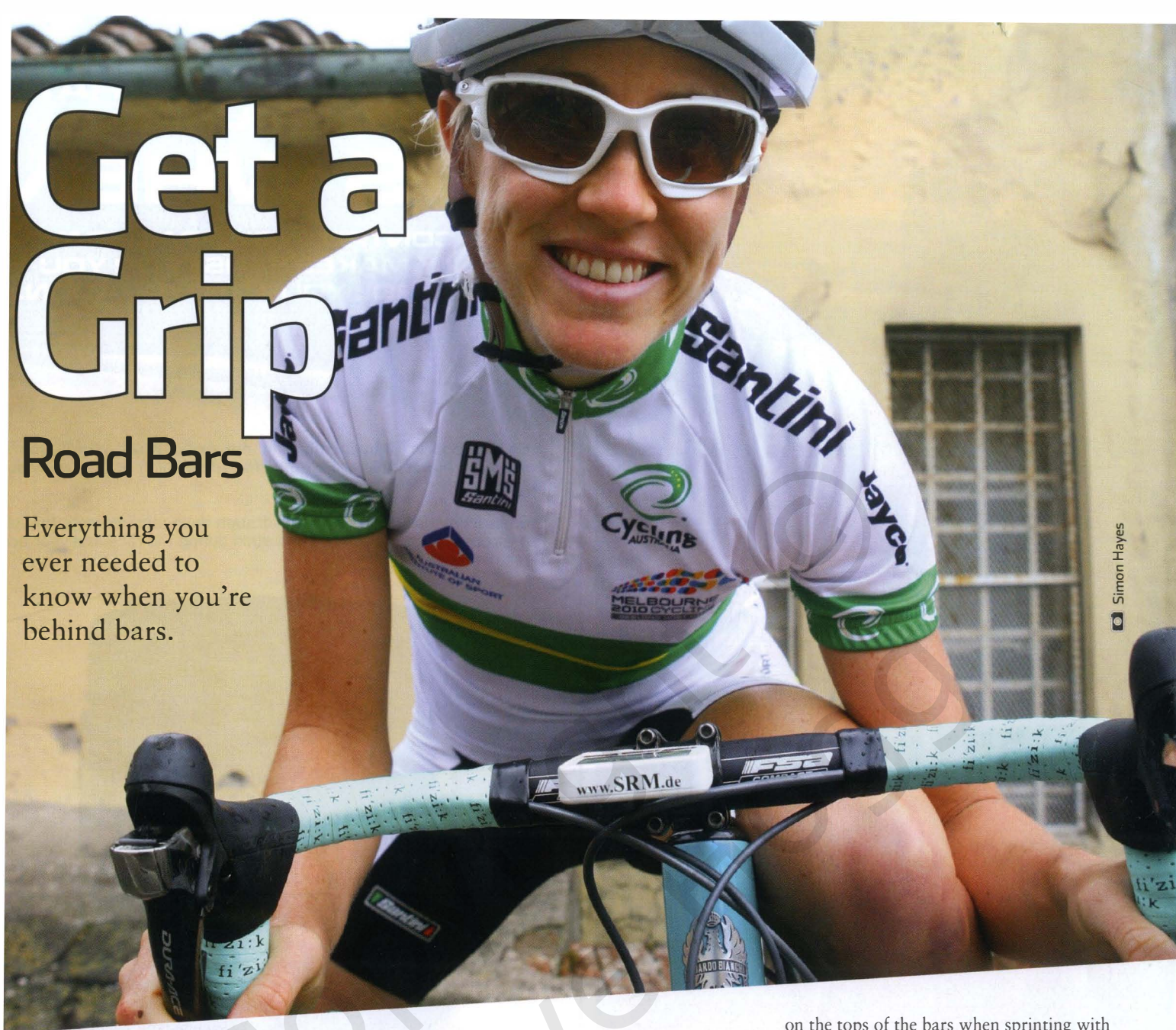


# Get a Grip

## Road Bars

Everything you ever needed to know when you're behind bars.



Simon Hayes

By Steve Hogg

Before talking about handle bars, we need to make sure that we are speaking the same language. Below are definitions and some information about the key descriptive terms that I will be using.

**Drop** (usually shallow, medium or deep) indicates the vertical depth of the bar. Drop is usually measured vertically from centre to centre; that is from the centre of the section of the bar that is clamped by the stem to the centre of the lowest part of the tube that forms the bar. In respect of modern bars, 125mm or less is a shallow drop. Medium drop is 126 – 135mm and anything over that is deep drop. If we include track bars, I've seen bars with drops of 110mm to 170mm in the recent past, so there is quite a range out there.

Prior to the advent of combined gear and brake levers, the racing cyclist normally reached down to the down tube mounted gear levers when shifting gears. Bar drop whether deep or shallow didn't hinder this. Optimal bar drop was usually determined by the width of the rider's palms. Wider hands meant deeper drop bars and vice versa. Modern

shifters need to be able to be reached easily from the drops and the practical effect of this has caused a slow redesign of bars by the majority of manufacturers. This process wasn't without hiccups and for a time many so called 'anatomic' bars were examples of how not to design an item for ease of human use. This has now changed and many of the shallow drop, shortish reach bars on the market have drop curves that allow even the widest hands to fit into them with ease.

### Reach or Throw

This is the measure of the horizontal forward extension of the bar as measured from the centre section where it is clamped by the stem to the centre of the furthest forward projection of the bar. It is convention to measure reach with the rearmost part of the bar horizontal, though in practice many bars are tilted up to varying degrees for comfort. Tilting the bar will affect the 'effective' reach and grip angle (see over). Short reach is between 65 and 75mm while medium is 76 to 85mm. Anything more is long reach. There are still bars on the market with a reach dimension of 90 – 95mm. I'm at a loss to understand this. The longer the reach, the more likely the rider is to whack their wrists

on the tops of the bars when sprinting with hands placed in the drops. If hand placement is moved rearward in the drops to avoid this concern, then it is harder than it should be to reach the gear levers.

Happily, inflexible riders are best served by short to medium reach bars (combined with a shallow drop) placed in a moderately high to high position to minimise flexion of the lumbar spine when shifting hands between bar tops, brake hoods and drops. Similarly, more flexible riders with greater ability to extend their thoracic spines also benefit. A shorter reach bar combined with a longer stem than would be used on a long reach bar (and set with the top of the bar lower for an equivalent body position when hands are in the drops, as would be the case on a deep drop bar) allows the flexible rider the ability to maintain thoracic spine extension (which in turn enhances breathing ability) while shifting their hands between the same three positions.

### Upper Drop Slope

Upper drop slope is the angle or rate at which the top of the forward projection of the bar descends as it reaches forward. The lesser the upper drop slope; i.e., the closer to horizontal, the easier it is to achieve comfortable brake hood placement. The steeper the upper drop slope, the more acute

the angle between the bar and the brake hood placement for a given degree of comfort with hands on brake hoods. Often this means that bars with a steep upper drop slope offer the choice of being able to reach the brakes from the drops well but not allow a comfortable position with hands on brake hoods, or vice versa. Simply, a low rate of upper drop slope is preferable in most cases.

### Grip Angle

Grip angle is the angle relative to horizontal of the portion of the drops that is gripped by the hand when riding in the drops. Bear in mind that hand placement in the drops may vary between sprinting out of the saddle and riding in the drops while seated. Many of the bars reaching the market over the last few years have had grip angles closer to horizontal than was common on so called 'anatomic bars'. A steep grip angle (30 – 50 degrees) causes the rider to have their closed hands much closer to vertical than a shallow grip angle. In turn this means that a steep grip angle causes the elbows to be bent more and the upper body lowered more than would be the case for a bar with a shallower grip angle set at the same height. The outcome is that when riding in the drops, a bar with a steep grip angle needs to be placed higher for an equivalent torso position, than a bar with a shallower grip angle. A steep grip angle also makes sprinting hard out of the saddle much harder unless the hands are moved more rearward to where the grip angle lessens. Doing this increases the distance to the gear levers which is unlikely to be an advantage. In essence, a shallow grip angle is preferable to a steeper one because it allows the rider more options and better access to the shifters.

#### Explanatory Note:

*Upper drop slope and grip angle are 'relative' terms. Relative in the sense that a steep upper drop slope can be lessened by tilting the bars further upwards. However this can only come at the cost of steeping the grip angle.*

### Standard or Oversized Clamp Diameter

This refers to the diameter of the centre of the bar where it is clamped by the stem. Historically, most quality road bars have been of 26.0mm clamp diameter and this became the quality bar 'standard' over several decades. An exception to this was Cinelli who went alone with 26.4mm bar clamp diameter. This

0.4mm difference doesn't seem much but as several generations of bike mechanics have found, mixing 26.0mm bars with 26.4mm stems or vice versa caused more problems than it solved. Then we saw the emergence of 'oversized' bars. Bar manufacturers list their oversized offerings as either 31.7mm or 31.8mm diameter. In fact they are the same. Vernier calipers tell me that they are all of 31.75mm clamp diameter and I assume that some manufacturers choose to round up the measurement while others prefer to round down.

The theory behind oversized bars is that as you increase the cross section of a tube, resistance to bending increases. Properly done, a fatter 'oversized' bar has less flex than a 'standard' diameter bar while using less material for a lower weight.

**Lateral extension profile** is the shape of the cross section of the top of the bars where they project either side of where they are clamped by the stem. Most bars taper from the 'oversized' bulge where the stem clamps but some taper slowly and the entire upper may be oversized, or in the case of bars that taper quickly from the centre, the rider is gripping a much smaller diameter tube and individual preference rules. Additionally, some bars have a lateral extension profile that is tapered from front to back to allow the hands to contact a larger area. Typically, this taper runs down towards the back, ostensibly to allow the wrists a more comfortable angle, but at least one bar, the 3T Ergonova, tapers in the other direction, towards the front.

### Bar Width

You need a bar of the correct width for you. Bar width is measured at the lowest point of the drop bars and can be measured 'centre to centre' or 'outside to outside' as there is no convention adhered to by all brands. A 42cm bar 'centre to centre' would measure 420mm from the centre of the rear most section of the tubular extrusion that forms the drop. A 42cm 'centre to centre' measures approximately 435mm 'outside to outside'. A 44cm bar 'outside to outside', is measured from the outside edge of one side of the rearmost section of the drops to the same point on the other side. If the same bar was measured 'centre to centre' it would measure approximately 465mm. This illustrates that two bars of the same nominal size are not the same width. If someone is suggesting that you buy a bar of a certain size, always seek clarification by asking "Is that measured centre to centre or outside to outside?"

Manufacturers vary as to which convention they use to measure their bars. When purchasing, and if in doubt, ask.

As a guide, road handle bars are commonly available in widths from 36cm to 44cm centre to centre. Less commonly, there are 34cm and 46cm bars (measured centre to centre) on the market.

As a general rule, bar width is ideal if, when the rider has their hands placed in the drops, the centres of their fists are slightly wider than the centres of their shoulder joints. Using a narrower bar than this may have a negative effect on breathing efficiency and possibly compromise comfort and control. A wider bar than necessary merely means that the rider is



more of a wind sock than necessary.

One final 'trap' regarding bar width. It isn't a safe assumption that the width of bar where measured at the rearmost point of the drops is the same width where the bars project forward from the top. There are examples of both, sometimes from within the same brand. For instance, 3T make models named Ergonova and Ergosum. Let's look at nominal size 42cm. 3T measure their bars centre to centre. At a glance they are similar but closer inspection reveals that the Ergonova has a drop of 123mm and a reach of 77mm. The Ergosum figures are 128mm and 89mm respectively ie, deeper and longer. What is also different is that the Ergonova measures 420mm centre to centre at the bottom rear of the drops while the Ergosum measures 430 mm centre to centre. At the top of the bars where they start to project forward, the Ergonova narrows to 400mm whereas the Ergosum measures 420mm at the same point. In effect, this means that the Ergosum is a better fit for a broadish shouldered rider, but one whose shoulder width is not quite wide enough for a 44cm bar (centre to centre).

### Bar Material

The common choices are aluminium and carbon fibre or a mix of carbon and other composite fibres. Aluminium is a proven material having been in widespread use for bars and stems since the late 1950s or early 1960s. It is a developed enough material in this application to be almost idiot proof. Carbon is not at that stage yet. Carbon markets well as high tech and exotic, and manufacturers oblige by producing items for those susceptible to tech appeal. Carbon bars are generally lighter than equivalent aluminium bars, but when compared to quality aluminium bars, the weight difference might be equivalent to a large swallow or two from a bidon. For this negligible advantage the rider pays three to four times the cost of a quality aluminium bar with a decrease in 'crashability'. If you have a fall and your bar



strikes the ground or anything else with any force, an aluminium bar will almost certainly be safely reusable providing that it is not bent. If it is bent replace it. In contrast, the only safe option with carbon fibre bars undergoing the same stress is to replace them. Carbon bars can begin to delaminate, post impact, without any surface signs only to fail at a later date. When a bar fails, almost inevitably the rider falls.

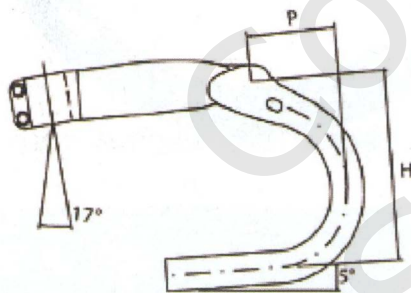
I suspect that carbon bars could be made as resilient as aluminium bars but the weight advantage would evaporate without any real cost savings. So it's up to you. If you need café cred or don't plan on crashing, ride carbon bars. If you don't need café cred or suspect that you may fall at some time, then quality aluminium bars are a safer bet.

To summarise, carbon offers some weight saving, is much more expensive and does not tolerate mechanical ineptitude nearly as well as aluminium. That's why aluminium is the overwhelming choice amongst pro teams —at the moment. With advances in 'productionising' composite materials at reasonable cost, it isn't possible to say whether that will still be the case in 10 years time.

One last word on the carbon / aluminium divide. Some manufacturers offer bars that are carbon wrapped full length around an aluminium core, or just a partial wrap where the carbon will be visible once the bars are taped. Almost always bars of this type are heavier and more expensive than quality aluminium bars and appeal only to the café cred set.

### Shape Implications

I would like to use the bar schematics below to discuss the implications of bar shape. The five bars exhibit a range of shapes of which there are many similar offerings in many brands available. It is also important to note that Bars One and Two are one piece bar and stem combinations.

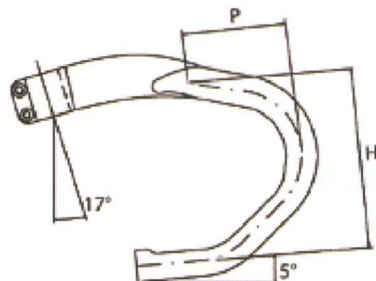


#### Bar One Drop 138mm / Reach 76mm.

Pros – old style shallow drop round bar. Suitable for small to medium width palms. Has a steep upper drop slope but the short reach means that gaining a comfortable brake hood height (meaning being able to place hands on brake hoods with unbent or near unbent wrists) should be possible without compromising reach to the brakes when hands are in the drops, for any rider with suitable palm width. Unless the rider has extremely short fingers. This style of bar is popular with many people who have been riding for many years and for whom it is similar to a type they may have used for a long time. Lastly, the flattish lateral bar extensions offer a greater area to rest the palms than round bar tops.

Cons – if you have a width across the centre of the palm of more than 80 – 85mm this isn't

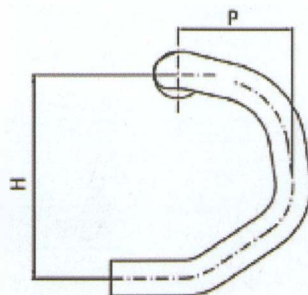
a practical choice for you. The other issue is the one piece bar and stem design. This bar is made in most combinations of stem length and bar width, but not all. If you need a narrow width bar with a longish stem or a wide bar with a short stem, forget it. The one piece design also eliminates any possibility of adjusting the angle of the bar. It may well work for you, but it may not. It is important with one piece bar / stems that you try well and truly before you buy. Making a mistake is an expensive exercise.



#### Bar Two Drop 138mm / Reach 86mm

Pros- Upper drop slope is quite flat which is a positive for brake hood placement and reach to brake levers from drops. Despite having the same measurable drop as Bar One, the shape allows many larger hands (up to 100mm centre of palm width) to fit into this bar comfortably. Flattish lateral extensions allow any weight on hands to spread over a greater area than would be the case with a round lateral extension.

Cons – one piece combo with same restrictions as mentioned in Bar One. Steep grip angle of approximately 45 degrees is okay for driving on the flat but, when combined with the moderately long reach, makes it near impossible to sprint out of the seat without wrists contacting bar tops. If you have ever done this it is painful and you would choose to avoid the possibility. For out of the seat sprinting the hands need to be moved further to the rear of the drop which causes two problems. Firstly, there is a sudden kink or corner in the bar at that point which means that the bar doesn't fit the palm well when sprinting. The second is that moving the hands to the rear of the drop to sprint increases the reach the gear levers making shifting problematic.

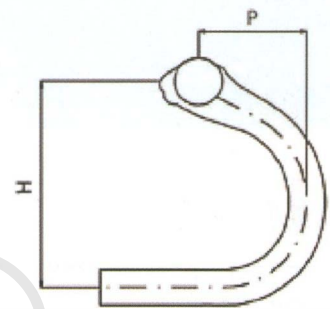


#### Bar Three Drop 137mm / Reach 82mm

Pros- Very similar to Bar Two but slightly shorter reach gives incremental improvement in lessening wrist contact with bar tops when sprinting. Again, largish palm width hands will fit this bar.

Cons – Round bar tops. Not everyone prefers flatter or profiled bar tops but round

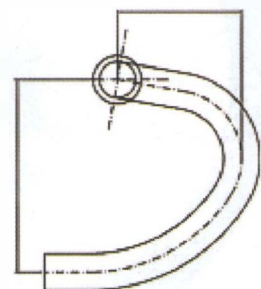
bar tops are not as often chosen when riders are given a choice and have tried both shapes. Grip angle; in practice this bar would not be used with the rearmost part of the drops horizontal as per the pic; it would be tilted up much as the pic of Bar Two. Unfortunately this means the negatives are much the same as for Bar Two.



#### Bar Four Drop 138 / Reach 72mm

Pros – Small difference in reach aside, the shape is very similar to Bar One and the bar has the same good points with the additional one that it is available as a separate bar which can be placed at any angle desired by the rider and with the stem length and angle of choice. In practice it would be tilted up at an angle of 5 – 10 degrees for most riders.

Cons – Round bar tops and not a good choice for hands with a centre of palm width of more than 80 – 85mm.



#### Bar Five Drop 125mm / Reach 72mm

Pros- This is the pick of the five examples here. It ticks almost all the boxes. Flattish upper drop slope allows easy placement of brake levers for comfort on the hoods and ability to reach the brake levers from the drops. Single radius bend is cunning. Even those with the widest palms will fit their hands into this bar with ease even though it has the shallowest drop of any of these five bars. Better still; hand placement would not need to be moved rearward in the drops when sprinting. This means good access to the gear levers when sprinting out of the saddle. Moving the hands all the way forwards in the drops means that the hand placement rises. In practice this means that back extension doesn't really change as hand placement changes in the drops.

Cons – About the only negative is the round lateral extension profile.

I hope this article gives you the idea that a bar is more than just something to grip. A quality bar that suits the rider makes a perceptible difference to comfort and performance. *efc*