



## Compatibility of Standard Wheelsets and the Universal Gauge O Wheelset with Standard Tracks

This Data Sheet lists the compatibility of wheelsets and tracks which comply fully with their respective Standards. It also shows the compatibility of the Guild 'Universal' wheelset with different track standards.

Full compatibility between the wheelset and the track requires the following:

1. The minimum back to back (BB) dimension must be greater than the maximum dimension over the check rails (OC).
2. The maximum back to flange face dimension (BF) must be equal to or less than the minimum check rail to opposite rail face dimension (CR). This requirement assumes a square flange but in most practical cases the flange taper allows crossings to be negotiated when BF exceeds CR by up to 0.3mm, shown in the table by ●. For example, Guild Fine Standard wheelsets will negotiate Guild Coarse Standard crossings.
3. The minimum wheel width (WW) must be equal to or greater than twice the minimum flangeway (2FY). Some wheels of width lower than twice the flangeway will negotiate crossings with acceptable drop-in and these are also shown in the table by ●.

The Track Standards do not specify a minimum dimension from the running surface to the top of the chairs or other type of rail support. A minimum dimension of 1.6mm will ensure clearance to the flanges of wheels complying with any of the standards listed except for the two Greenly ones which do not specify a maximum flange depth.

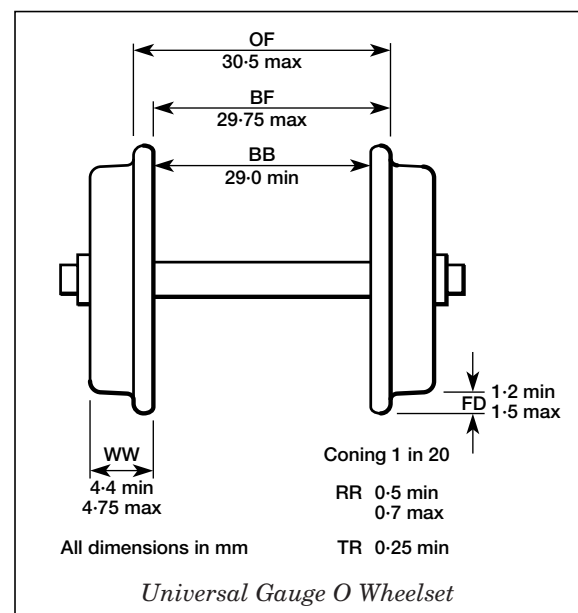
The Guild 'Universal' wheelset is designed to work with as many different track standards as possible. When the Guild reviewed the BRMSB Standards, it was found that a single wheelset could not be fully compatible with all three BRMSB track Standards. The minimum back to back dimension of 29.0mm given by the BRMSB Fine Standard and the maximum back to opposite flange face dimension of 29.5mm defined by the BRMSB Coarse Standard would result in a maximum flange width of only 0.5mm. This is too small to allow a reasonable manufacturing tolerance, particularly for modellers making their own wheels, so Fine and Coarse Standard wheelsets were retained but with the lateral tolerances altered to permit a standard wheel profile. Such a profile would have a 4.4mm wide wheel with 1.0mm flange width and 1.3mm flange depth. The flange depth required by the minimum Coarse Standard flange depth is 0.1mm above the maximum for Fine (Normal Flange) Standard.

However, experience has shown that flanges down to 1mm depth run satisfactorily on both Fine and Coarse Standard track.

Guild Coarse Standard wheel sets are compatible with most of the Standards but with reduced check rail clearance on BRMSB and Guild Fine Standard tracks. This reduction can be avoided by taking advantage of the slight difference between the Guild and BRMSB Coarse Standard track dimensions and making the maximum back to opposite flange face dimension 29.75mm and the minimum back to back dimension 29.0mm, giving a maximum over flanges dimension of 30.5mm. The resulting 'Universal' wheelset is compatible with all the current standards except Scale Seven and BRMSB Coarse. BRMSB Coarse Standard track can be made compatible by moving the minimum check rail to opposite face dimension from 29.5mm to 29.8mm. Such track will still be fully compatible with BRMSB Coarse Standard wheelsets.

Some commercially produced wheels have 0.75mm wide flanges and after setting to a back to back dimension of 29mm run through pointwork laid to both Fine and Coarse Standards without roughness or derailment.

The Guild Fine Standard is the nearest to true scale dimensions of the 32mm gauge standards and so is the most realistic one for the visible wheels of models of steam prototypes. However, where running on tracks to various standards is required, the use of wheelsets to the 'Universal' dimensions on rolling stock with outside frames will hardly be noticeable without close inspection.



## Track Dimensions

Track Standard		Guild			Greenly (1935)		BRMSB			NMRA	AMRA	Euro
		Fine	Coarse	Scale Seven	Ordinary	Special	Fine	Coarse	Unified			
Over check rails	OC	28.5	30.94	27.6	25.5	27.0	28.5	27.5	28.0	28.27	28.13	28.0
Check to opp.face	CR	30.25	31.99	29.8	28.0	29.5	30.0	29.5	30.0	29.77	29.87	30.0
Twice flangeway	2FY	3.5	1.94	4.4	6.5	5.0	3.5	5.0	3.2	3.0	3.28	4.2
<b>Wheel Standard</b>												
Guild	BB 29.0	C	C	X	C	C	C	C	C	C	C	C
Fine	BF 30.0	C	●	X	X	X	C	X	C	C	C	C
	WW 3.5	C	●	X	X	X	C	X	C	C	C	●
Compatibility		✓	✓	✗	✗	✗	✓	✗	✓	✓	✓	✓
Guild	BB 28.0	X	C	X	C	C	X	C	X	X	X	X
Coarse	BF 29.5	C	C	C	X	C	C	C	C	C	C	C
	WW 4.4	C	C	C	X	●	C	●	C	C	C	C
Compatibility		✗	✓	✗	✗	✓	✗	✓	✗	✗	✗	✗
Guild	BB 29.0	C	C	X	C	C	C	C	C	C	C	C
Universal	BF 29.75	C	C	C	X	C	C	C	C	C	C	C
	WW 4.4	C	C	C	X	●	C	●	C	C	C	C
Compatibility		✓	✓	✗	✗	✓	✓	✓	✓	✓	✓	✓
Scale	BB 31.34	C	X	C	C	C	C	C	C	C	C	C
Seven	BF 31.99	X	X	C	X	X	X	X	X	X	X	X
	WW 2.87	X	X	C	X	X	X	X	X	X	X	X
Compatibility		✗	✗	✓	✗	✗	✗	✗	✗	✗	✗	✗
Greenly	BB 27.0	X	X	X	C	X	X	X	X	X	X	X
Ordinary	BF 27.75	C	C	C	C	C	C	C	C	C	C	C
	WW 6.5	C	C	C	C	C	C	C	C	C	C	C
Compatibility		✗	✗	✗	✓	✗	✗	✗	✗	✗	✗	✗
Greenly	BB 28.5	X	C	X	C	C	X	C	C	C	C	C
Special	BF 29.25	C	C	C	X	C	C	C	C	C	C	C
	WW 5.5	C	C	C	X	C	C	C	C	C	C	C
Compatibility		✗	✓	✗	✗	✓	✗	✓	✓	✓	✓	✓
BRMSB	BB 29.0	C	C	X	C	C	C	C	C	C	C	C
Fine	BF 30.0	C	●	C	X	X	C	X	C	C	C	C
	WW 3.75	C	●	C	X	●	C	X	C	C	C	X
Compatibility		✓	✓	✗	✗	✓	✓	✗	✓	✓	✓	✓
BRMSB	BB 28.0	X	C	X	C	C	X	C	X	X	X	X
Coarse	BF 29.5	C	C	C	X	C	C	C	C	C	C	C
	WW 5.0	C	C	C	X	C	C	C	C	C	C	C
Compatibility		✗	✓	✗	✗	✓	✗	✓	✗	✗	✗	✗
BRMSB	BB 28.5	X	C	X	C	C	X	C	C	C	C	C
Unified	BF 30.0	C	C	C	X	X	C	X	C	C	C	C
	WW 4.0	C	C	C	X	X	C	X	C	C	C	X
Compatibility		✗	✓	✗	✗	✗	✗	✗	✓	✓	✓	✓
NMRA	BB 28.4	X	C	X	C	C	X	C	C	C	C	C
	BF 29.77	C	C	C	X	●	C	●	C	C	C	C
	WW 4.37	C	C	C	X	●	C	●	C	C	C	C
Compatibility		✗	✓	✗	✗	✓	✗	✓	✓	✓	✓	✓
AMRA	BB 28.4	X	C	X	C	C	X	C	C	C	C	C
	BF 30.0	C	C	C	X	X	C	X	C	C	C	C
	WW 4.0	C	●	C	X	X	C	●	C	C	C	●
Compatibility		✗	✓	✗	✗	✗	✗	✗	✓	✓	✓	✓
European	BB 28.4	X	C	X	C	C	X	C	C	C	C	C
	BF 29.8	C	C	C	X	●	C	●	C	C	C	C
	WW 4.7	C	C	C	X	●	C	●	C	C	C	C
Compatibility		✗	✓	✗	✗	✓	✗	✓	✓	✓	✓	✓

The table shows compatibility of wheelsets with the Track Standard in each column as follows.

(all dimensions in millimetres)

✓ = This wheelset is compatible

✗ = This wheelset is not compatible.

C = This dimension is fully compatible.

● = This dimension is compatible in practice.

X = This dimension is not compatible.