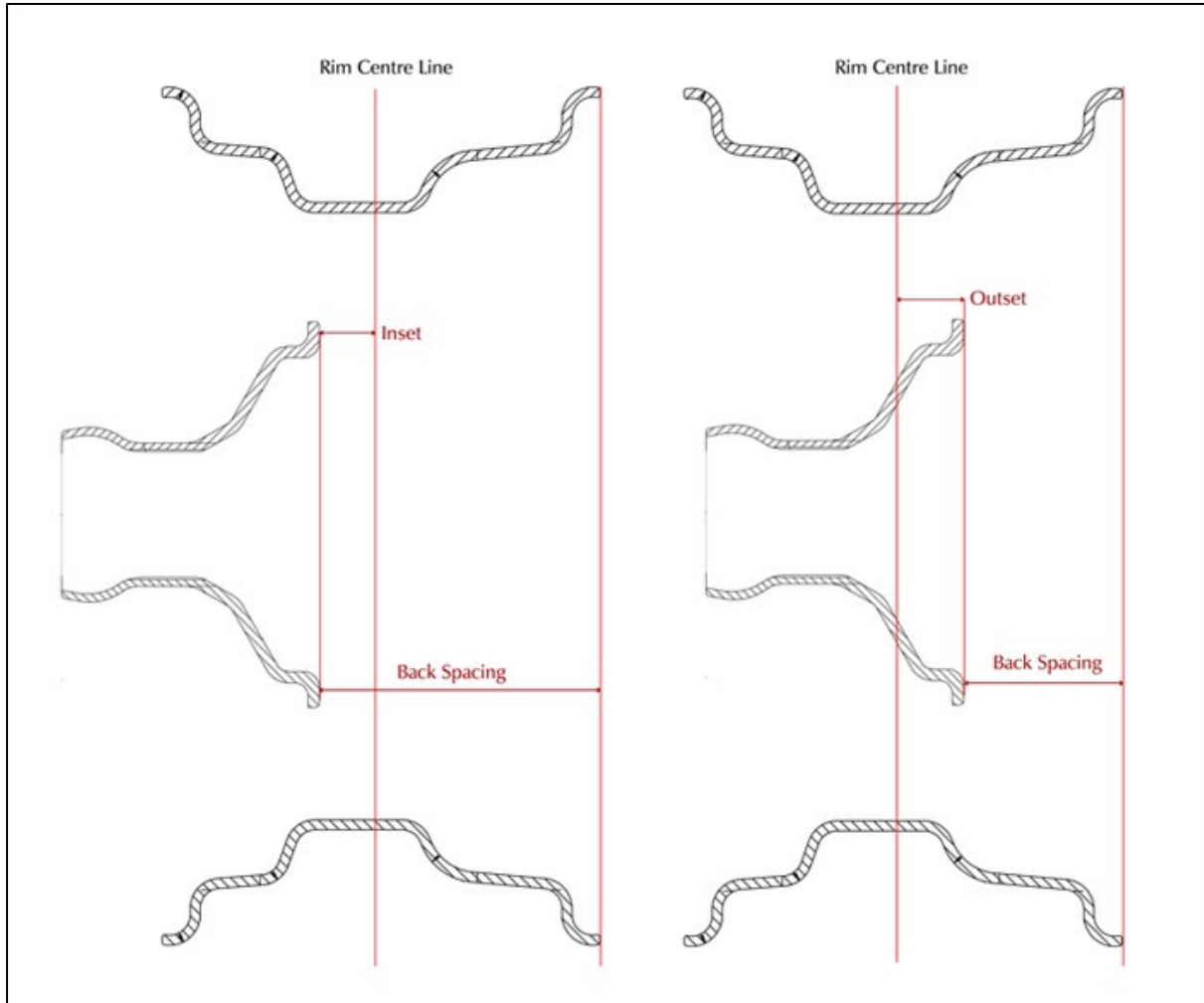
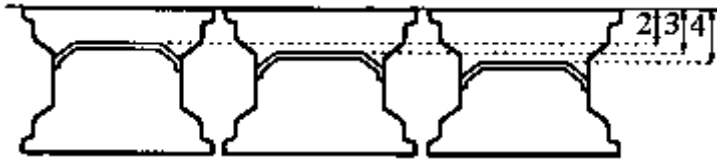


## Inset, Outset and Back Spacing

Inset and outset are engineering measurements relating to the centre line of the rim. It is not practical to try and take these measurements from a wheel so the back spacing is used to describe the position of the rim in relation to the centre.



## How to Measure Wheel BackSpace



The easiest way to measure backspace is to lay the wheel face down onto the ground so the backside of the wheel is facing up. Take a straight edge and lay it diagonally across the [inboard flange](#) of the wheel. Take a tape measure and measure the distance from where the straight edge contacts the inboard flange to the hub [mounting pad](#) of the wheel. This measurement is backspace. The above photo shows three wheels with 2", 3", & 4" backspace.

### Items required to measure wheel backspace:

- Tape measure
- Straight edge
- Wheel w/o tire (preferred)

## Measuring Wheel Offset

To calculate offset you'll need the following measurements:

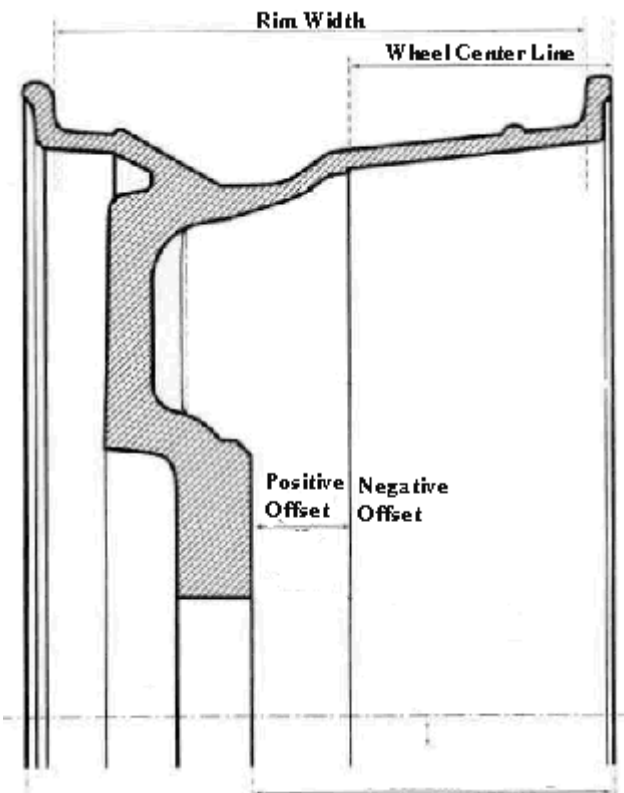
- Wheel backspace
- Wheel Width
- Wheel Center line (outboard flange to inboard flange measurement / 2)

Subtract:

- Wheel center line from Wheel backspace to get offset.
  - If backspace is less than the wheel centerline the offset is negative
  - If backspace is greater than the wheel centerline the offset is positive

Tip:

- To convert from inches to mm multiply by 25.4
- To convert from mm to inches divide by 25.4



BACKSPACE	3.25"	3.5"	3.75"	4"	4.25"	4.5"	5"	5.25"	5.5"	5.75"	6"
WHEEL WIDTH											
5.5"	0	6	12	19	25	32	44	52	57	63	69
6"	-6.4	0	6	12	19	25	38	44	51	57	63
6.5"	-12	-6	0	6	12	19	32	38	44	51	57
7"	-19	-12	-6	0	6	12	25	32	38	44	51
8"	-32	-25	-19	-12	-6	0	12	19	25	32	38
8.5"	-38	-32	-25	-19	-12	-6	6	12	19	25	32
9"	-44	-38	-32	-25	-19	-12	0	6	12	19	25
9.5"	-51	-44	-38	-32	-25	-19	-6	0	6	12	19
10"	-57	-51	-44	-38	-32	-25	-12	-6	0	6	12
10.5"	-63	-57	-51	-44	-38	-32	-19	-12	-6	0	6
11"	-69	-63	-57	-51	-44	-38	-25	-19	-12	-6	0
12"			-69	-63	-57	-51	-38	-32	-25	-19	-6

## Backspace to Offset Conversion Chart

The table on the right is a quick reference for finding offset, pick the rim width and follow the row over to the backspace of your wheel.

## Determining Vehicle Fitment

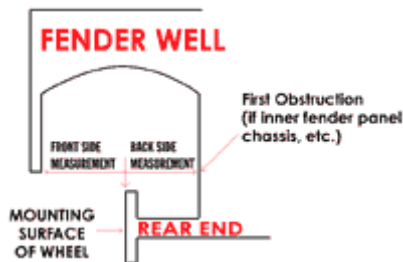
Fitting a wheel and tire package is different for each vehicle, but by following these guidelines your chances for success will be much greater. In most cases you'll have to use the physical dimensions of the current wheel/tire package to determine the dimensions of the new wheel/tire package.

Items which are potential trouble spots:

- Tie Rod Ends
- A-arms
- Brake Calipers
- Shocks and Shock Mounts
- Inner & Outer Fenders (esp. front tires turned to lock)

In the drawing on the left, we've made two measurements

- Front Side Clearance
- Back Side Clearance



These measurements when used with:

- Tire Section Width
- Tire Diameter
- Rim Width
- Rim Backspace

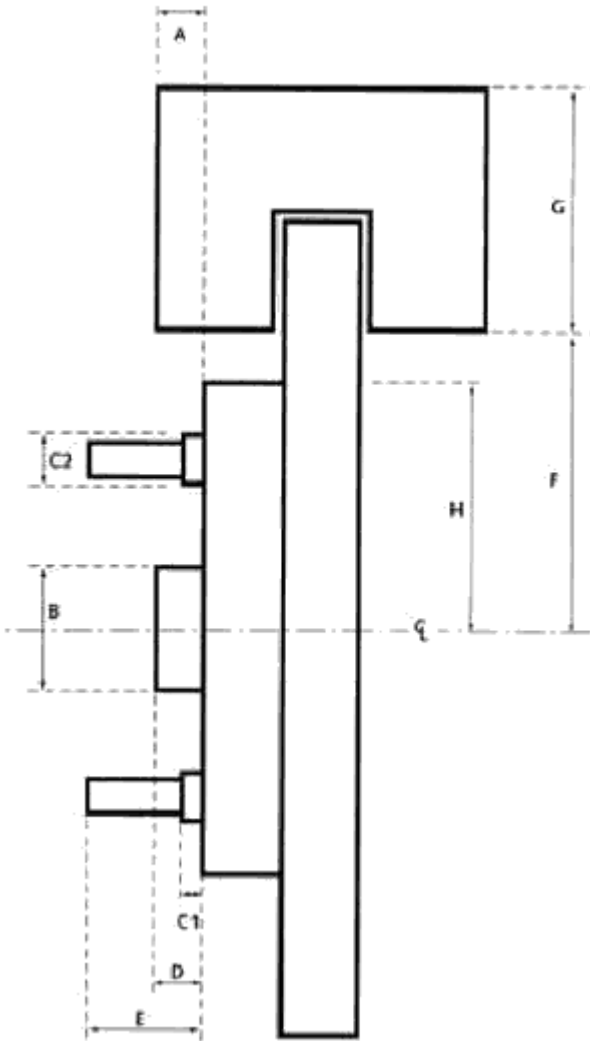
Help determine if wheel/tire clearance is adequate for the new wheel/tire package you've selected

**Suggestion:** Start your search for new wheels by picking the tires first. Get the tire manufacturer's rim width recommendations and physical dimensions for the tires you want. Pay close attention to [Section Width and Measured Rims specs.](#), these are important numbers to be used when selecting rims and determining vehicle fitment.

## Determine Wheel Caliper Clearance

Ensuring proper caliper clearance inside the wheel is important. The following chart should enable you to have the dimensions required by most wheel manufacturers.

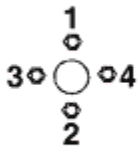
**Caliper and Hub Diagram**



- A. Caliper Overhang Distance
  - Used to determine if wheel dish is adequate (in some cases a spacer is required for clearance)
- B. Diameter of Hub Center
  - Required if wheels are hub centric
- C. Wheel Stud Diameter
  - Required along with bolt circle
- D. Height of Hub Center
- E. Length of Lug and Thread Type (Fine or Coarse)
  - Required to determine if longer studs are necessary
- F. Distance from CL of Hub to Caliper
  - Used with A to determine if a spacer is required for proper fitment
- G. Width of Caliper
  - Used with F to determine if wheel ID is adequate to clear rotor/caliper package
- H. Diameter of Hub Mounting Face
  - Used to determine if hub is adequate to support wheel/spacer

## Typical Lug Nut Torque Specifications

**Tighten Lug Nuts in a Criss-Cross Pattern for Best Equal Torque Distribution.**



**4 LUG**



**5 LUG**



**6 LUG**



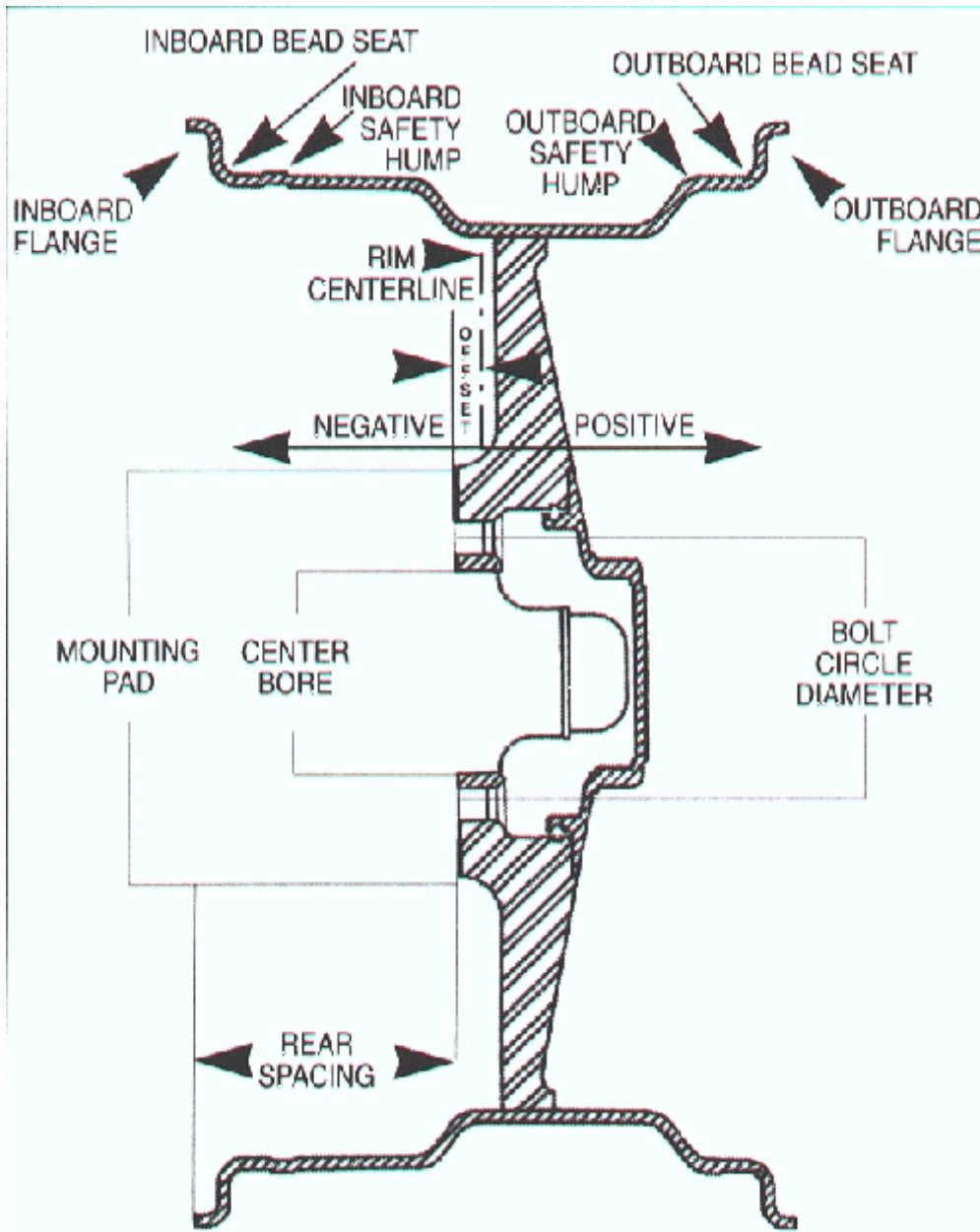
**8 LUG**

Lug Size	Ft/Lbs Torque
7/16"	55-65
1/2"	75-85
9/16"	95-115
5/8"	135-145
12mm	72-80
14mm	85-95

**IMPORTANT NOTICE:** As with all types of wheels retorque lug nuts after the first 25 miles & at 100 mile intervals until lug torque is maintained.

**Note:** Always refer to Owner's Manual for proper factory specifications that take precedence over the listed recommendations.

## Wheel Terminology



**Bolt pattern** or **lug pattern** or **bolt circle** is determined by the number of bolt holes and the bolt circle diameter.

**Hub Diameter** or **center bore** is the hole at the center of the wheel.

**Rear spacing** or **back spacing** is the distance from the backside of the wheel mounting pad to the outside of the rim flange.

**Offset:** The distance from the centerline of the wheel to the mounting surface of the wheel.

**Negative offset:** When the back of the bolt pad is closer to the inside of the wheel; when mounting surface is inboard of the rim centerline.

**Positive offset:** When the back of the bolt pad is closer to the street side of the wheel; when the mounting surface is outboard of the rim centerline.