

TECHNOLOGY BULLETIN

A PUBLICATION OF CONMET

Wheel End Load Ratings for Hubs Used in Single Wheel Applications

Single wheels impose different loading conditions on the hub, bearings and axles when compared to dual wheels. As a result, the hub load ratings change according to wheel offset. This bulletin details hub load ratings for trailer hubs (SAE N and P type) and drive hubs (SAE R type) with single wheel offsets ranging from 0" to 7". This bulletin is valid for hubs used on drive, trailer, pusher and tag axles for both drum brakes and disc brakes.

Wheel offset is a term referring to the geometry of the wheel; it can be mounted to the hub either **outset** or **inset**. Both outset and inset are calculated as the distance from the centerline of the wheel to the wheel mounting surface. The wheel is **outset** when the centerline of the wheel is outboard of the wheel mounting surface. The wheel is **inset** when the centerline of the wheel is inboard of the wheel mounting surface. The wheel centerline is depicted by the dashed line in the illustration shown below. The hub load ratings listed in tables 1 and 2 are tabulated for single wheels mounted both inset and outset.

Measuring Wheel Outset and Inset (Refer to following figure):

Most wheel manufacturers will publish the inset or outset of their wheels by part number. If the part number or manufacturer is unknown, perform the following measurements and calculation to make a determination. For dual wheels, the effective outset is the flange thickness of one wheel.

1. Measure the wheel width (dimension A).
2. Measure the distance from the outboard wheel edge (if outset) or inboard wheel edge (if inset) to the wheel mounting surface (dimension B).
3. Use the formula below to calculate wheel outset or inset (dimension C).

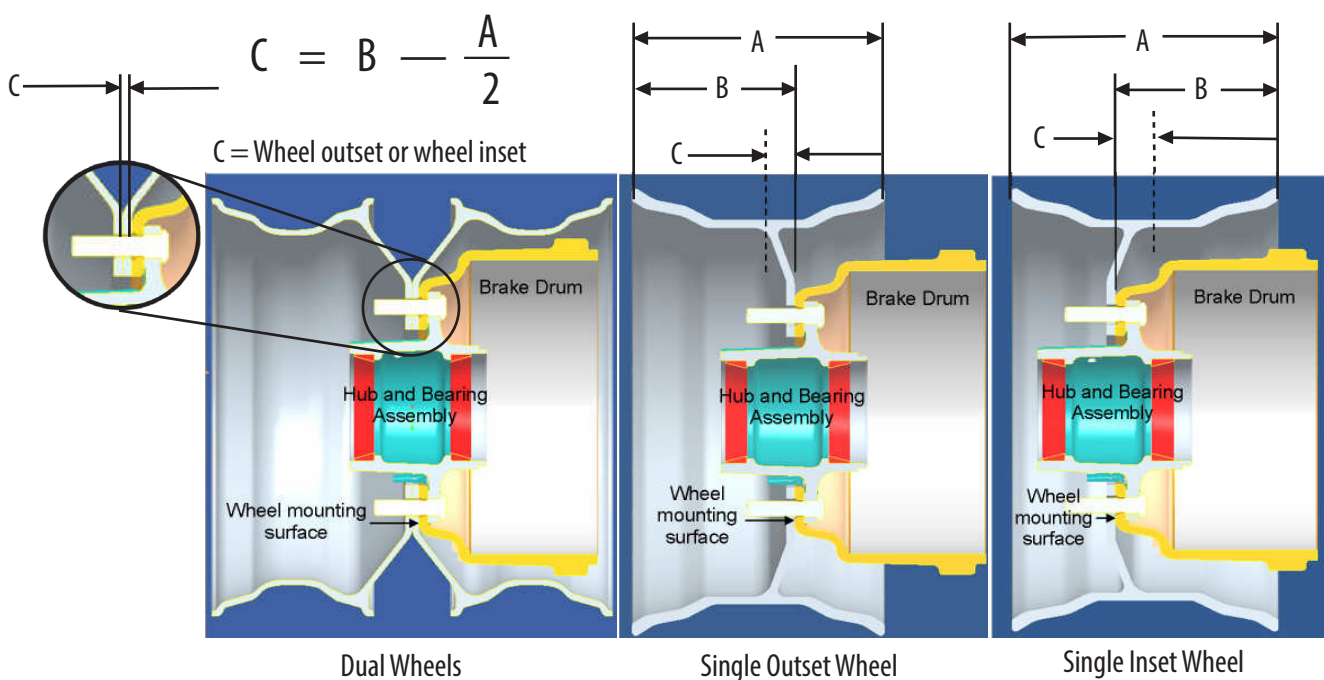




Table 1 details load ratings based on wheel outset or inset and axle type for ConMet aluminum hubs.
 Table 2 details load ratings based on wheel outset or inset and axle type for ConMet iron hubs.

IMPORTANT: Using outset or inset single wheels may decrease the load rating for other components such as axles. Manufacturers of axle components should be consulted for approved load ratings. In many instances, it is the bearing or axle that governs the load rating. The tables below are not governed by only the hub, but also the bearings. Some manufacturers of axles and wheel end components recommend that the N type spindle should not be used in conjunction with outset wheels on trailer axles. For single outset wheel applications, some axle manufacturers recommend that the P type spindle should be used.

Applications of wheel equipment that constitute moving normal tire loads outset or inset relative to dual positions typically reduces the design performance of the system. The material within is presented solely as a guide to ensure safe load limits of the hub and bearing system are maintained.

Table 1: **ALUMINUM** Hub Load Ratings for Single Outset and Inset Wheel Applications

Wheel Outset or Inset	P Type Trailer Load Rating (lbs)	N Type Trailer Load Rating (lbs)	R Type Drive Load Rating (lbs)
0" to 1.13"	12,500	11,500	11,500
Greater than 1.13" to 2.00"	10,100	8,900	9,500
Greater than 2.00" to 3.00"	8,500	7,200	7,700
Greater than 3.00" to 4.00"	7,600	6,500	6,300
Greater than 4.00" to 5.00"	6,700	5,700	5,600
Greater than 5.00" to 6.00"	6,100	5,000	5,000
Greater than 6.00" to 7.00"	5,500	4,500	4,500

Table 2: **IRON** Hub Load Ratings for Single Outset and Inset Wheel Applications

Wheel Outset or Inset	P Type Trailer Load Rating (lbs)	N Type Trailer Load Rating (lbs)	R Type Drive Load Rating (lbs)
0" to 1.13"	12,500	12,500	13,000*
Greater than 1.13" to 2.00"	10,100	8,900	10,000
Greater than 2.00" to 3.00"	9,100	7,200	8,300
Greater than 3.00" to 4.00"	8,300	6,500	7,300
Greater than 4.00" to 5.00"	7,200	5,700	6,500
Greater than 5.00" to 6.00"	6,300	5,000	5,800
Greater than 6.00" to 7.00"	5,500	4,500	5,300

* Iron R type drive hub casting #10026090 is rated for 11,500 lbs for 0" to 1.13" outset or inset case. The 10026090 casting is for an 8 stud mounting system.

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