

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 un-modified 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








Picture	Manufacturer / Equipment	Practical Operating Radius	Absolute Minimum Reported Radius
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**Athearn HO Scale Locos/On30 Donors
(Recommend 18" for all equipment)**

	SW1200 switcher NB : Will probably negotiate 15", but coupler swing may pose problems	18"	15"
	SW1500 switcher	18"	15"



**Bachmann On30
(Recommend 18" for all equipment)**











	2-6-0 Mogul	18"	12"
	0-4-0 Porter	12"	6"
	0-4-2 Porter * NOTE - 7" is reported as FAILING "out of the box", But can be made to work OK IF the trailing truck SPRING is removed (Thanks Dallas @ BVM!)	15"	9"* SEE NOTES!






	0-4-0 Davenport Gas-Mechanical	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 * NOTE - 15" has been reported, with PERFECT TRACKWORK - 12" has been reported when the tender is connected by 2 nd Drawbar hole, at ABSOLUTE MINIMUM SPEED , on PERFECT TRACKWORK <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>	22"	18"* SEE NOTES!
	Railtruck (Leading bogie/Single powered trailing axle)	18"	10"
	2-4-4 Forney Inside & Outside frame versions * NOTE: While the Forney is not a Large loco, the forney design has a rear coupler configuration which will swing a LONG WAY off track centerline. This MAY result in the Forney dragging some shorter rollingstock sideways off the track on < 18" radii curves.	22"	18"* SEE NOTES!


	4-4-0 American Steam Locomotive * NOTE: The American has been tested on 12" radii, but will not couple anything on the front coupler, and the front truck may foul the frame members.	18"	15"* SEE NOTES!
	2-6-6-2 Mallet	18"	18"
	4-6-0 Ten-Wheeler * NOTE: - 18" requires tender to be connected by 2 nd drawbar hole. - Front truck/wheelsets fouls inside of cylinder castings on 16"	22"	18"* SEE NOTES!
	Railbus + Trailer	18"	18"









**Bachmann HO Scale Locos/On30 Donors
(Recommend 18" for all equipment)**





	50 ton Class B Climax mechanism * NOTE 12" has been reported as possible by BVM, with - removal of the front truck front brake beam, and - clearance modifications to the Front and Rear End-beams.	18"	15" * SEE NOTES!
	70 ton 3-truck Class C Shay (converted to 2 truck Class B) * NOTE 12" has been reported as possible by BVM, With driveshaft both IN and OUTside of the curve. The removal of the Auxillary tender, 3 rd truck, and wiring loom in the conversion process is the key to the tighter turn radii.	18"	12" * SEE NOTES!

	0-6-0T SaddleTank #8181x * NOTE: Extreme rear overhang, esp with On30-width cab	18"	7"* SEE NOTES!
	HO SCALE Hi-Railer #46207 * NOTE : 7" OK with small guidewheels removed	18"	7"* SEE NOTES!
	School Bus #46211 * NOTE : 10" OK with small guidewheels removed	18"	10"* SEE NOTES!
	4-6-0 locomotive (52" drivers) #84901 * NOTE : 10" has been reported when the tender is connected by 2 nd Drawbar hole	18"	10"* SEE NOTES!
	4-6-0 locomotive (63" drivers) #84902	18"	15"
	CURRENT "Phase 3" 44 tonner, central motor * NOTE Jeff Law mentions that this mech has mechanical limitations, that can be "tweaked". http://www.datamasta.com/on30/on30_mp_30.asp	18"	15" * SEE NOTES!
	"Phase 3" 70 tonner, central motor	18"	15"
	45ton siderod diesel, central motor	12"	10"
	4 wheel Ballast vehicle	9"	7"
	Brill Trolley	18"	7"


Backwoods Miniatures			
	<p>x-6-x "Select-a-Kit" Conversion (B'mann HO 0-6-0T SaddleTank #8181x)</p> <p>*NOTE - Donor 0-6-0 mech capable of 7" radii. However, the additional Leading/Trailing truck options may limit this.</p>	18"	18"* SEE NOTES!
	<p>Mack AC Railtruck bodykit (B'mann On30 Railtruck)</p>	18"	10"
	<p>On30 Whitcomb Centre-Cab (Athearn SW1500)</p>	18"	15"
	<p>Two-Truck Class B 20ton Climax</p>	20"	20"
	<p>On30 Tender for the Bachmann Climax (2 truck Class B Climax)</p>	20"	20"

Boulder Valley Models (Thanks to Dallas @ BVM for the official design specs!)			
	<p>251/252 APEX 14 Ton "Mini Climax" Locomotive (B'mann HO 50 ton Class B Climax mechanism)</p> <p>* NOTE 12" has been reported as possible by BVM, with - removal of the front truck front brake beam, and - clearance modifications to the Front and Rear End-beams.</p>	18"	15" * SEE NOTES!


	<p>255 "Silver City Sidewinder"/Gilpin Class B Shay (B'mann HO 70 ton 3 truck Shay converted to 2 truck)</p> <p>* NOTE 12" has been reported as possible by BVM, With driveshaft both IN and OUTside of the curve. The removal of the Auxillary tender, 3rd truck, and wiring loom in the conversion process is the key to the tighter turn radii.</p>	18"	12" * SEE NOTES!
	<p>301/302 Dunkirk (Athearn HO SW1200 diesel mech) NB: Will probably negotiate 15", but coupler swing may pose problems</p>	18"	15"
	<p>351 Boxcab Diesel (B'mann "Phase 3" 44 tonner, with central motor)</p> <p>* NOTE Jeff Law mentions that this mech has mechanical limitations, that can be "tweaked". http://www.datamasta.com/on30/on30_mp_30.asp</p>	15"	15" * SEE NOTES!
	<p>352 Little-Bose Boxcab (B'mann On30 Davenport Gas Mechanical)</p>	12"	6"
	<p>354 Durante Motors "Twin Schnozzer" Engine (B'mann HO 45ton siderod diesel, central motor)</p>	12"	10"
	<p>361/362 Mighty Midget (4 whl power truck from B'mann HO "Phase 1/2" 44tonner)</p>	6"	6"
	<p>371 Mudbug and Trailer (4 whl power truck from B'mann "Brill Trolley")</p>	6"	6"
	<p>372 "Tin Chicken" (B'mann HO 4 wheel Ballast vehicle mechanism)</p>	9"	7"

	381-384 "Ruffled Duckling"/"Rambling Roadrunner" Railtrucks (B'mann On30 Railtruck)	18"	10"
	KD-01 "44Tonner Bash" (B'mann "Phase 3" 44 tonner, with central motor) * NOTE Jeff Law mentions that this mech has mechanical limitations, that can be "tweaked". http://www.datamasta.com/on30/on30_mp_30.asp	18"	15" * SEE NOTES!
	KD-05 Mega Midget (4 whl power truck from B'mann HO "Phase 1/2" 44tonner)	9"	9"
	KD-06 "70Tonner Bash" (B'mann "Phase 3" 70 tonner, with central motor)	18"	15"


Broadway Limited Industries

	C-16 2-8-0	18"	15"
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Chivers


	Chivers RC7827 GE25T (Steam Era Models Black Beetle)	18"	18"
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Precision Scale Castings


	K27 2-8-2	26" +	26" +
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LeeTown Models


(Thanks to Lee Snover @ LeeTown for the official design specs)

	GE Boxcab Locomotive	7.5"	5"
	"Model T" railtruck	8"	8"


Life Like/Walthers HO Scale Locos/On30 Donors (Recommend 18" for all equipment)


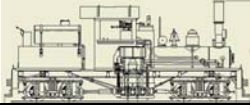

	Alco S1 diesel switcher * NOTE : reported as mechanically OK on 10", but doubtful that it can stay coupled to any "out-of-box" rollingstock	18"	15"* SEE NOTES!
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Precision Craft Models (BLI)

	Galloping Goose * NOTE 15" has been reported on geometrically <i>PERFECT</i> trackwork. Inherent design limits prevent operation on tighter curves.	18"	15" * SEE NOTES!
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Rivarossi HO Scale/On30 Donors









	Class B 2-truck Heisler (NMRA RP25 wheel vers)	18"	10"
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Wiseman Model Services (Thanks to Keith @ Wiseman Model Services for the official design specs!)			
	Vertical Boiler Shay (On30 version)	18"	18"
	Mich Cal #6 Shay (On30 version)	18"	16"
	MOW Railtruck (On30 version)	18"	10"





Freight/Passenger Cars






Picture	Manufacturer / Equipment	Practical Operating Radius	Minimum Reported Radius
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Bachmann (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"

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	Caboose	18"	12"
	V Dump cars	15"	10"
	Wood Side Dump cars	15"	10"
	Log Skeleton cars	18"	12"

Boulder Valley Models (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"
	551 thru 555 "15-foot skeleton log cars"	12"	12"

	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"

Chivers			
	Shorty cars	15"	6"
	14' Caboose	15"	6"