

# Wheel Offset - Explained

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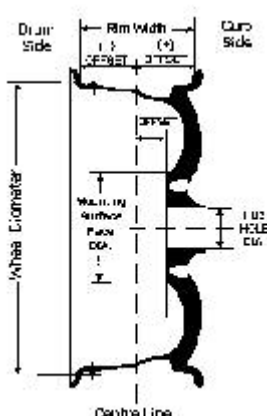


Figure 1

Cross section dimensions of a wheel.

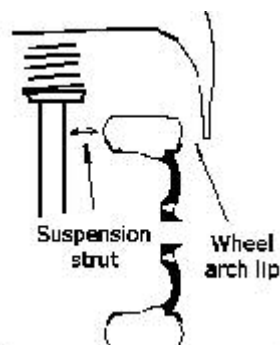


Figure 2

Diagram of restrictions imposed with larger, wider alloys within the arch.



Figure 3

Vauxhall Nova fitted with 15x6" alloys with et49, lowered 35mm, fits without any body modifications.

## What is the 'offset'?

One of the most asked questions, what's the offset closely followed by what is the biggest wheel that can I fit onto my car? The offset is a gauge of how much a wheel will stick out from the arch of a car or how far it will recess into the arch of the car. If the offset is wrong, the wheels will stick out too far and will almost be a like a beach buggy!

If you take a wheel and cut it in half and draw a line down the centre of the width of a wheel ( [Figure 1](#) ), the offset would be the distance between the back face (mounting face) of the wheel and the centre line that you have just drawn (shown as a dotted line in [Figure 1](#)).

It is very important not to deviate too far from the offset of the wheel originally fitted to the vehicle. In this case Vauxhall engineers developed the 'Negative Scrub Geometry". This gave a offset of -49mm (et49). A wheel of radically different offset can cause serious clearance and handling problems along with accelerated tyre and bearing wear.



The offset is commonly shown as a et number, i.e. **et49**. This means the offset is 49mm. The offset is always measured in millimetre's and can normally be found at the back of the wheel or stamped behind the centre cap (if fitted).

Negative scrub geometry had the intention that if you got a flat tyre you were still able to control the car (so long as you weren't going motorway speeds). So its best to keep as close to the et49 figure as possible.

However the bigger the alloy wheel goes, the more difficult it becomes to stay close to the et49. The reason being is that as wheel gets bigger in diameter, it also becomes wider, and so does the tyre that fits it. This is when other items in the wheel arch can begin to foul with the alloy wheel or the tyre. Namely the arch lip of the car and the suspension strut ( [Figure 2](#) ). When this happens the offset must change for the bigger wheel and tyre to fit in the arch. Plus if the car has been lowered, this will have to be considered too as the wheel is now tucked further up in the arch.

But some models of the Vauxhall/Opel/Holden/Bedford range can't change much. Namely vehicles that have arch lips very close to the wall of the tire or the arch shape itself is not curved. Namely the Vauxhall Nova and Astra models suffer from this ( [see Figure 3](#) ). Otherwise it means body and arch modifications to accommodate the larger wheel. They will have to try and keep to the et49 offset as much as possible. Even the Nova GSi had standard alloy wheels at 47.5mm offset!

Typically on bigger Vauxhall models these do not have this restriction which means larger wheels can be fitted to the car without body or arch modifications. Typically a offset of between et32 to et38 fits larger models with 17", 18" and 19" alloys on (say) a Cavalier, Calibra, Vectra, Carlton etc ( [see Figure 4](#) ).



Figure 4  
Vauxhall Calibra fitted with  
17x7.5" alloys with et35,  
lowered 30mm, fits without  
body modifications.



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