



BUYING A NEW BIKE

Purchasing a new bike can sometimes be a bit confusing. Frame types, group sets, crank sizing, cassette sizing, rims, saddle, handles bar, pedals and on it goes. I will break the process down into each component and help you understand what you need to know about each one.

FRAME

ALUMINUM

The first and most important part of the bike is the frame. Frames are manufactured with several different materials and in many different sizes. The first material, which most people have due to its economy of cost, is aluminum. These bikes tend to cost anywhere from \$1200 to \$1500. They usually have a group set (I'll get to that later) that sits somewhere in the middle to bottom on the manufacturer's line up.

ALUMINUM + CARBON FIBRE

The next type of frame is a combination of carbon fibre and aluminum. This does not mean that bike manufacturers combine two different types of materials to form a single one; it means that different parts of the bike use different types of materials. The combination of two materials achieves two important factors. The first being road vibration dampening. You'll find carbon fibre on the front fork, rear chain stay and seat post. These are the areas of the bike where road vibration is at its greatest. The second value to the combination method is the weight savings of having carbon fibre on the bike. The lighter the bike the less energy needed to move the bike through the air. These bikes usually sell for around \$1500 to \$2000. Bikes like these will have a group set that sits around the middle of the group set line up.

STEELE/TITANIUM

This type of frame material tends to be for the artisans of the world. There is a small community of custom bike builders that build absolutely wonderful frames by hand. These tubes tend to be smaller in diameter than aluminum and carbon fibre and are very reminiscent of the older, classic bike style. Some of these bikes can be quite light, especially titanium, but they also tend to be quite expensive both relative to the custom build and the material. Steele can be on par with aluminum regarding weight, but steel is more expensive. Unfortunately you don't see many of these bikes around much anymore, but the ones you do see are classic and many are found wanting after the fact.

CARBON FIBRE

The last type of frame is all carbon fibre. These bikes usually start around \$3000 and can go as high as the cost of a cheap car. The group set can be anywhere from the middle to the top end. The advantage

of carbon fibre over aluminum is weight and stiffness. The lighter the bike the easier it will be to move through air, especially going uphill. The other advantage is stiffness which means there is less flex in the bike so any power output from the cyclist will be transferred to the crank and the forward momentum of the bike. If a bike has lots of flex it would be like pushing against a spring to move something. The disadvantage of an all carbon fibre bike is the price. Ouch!!!

GROUPSET

CRANK

The next thing you will have to deal with is the group set. A group set is what makes the bike move forward, controls the gear shifting and stops the bike. The one part of the groupset that a cyclist will have to choose is crank sizing. Cranks are the circles with little teeth that the chain wraps around located at the middle bottom of the frame, otherwise known as the bottom bracket. They include arms on either side of the bike which your pedals are attached to. Cranks come in several different sizes. Usually new riders, who are buying aluminum, have what's called a triple crank. This means there are three rings to choose from when riding. The smallest of the three rings will help you get up hills a lot easier than the larger ones. These cranks are usually sized 30-39-50, meaning the large ring has 50 teeth, the middle ring has 39 teeth and the smallest ring has 30. More expensive bikes and more experienced cyclists will use what's called a standard crank which has two rings sized 39-53 while another easier option would be a compact crank which have two rings sized 34-50. The lower the number of teeth the easier it is to pedal, especially uphill. The numbers I have provided here are the most common sizes of cranks, although there are many other options to choose from nowadays.

CASSETTE

The cassette is comprised of the little cogs you see on the back of the bike attached to the centre of the rim. The chain raps around the crank and the cassette and the cyclists make the bike move by pedaling and moving the chain. The cassette is attached to the rear rim and when a pedal stroke is performed the chain forces the cassette to move in a clockwise rotation moving the rim along with it. Now you are cycling. I won't get into gear ratio's here, as that is another article all together, but the higher the number of teeth on the rear cassette cog the easier it is to move the bike. Common cassette sizes are 11-25, 11-28 and 12-25. This is by no means a complete breakdown of sizing options, but they do tend represent most of what is out there on the regular bike. The first number is the amount of teeth on the smallest sprocket and the last number is the amount of teeth on the largest sprocket. The rest will fall somewhere in between. The amount of sprockets will vary from 10 speeds to 11 speeds. I tend to use an 11-28 in the mountains and 11-25 everywhere else.

FRONT AND REAR DERAILEURS

The next item in the group set is the front and rear derailleur's. These are the little devices that move the chain up and down the rings at the front and up and down the rings at the back, called a cassette. These derailleur's are controlled by the shifters located on the handle bars. Also controlled by these shifters are the brake callipers (the things that squeeze against the rim to make you stop). These shifters are integrated meaning you squeeze the shifter toward the handle bar to slow down or stop or you push

the same lever, or one behind it, to one side to change gears either in the front or the back. The integrated shifter replaced the old school gear changing system where little levers were placed on the down tube and controlled all gear movements.

There are generally three companies that manufacture group sets. They are listed below. Generally speaking the first one in the group will be the most expensive going down the list to the cheapest, although there may be some crossing over of cost somewhere near the middle between cheaper electronic systems with higher end mechanical ones. There are also kits where someone with a mechanical system can replace certain components to upgrade to electronic. No need to replace a crank for this type of change.

Shimano	Campagnolo	SRAM
Dura Ace Di2 (electronic)	Super Record EPS (electronic)	Red
Dura Ace	Super Record	Force
Ultegra Di2 (electronic)	Record EPS (electronic)	Rival
Ultegra	Record	Apex
Shimano 105	Chorus	
Tiagra	Athena EPS (electronic)	
Sora	Athena	
	Centaur	
	Veloce	

RIMS

CLINCHER

One of the next features of the bike is the rims. This is one of the most common upgrades a cyclist can make to increase the overall performance of their machine. Rims come in three different varieties. The most common is the clincher. A clincher rim contains an inner tube and tire where the tire bead sits in a groove on the rim when inflated. This type of rim is very easy to change when you get a flat. You simply pop off the tire with a couple of tire levers, pull out the tube and replace it with one you are supposed to be carrying with you, or simply patch the hole with a patch kit. You can see why these are the most popular. They are the cheapest and easiest to maintain.

TUBELESS

Another type of rim that is gaining traction these days is the tubeless rim. These act more like a car tire. There is no tube inside a tubeless tire. Under pressure the tire bead sits in a groove on the rim and forms a solid seal. The advantages are less rolling resistance between the tube and tire and the weight savings of not having a tube. Most tubeless tires have a choice of inserting a tube when the tire has a flat. The one problem with this type of rim is the difficulty of installing the tire onto the rim. These tires tend to be very tight, a requirement to get a good seal, and can be very difficult to get both beads of the tire over the rim without destroying the rim. Most people have to use metal tire leavers to achieve this

objective as most plastic one will probably break. As for installing a tube out in the field, that can be pretty tough as well, especially in cold and wet environments. I have owned a pair of tubeless rims and I loved them. I got many miles out of them without getting a flat. But over the years of changing tires the scoring of the rim by metal tire levers caused the seal around the rim to be less than perfect and eventually the rims needed to be replaced.

TUBULAR

The last, and most expensive, type of rim is the tubular. These rims are usually made from carbon fibre and more times than not have a deep profile, meaning material will extrude away from the rim anywhere from 30 – 80 mm to increase the aerodynamic properties of the rim. See below. The rims in the diagram have a 50 mm profile. There are exceptions to high profile rims being carbon fibre. Some aluminum clincher rims have a high profile carbon fibre flange attached to the inside of the rim. The tubular tire looks like one big inner tube. The tube is actually in the tire itself, but the whole system is enclosed. The tire is glued or taped to the rim; gluing is considered the safer of these two methods. You cannot beat the rolling performance of a tubular tire as there is no shifting between rim and tire and no added resistance between tube and tire. The one drawback to this system, other than price, is the difficulty in dealing with flats. Some manufactures make pre-glued or pre-taped tires, but changing them in the field can take some practice. There are foams on the market, as well, that can inflate the tire and automatically seal the puncture and get you home, but if the hole is too big, then these foams tend not to do so well. Even so, I use my tubular rims all the time and have had decent luck without getting flats. A good tire is the key here. Don't buy cheap tires and the ones you do buy make sure they have a puncture resistant layer.

SADDLE

The next item on the list is the saddle. This one is pretty important as it connects your behind with the rest of the bike. Comfort on the saddle can make or break your cycling experience. Luckily, saddles come in many different shapes and sizes to accommodate the myriad shape and sizes of people's bottoms. A good bike shop will measure your sit bones by way of having you sit on a compression type pad for a couple of minutes then measure the indentation made by your sit bones. It's important to have your sit bones sitting on the right location on the saddle if comfort is to be achieved. Don't shop just by colour and nifty design; take the time to buy the saddle that's right for you. Saddles also come in plastic shell versions as well as in carbon fibre. Weight savings means a lot in cycling so a serious cyclist tends to count every gram that goes onto the bike.

HANDLE BARS

Handle bars. This is one aspect of the bike that often gets overlooked. Humans are different sizes and there should be different widths of handle bars to accommodate. And there are. A good bike fitter will make sure that the handle bar you possess is the right one for you. It's all about the comfort when it comes width sizing. Another aspect to handle bars is the size and shape of the drop, the downward curving end of the bar. The varieties are pretty good here as well. On top of sizing and the shape of the

drop are the whether or not to buy aluminum or carbon fibre. The reason for carbon fibre is the same as it has been through the length of this article.

PEDALS

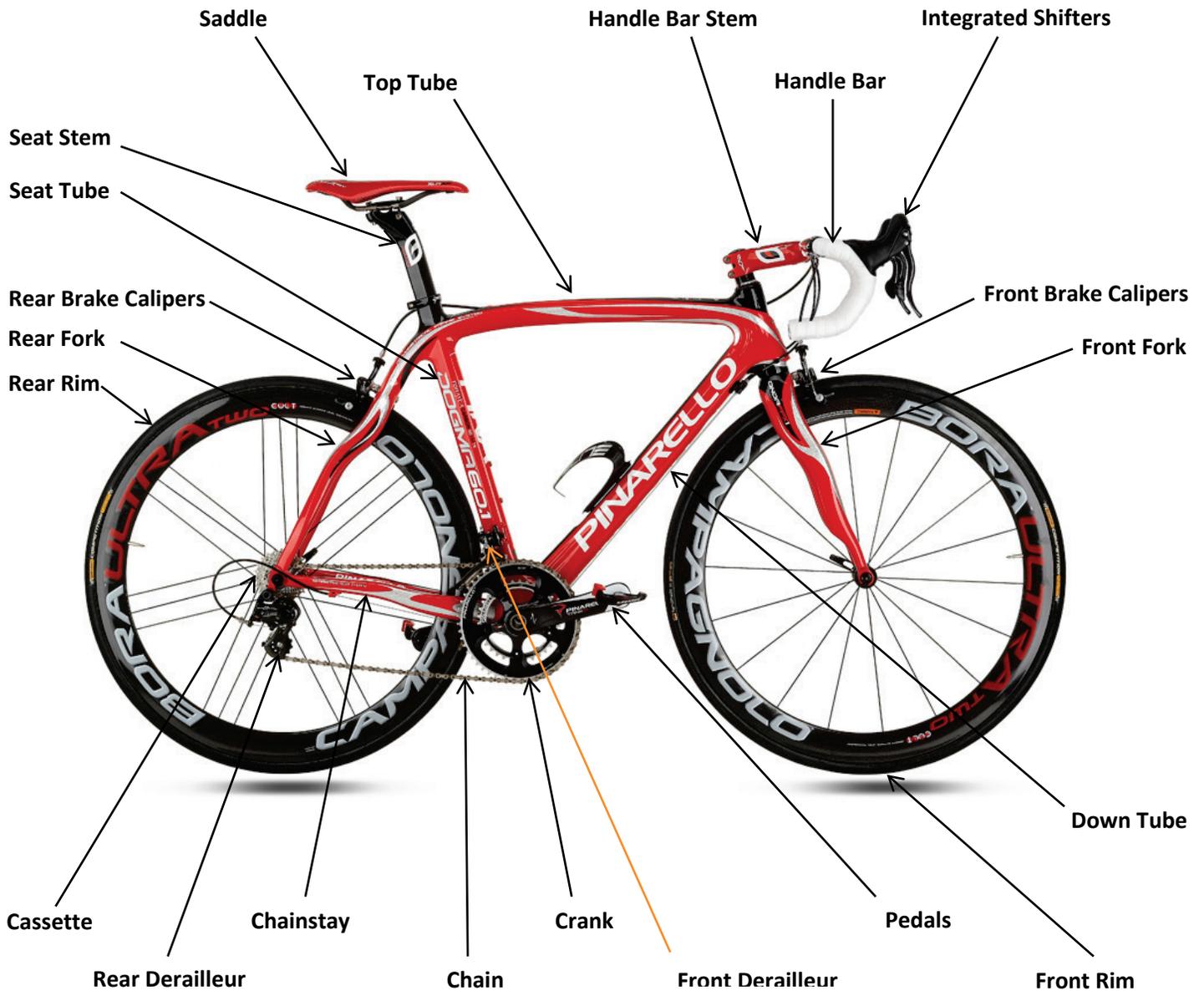
The last item on the list is pedals. Pedals never come with the bike; you always have to buy those separately. The most common manufacturers are Shimano and Look. Others that make up the other small minority are Time, Speedplay, Campagnolo and Mavic. The first two companies offer a wide range of pedals where a pair of carbon fibre pedals can cost somewhere round \$400 to a lower end aluminum model that costs about \$100. The higher end models will come with lighter materials, better springs and components for more secure entry and exit. Regardless of what route you choose, you will have to buy extra cleats. Cleats always come with the pedals and they always wear out. Shimano cleats tend to last longer as they are a harder material. Look, on the other hand, have a softer material to help reduce road vibration, but they wear out a little faster.

SO WHAT NOW

You have just absorbed a whole bunch of information. This article is intended for the budding cyclist that does not know much about the world of cycling. The more experienced cyclist certainly doesn't need my help. So what does this mean to you? Most bike stores sell complete bikes where the only thing you have to buy is the pedals. Easy!!! If you are buying into the high end market, then you will most likely be buying a frameset (frame and fork) and will have to choose all individual component's mentioned in this article. Lots of fun, lots of money. The average cyclist will most likely start out with a complete bike. Even with a complete bike you still might want to think about the type of crank that's right for you. Do you think you are strong enough for a standard crank (39-53) or do you think you are better suited to a compact (34-50)? You might even think you are better suited to a triple crank (30-39-50) if you live in a hilly area. Remember one thing; triple cranks are only available in lower end groupsets. Also remember the smaller amount of teeth on the crank means the easier it will be to climb.

The other component you may want to change is the saddle. Most good bike stores will do a fitting when you buy the bike. Really good stores will put you on a fitting bike to determine your correct frame size even before looking at a bike and then fit you to the bike after the fact. After you have settled on your particular preference and purchase it, the bike fitter will make all the adjustments that need to be done, including changing the saddle if you find it uncomfortable. You can probably swap out your rims at this point as well. Most good bike stores will give you credit for the rims that come with the bike if you upgrade to something else in the store. Take it one step at a time. Spend some time in your local bike shop, ask lots of questions and above all else, have fun.

THE BIKE AND ITS COMPONENTS



Top Tube + Down Tube + Chainstay + Rear Fork + Seat Tube = Frame

Frame + Front Fork = Frame Set

These are the basic parts of the frame and the components found on the frame. This is not supposed to be an exhaustive look at all the parts of the bike because many are missing here. It is meant to give the reader a basic resource when reading this article or any other.