

TECHNICAL INFORMATION ABOUT WHEELS AND TYRES

WHEEL MEASUREMENTS

A standard measurement for a wheel is given using several figures, e.g.

8 x 18, 4 x 100, 35

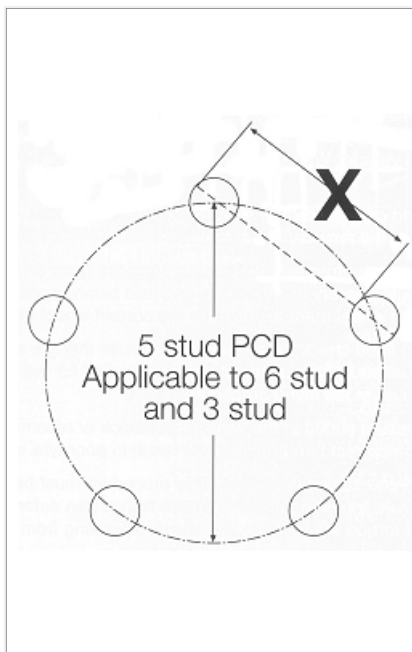
This can be broken down as follows:

8 x 18 represents a wheel which is 8 inches wide and 18 inches in diameter.

4 x 100 represents the number of studs/bolts and the PCD in millimeters (explained later).

35 represents the Offset (sometimes referred to as the ET).

PITCH CIRCLE DIAMETER (PCD)



The number of bolts used to install a wheel varies from 3 to 8 studs depending on the vehicle make and model. The pitch is the diameter (mm) of the circle that intersects the stud centres. To fix a wheel correctly, the number of studs and the pitch should be the same on the vehicle and the wheel.

The following calculations can be used to work out the PCD:

6-stud - Length 'X' x 2

5-stud - Length 'X' x 1.7012

3-stud - Length 'X' x 1.154

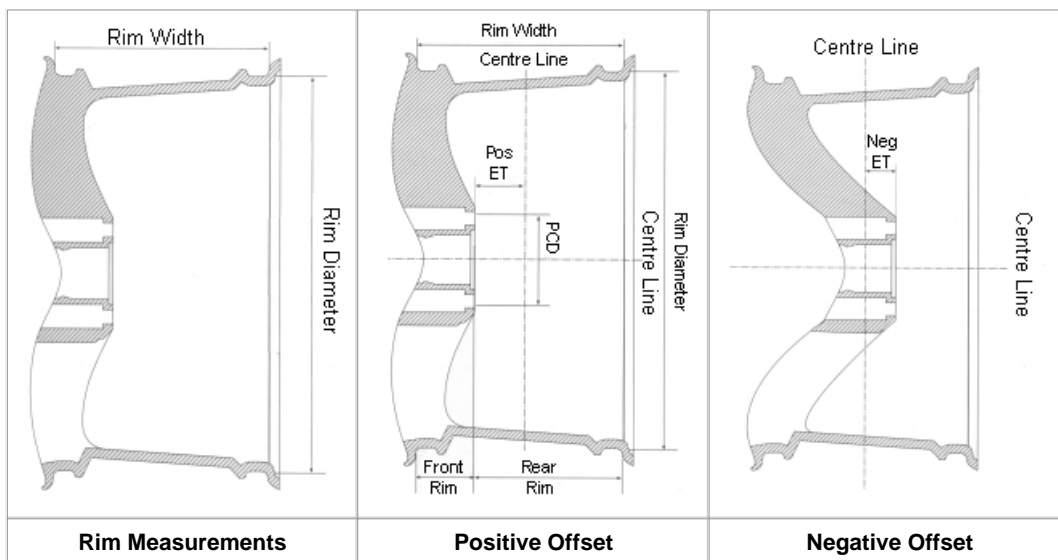
Common Stud Patterns:

3 x 98	4 x 95.25	4 x 98
4 x 100	4 x 108	4 x 114.3
5 x 98	5 x 100	5 x 108
5 x 110	5 x 112	5 x 114.3
5 x 120	5 x 127	5 x 130
5 x 139.7	5 x 150	6 x 139.7

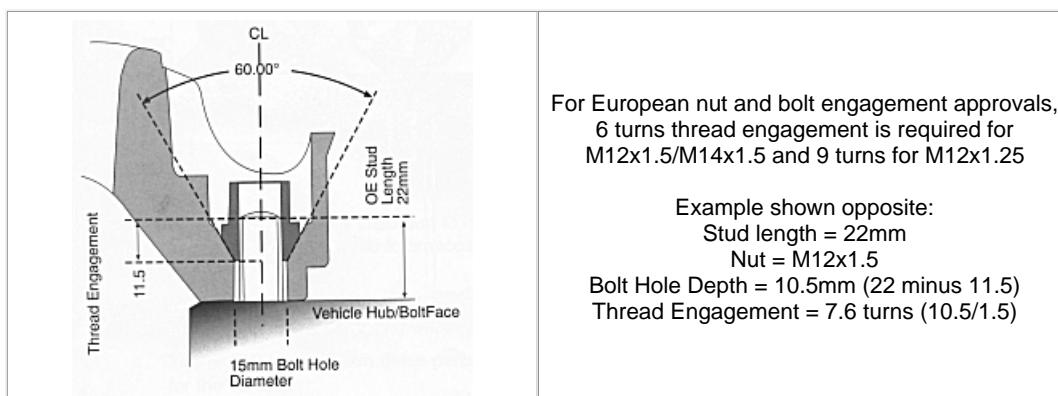
OFFSET (ET) EXPLAINED

Offset is the measurement in millimeters from the wheel centre line to the wheel mounting face. More often than not, offsets are positive(+) where wheel styles tend to be flush or convex. Negative (-) offsets tend to have concave styling.

WARNING: Incorrect offset can seriously affect vehicle performance.



THREAD ENGAGEMENT RULES



APPLICATION GUIDELINES

The following points must be adhered to BEFORE fitting any wheel and tyre:

Check with the wheel manufacturer that the intended wheel style has sufficient caliper clearances, the correct offset/PCD and accessories have been supplied for the intended vehicle. Wheel manufacturers will rarely credit if tyres are fitted.

Read the maintenance and care procedure supplied by the wheel manufacturer to ensure the maximum life of the rims can be obtained.

Check the vehicle hubs for hub protrusion before mounting the tyres on the wheels, e.g. location pins, temporary fixing screws and hub balance weights. In the event of this, check with wheel manufacturers for the correct wheel application.

Once the tyres have been fitted, check for air leakage between the tyre and rim flange and check the air valves. Quite often valves are supplied for the rims. These valves must be used in the fitting procedure.

Apply the correct tyre pressure stated in the vehicle handbook or recommended by the tyre manufacturer. Incorrect tyre pressure will result in poor tyre wear.

Ensure that the correct torque setting is applied. This procedure must be repeated within 50 miles (80 km). Over-tightening of the nuts/bolts can deform the wheel stud holes. Lack of torque will result in the wheel separating from the vehicle hub.

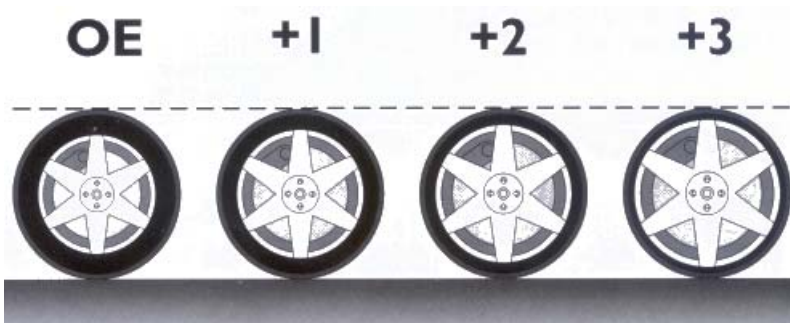
Note: There are several types of wheel securing nut/bolt seatings. 60-degree cone seating being the most common (radius seatings are applied by German vehicle manufacturers and flat seatings are often applied by Japanese manufacturers). A greater percentage of aftermarket wheel applications use the 60-degree type of seating. Note: mixing of seating is highly dangerous.

Note: It is against the law to drive a vehicle with a wheel and tyre combination the protrudes outside outside the vehicle body.

TYRE UPSTEPS

When upstepping it is important to retain the rolling diameter as specified by the manufacturer. The tolerances for the rolling diameter are governed by ETRTO.

When increasing the wheel diameter, it is necessary to alter the aspect ratio to match the overall gearing within the tolerance of ETRTO.



TYRE PART NUMBER EXPLAINED



Number Examples:	Explanation
195/50 R 15 86 H	1) Tyre width in millimeters
215/45 Z R 17	2) Tyre aspect ratio (percentage of tyre width)
165 S R 13	3) R = Radial construction
31 x 10.50 R 15 6PR	4) Tyre diameter (also known as applicable rim diameter)
220/55 R 390	5) Load index

	6) Speed symbol
	7) Tyre outer diameter in inches
	8) Tyre rating (tyre structure-ply rating)
	9) Tyre internal diameter in millimeters (millimetric tyres only)