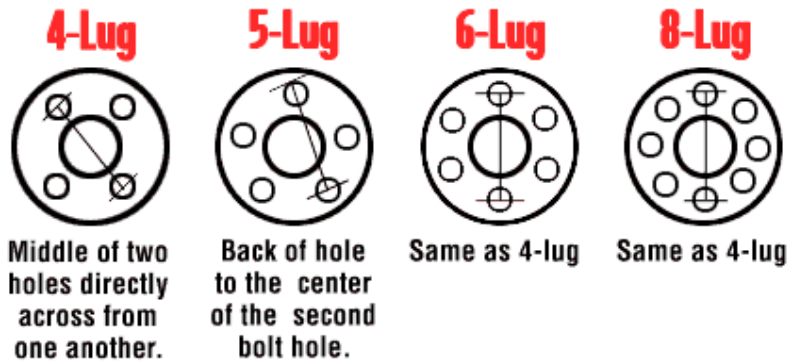
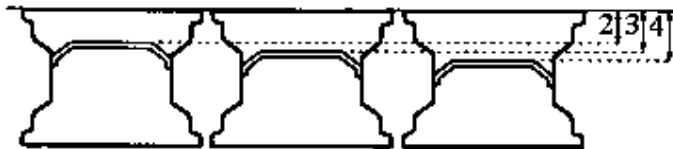

How to Measure Bolt Patterns



How to Measure Wheel BackSpace



- Items required to measure wheel backspace:**
- Tape measure
 - Straight edge
 - Wheel w/o tire (preferred)

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.

Measuring Wheel Offset

To calculate offset you'll need the following measurements:

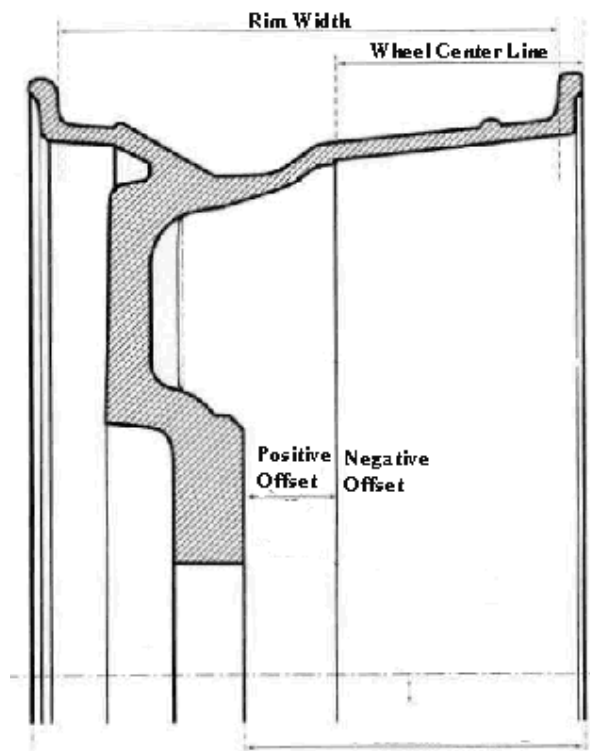
- Wheel backspace
- Wheel Width
- Wheel Center line (outboard flange to inboard flange measurement / 2)

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



WWW

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

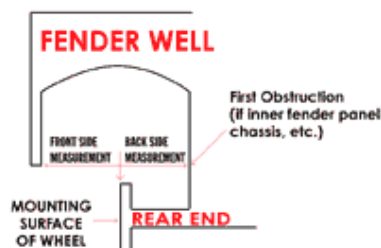
The table on the right is a quick reference for finding offset, pick the rim width and follow the row over to the backspace of your wheel.

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

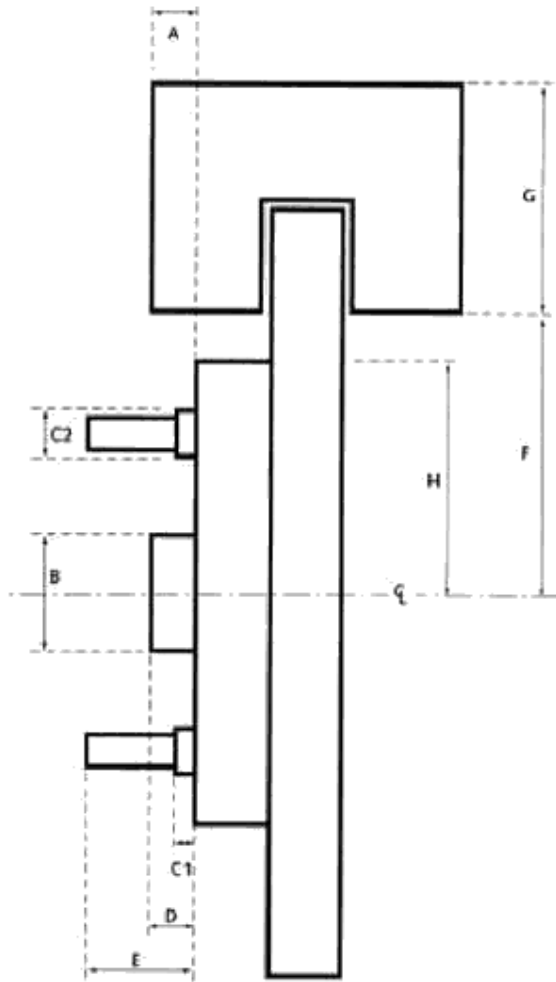
Help determine if wheel/tire clearance is adequate for the new wheel/tire package you've selected

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 manufactures.

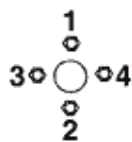
Caliper and Hub Diagram



- 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

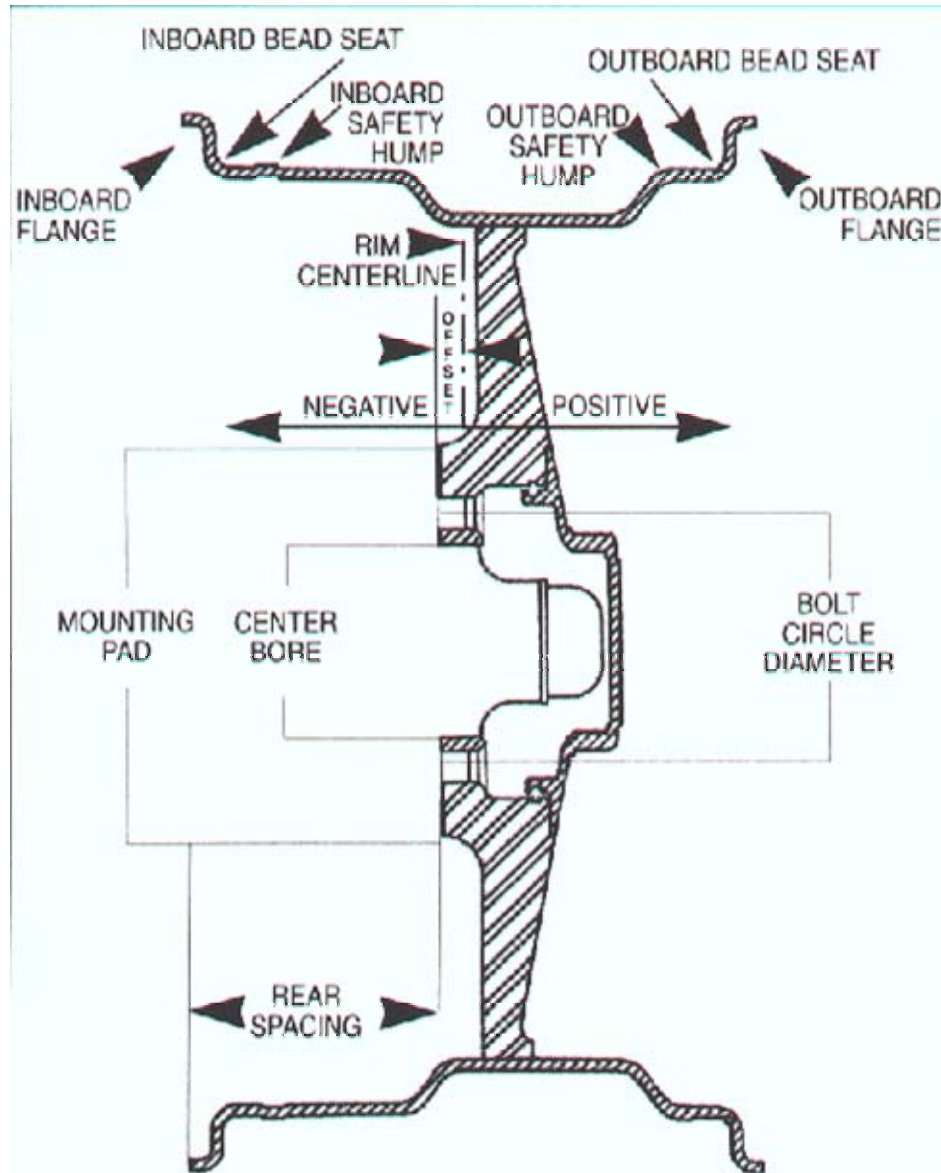
Lug Size Ft/Lbs Torq

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 & 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.

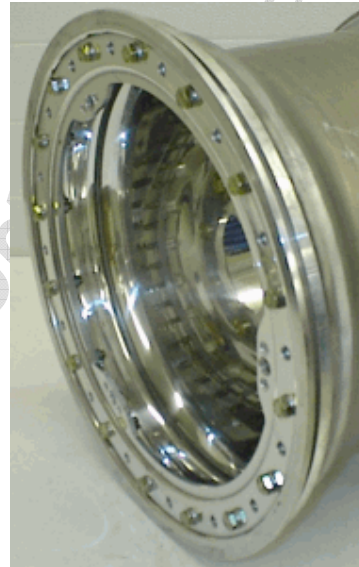
Rear spacing or **back spacing** is the distance from the backside of the wheel mounting pad to the outside of the rim flange.

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.

Bead-Loc A device which captures the tire bead between it's flanges, usually secured by bolts to keep tire bead from dismounting. Usually used in dirt circle track or off road applications where low tire pressures are used and hitting ruts or other vehicles are common.
Left: An example of a Bead-Loc wheel



Modular Wheel Inspection and Maintenance

Two & Three piece modular wheels require periodic maintenance. You'll want to work out your own maintenance schedule, but here's an example of what the manufacturer recommends.

- Each Season disassemble, thoroughly inspect, clean, re-seal, and re-torque each wheel:
- Replace wheel bolts each season
- Wheel Bolt Torque:
 - 1/4" bolts 15 ft/lbs. or 180 in./lbs
 - 5/16" bolts 20 ft/lbs.
- After thoroughly cleaning all mating surfaces with an appropriate cleaner, add a thin skim coat of silicone sealant to these surfaces, assemble wheel and torque bolts to recommended torque
- Install a new valve stem

- Add a thick coat of silicone sealant to the drop center area of the wheel and let it cure for 24 hours before initial use

Below is an example of cracking which can occur on wheels which don't support the back rim half with the center. This wheel happens to be a Dura-lite wheel.



Modular Wheel Leak Detection

So your tires keep going flat, before you blame those leaky slicks, check your wheels for leaks.

- Inflate the tire/wheel combination to 40psi
- Spray a solution of soapy water onto the wheel
- Mark areas where bubbles appear with a tire crayon
- If leaks in the wheel are found follow the maintenance procedure above to reseal the wheel

The most common cause for leaking modular wheels is; the tire changing person has stuck their tire spoon into the silicone seal and damaged it during a tire mount.