

# On30 Commercial Loco and Car Minimum Radius Guide

This guide was created in response to the many requests from newcomers to the scale of On30 (1/4" scale models running on 16.5mm track), as to the minimum radius required from various manufacturer's unmodified locos and cars. This is not intended to be a "Last Word" on minimum radii requirements for On30, it is intended to be more of a "Useful Guide".

As always, these results are not set in concrete, ("your mileage may vary"), but have been collated from a volunteer pool of over 1500 members on the On30Conspiracy YahooGroups email list. (Special Thanks to "Stumpy" Stone, Bobber Gibbs, and Dallas Mallerich). These stats are based on locos and equipment as straight out of the box. Most equipment can be configured and/or modified to turn tighter than the manufacturer ever intended. However, it is the "out of the box" stats that will be most helpful to the newcomer.

**N.B.** These stats also do not take into account such variables as track design, rail code/height, point/switch design, "trackplan", or "quality" of track installation. (I personally use handlaid track on a "nominal" 18" radius. "Nominal", because it is truly handlaid, and hence is not of a perfect constant radius throughout the curve).

**N.B.** These stats do not take into account any particular combination of coupled equipment. IE a 4 wheel Porter loco and 4 wheel skips may stay coupled around a given curve, but a Mogul on the same curve may drag the same 4 wheel skips sideways to the point of skewing them off the track.

The "***Practical Operating Radius***" specs are known to work with each piece of equipment listed.

The "***Absolute Minimum Reported Radius***" info is the lowest successful radius reported, but is ***NOT RECCOMENDED***, except under ***EXTREME CIRCUMSTANCES***. As the curve radius gets tighter, the more critical it becomes to make sure that your trackwork and rollingstock is mechanically perfect. If you are prone to taking shortcuts when laying your track and tuning locos/cars, or are not mechanically inclined, do yourself a favor, don't "push the envelope", try to get the largest "Minimum Radius" you can.

Use these stats as a guide, but always consider the manufacturer's design limits when designing a layout around certain pieces of equipment. Remember, a layout which will only ever run Bachmann 4 wheel Porter Locos and 4 wheel skips may be able to get away with 6" radius curves, a layout which will occasionally play host to PSC K27 locos will not!

Happy Modelling,  
Aim to Improve,  
"Professor Klyzlr"

"...Still hauling logs with a Class A Climax and log bogies, deep in the Aussie Bush..."

| Locomotives  |                            |                                  |
|--|----------------------------|----------------------------------|
| Manufacturer / Equipment   | Practical Operating Radius | Absolute Minimum Reported Radius |
| <b>Bachmann</b> (Recommend 18" for all equipment)  |                            |                                  |
| 2-6-0 Mogul  | 18"                        | 12"                              |
| 0-4-0 Porter   | 12"                        | 6"                               |
| 0-4-2 Porter   | 15"                        | 9"                               |
| 0-4-0 Davenport Diesel   | 12"                        | 6"                               |
| 2 truck Class A Shay   | 18"                        | 15"                              |
| 2 truck Class B Climax   | 18"                        | 12"                              |
| Closed Street Car  | 15"                        | 3"                               |
| 2-8-0 Baldwin Outside Frame Consolidation  | 18"                        | 15"*<br><b>SEE NOTES!!</b>       |
| <p><b>* NOTE</b><br/> - 15" has been reported, with <b>PERFECT TRACKWORK</b><br/> - 12" has been reported when the tender is connected by 2<sup>nd</sup> Drawbar hole, at <b>ABSOLUTE MINIMUM SPEED</b>, on <b>PERFECT TRACKWORK</b></p> <p><b><i>This is a LARGE LOCO, Mechanically and Visually you push the minimum radius limits at your own risk! PLEASE Re-Read Page One of this document.</i></b></p> |                            |                                  |
| Railtruck (Leading bogie/Single powered trailing axle)   | 18"                        | 12"                              |
| <b>Boulder Valley Models</b><br>(Thanks to Dallas @ BVM for the official design specs!)  |                            |                                  |
| 301/302 Dunkirk (Athearn HO SW1200 diesel mech)<br>NB: Will probably negotiate 15", but coupler swing may pose problems  | 18"                        | 15"                              |
| 361/362 Mighty Midget<br>(4 whl power truck from B'mann HO "Phase 1/2" 44tonner)   | 6"                         | 6"                               |
| 371 Mudbug and Trailer<br>(4 whl power truck from B'mann "Brill Trolley")  | 6"                         | 6"                               |
| KD-05 Mega Midget<br>(4 whl power truck from B'mann HO "Phase 1/2" 44tonner)   | 9"                         | 9"                               |
| 351 Boxcab Diesel<br>(B'mann "Phase 3" 44 tonner, with central motor)  | 15"                        | 15"                              |
| KD-01 "44Tonner Bash"<br>(B'mann "Phase 3" 44 tonner, with central motor)  | 15"                        | 15"                              |
| KD-06 "70Tonner Bash"<br>(B'mann "Phase 3" 70 tonner, with central motor)  | 15"                        | 15"                              |
| 327 "Tin Chicken"<br>(B'mann HO 4 wheel Ballast vehicle mechanism)   | 9"                         | 7"                               |

|   |       |       |
|---|-------|-------|
| 251/252 APEX 14 Ton "Mini Climax" Locomotive<br>(B'mann HO 50 ton Class B Climax mechanism)   | 18"   | 15" * |
| * <b>NOTE</b><br>12" has been reported as possible by BVM, with<br>- removal of the front truck front brake beam, and<br>- clearance modifications to the Front and Rear End-beams. |       |       |
| <b>Wiseman Model Services</b><br>(Thanks to Keith @ Wiseman Model Services for the official<br>design specs!)   |       |       |
| Vertical Boiler Shay (On30 version)   | 18"   | 18"   |
| Mich Cal #6 Shay (On30 version)   | 18"   | 16"   |
| MOW Railtruck (On30 version)  | 18"   | 10"   |
|   |       |       |
| <b>Precision Scale Castings</b>   |       |       |
| K27 2-8-2   | 26" + | 26" + |
|   |       |       |
| <b>Broadway Limited</b>   |       |       |
| C-16 2-8-0  | 18"   | 15"   |
|   |       |       |
| <b>LeeTown Models</b><br>(Thanks to Lee Snover @ LeeTown for the official design<br>specs)  |       |       |
| GE Boxcab Locomotive  | 7.5"  | 5"    |
| "Model T" railtruck   | 8"    | 8"    |

| Freight/Passenger Cars  |                            |                         |
|---|----------------------------|-------------------------|
| Manufacturer / Equipment  | Practical Operating Radius | Minimum Reported Radius |
| <b>Bachmann</b> (Recommend 18" for all equipment)                                       |                            |                         |
| Flatcar   | 18"                        | 12"                     |
| Gondola   | 18"                        | 12"                     |
| Boxcar  | 18"                        | 12"                     |
| Stockcar  | 18"                        | 12"                     |
| Tankcar   | 18"                        | 12"                     |
| Passenger Coach   | 18"                        | 12"                     |
| Combine   | 18"                        | 12"                     |
| Baggage Car   | 18"                        | 12"                     |
| Caboose   | 18"                        | 12"                     |
| V Dump cars   | 15"                        | 10"                     |
| Wood Side Dump cars   | 15"                        | 10"                     |
| Log Skeleton cars   | 18"                        | 12"                     |
|   |                            |                         |
| <b>Boulder Valley Models</b><br>(Thanks to Dallas @ BVM for the official design specs!) |                            |                         |
| SC1/2 Pedestal Flats  | 6"                         | 6"                      |
| 501 thru 508 "Shorty Cars"  | 9"                         | 9"                      |
| 511 thru 513 "16-foot cars"   | 15"                        | 10"                     |
| 521 thru 524 "16-foot cars"   | 15"                        | 10"                     |
| 561 thru 564 "15 foot hopper"   | 15"                        | 12"                     |
| 601 thru 606 "20-foot cars"   | 15"                        | 15"                     |
| 607 thru 609 "20 foot cars"   | 15"                        | 15"                     |
| 611 thru 616 "20-foot cars"   | 15"                        | 15"                     |
| 617 thru 619 "20 foot cars"   | 15"                        | 15"                     |
| 621 thru 626 "20 foot cars"   | 15"                        | 15"                     |
| 631 thru 633 "20 foot cars"   | 15"                        | 15"                     |
|   |                            |                         |
| <b>Chivers</b>  |                            |                         |
| Shorty cars   | 15"                        | 6"                      |
|   |                            |                         |