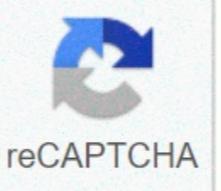




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Tyre size guide bicycle

Accessories Bicycle Parts Special Tools This article is also available in English! For more general tire information, see my tires article. Which tyre size fits what rim size? Bicycle tyres come in an amazing variety of sizes. To make matters worse, in the early days of cycling, every country that built bicycles developed its own size marking system. The same elastic size will be known by different numbers in different countries. Worse still, different size tires that were not interchangeable with each other were often marked with the same numbers! This page covers sizes shared by her writing, as well as a number of older sizes. Sutherland's Manual for Bicycle Engineering, 3rd to 6th edition, covers dozens of additional, antique sizes. The 6th edition is available on CD ROM from Sutherland's. Best bike shops have a copy. Which size tyre fits which bike? To determine which tyre size will fit, perform measurements on the fork and frame of the bike. If the bike has rim brakes, the rim should be aligned with the brake shoes and so only a rim size or a small range of sizes will work. So, first measure the distance from where the center of the hub shaft would be in a dropout in the center of a brake shoe. Then look for the lip radius in the ISO panel on this page. A different set size may be possible with different brakes, although longer brake reach generally leads to poorer brake performance. The front tyre must not reach the crown of the fork. the rear tyre must not reach the seat bridge or the chainstay bridge. Take measurements from the axle position to the branch crown, the chainstay bridge and the seatstay bridge. The non-beam tyre is nominally the radius of the lip plus the width of the tyre and 1 cm larger for a tyre with a deep tread. A tyre should usually have 1 cm clearance, 2 cm if a wing will be installed, but do not use a wheel that is much smaller, or a pedal is very likely to hit the ground in turns. On a bike with horizontal abandon, additional clearance on the chainstay bridge is desirable so the wheel can be removed without deflating the tire. The space between the blades or fork stays should be wide enough to clean the tyre, with a few mm extra on each side in case the wheel goes slightly out of the truth. Measure the radius of the wider part of the tyre, usually the radius of the lip plus half the width of the tyre -- except that the wider part may be on the sole of an off-road tyre. The nominal width of the tyre shall be indicated on the tyre. the actual width be measured if the tyre is installed on a rim. If the bike has hub brakes (drum, disc, coaster), different rim sizes are possible if the tyre fits the frame. A larger lip goes with a thinner tyre, and vice versa.. Traditional resizing systems Traditional resizing systems are based on a measurement of the external diameter of a tyre. This should usually be measured in inches (26, 27, etc.) or millimeters (650, 700, etc.). Unfortunately, the evolution of tyres and has made these measurements lose touch with reality. Here's how it works: Let's start with the size 26 x 2,125 that became popular on heavyweight rubber balloon bikes in the late 30s and still remains common on cruiser beach bikes. This size rubber is very close to 26 inches in actual diameter. Some riders, however, were unhappy with these tires, and wanted something a little lighter and faster. The industry responded by making middleweight tires marked 26 x 1.75 to fit the same rims. Although still called 26 inches, these tires are actually 25 5/8, not 26. This same lip size was adopted by the early pioneers of west coast kunkers, and became the standard for mountain bikes. Due to market appetite, you can get tires as tight as 25 mm to fit these rims, so you end up with a 26 inch tire that's more like 24 7/8 in real diameter! A second number or letter code would indicate the width of the tyre. (26 x 1.75, 27 x 1 1/4..650B, 700C...) Is point 7 5 equal to three quarters? Inch-based names sometimes express width in decimal (26 x 1.75) and sometimes as a common fraction (26 x 1 3/4). This is the most common cause of mismatches. Although these size determinations are mathematically equal, they refer to different size tyres, which are NOT interchangeable. It is dangerous to generalise when we talk about tyre size, but I would like to state with certainty the following: If two tyres are marked with sizes that are mathematically equal, but one is expressed as decimal and the other as a fraction, these two tyres will not be interchangeable. (well, there are three exceptions, noted in the tables below ...) Dishonesty in size competitive pressures have often led to inaccuracy in measuring width. Here's how it works: Suppose you're in the market for a high-performance 700 x 25 tire; you can reasonably research directories and ads to try to find the lighter 700-25 available. If Pepsi Tire Company and Coke Tire Company had tires of equal quality and technology, but the Pepsi 700-25 was actually a 700-24 marked as 25, the Pepsi tire would be lighter than the exact Coke 700-25 mark. That would put Pepsi at a competitive advantage. In self-defense, Coke will retaliate by trading an even lighter 700-23 marked as 700-25. This scenario prevailed throughout the 1970s and 1980s. The situation got so out-of-hand that cooler heads have prevailed, and there is a strong (but not universal) trend toward accurate width measurements. Some road bikes have extremely tight clearances and won't fit an honest 28 Tyre. See comments in our article on wings. The B.S.D.ISO, the International Organization for Standardization, has developed a universal tyre and tyre size system that eliminates confusion. (This system was formerly known as the E.T.R.T.O. system, developed by the European Technical Organisation for Tyres and Sops.) The ISO system uses two numbers. The first is the width in On the rim, this is the inner width between the flanges, as shown in the diagram; for the tyre, is the expanded width. This will vary a little depending on the width of the lip. The second ISO number is the critical one: it is the diameter of the lip bead seat, in mm (B.S.D.). Generally, if this number fits, the tyre involved will fit onto the rim; If it doesn't fit, the tire doesn't fit. For example, a 700 x 20 C road tyre would be a 20-622; a 700 x 38 hybrid tyre would be a 38-622. The width difference between these sizes would make them less than ideal replacements for one another, but any lip that could fit one of them could work after a fashion with the other. A general guideline is that the width of the tyres should be between 1.45/2.0 x the inner lip width. If you pull the beads apart and measure the total width from the bead to the bead, it must be about 2.5 x the ISO width. If your tyre is too narrow for the rim, there is an increased risk of tyre/tyre damage from road hazards. If its too wide for the rim, there is a risk of increased side wall wear from brake shoes, and a greater risk of losing control in case of sudden flat. The following tables give a partial list of traditional tyre sizes, with their iso bead-seat equivalents. The ISO comparison list at the bottom of this page covers all the sizes we know are in production from 2016. Fractional, decimal and French lists cover common sizes. Fractional sizes: Fractional ISO 36 inch 787 mm Unicycles applications, some 32-inch innovation bikes 686 mm Unicycles, some novelty bikes 29 inches 622 mm This is a marketing term for wide 622 mm (700C) tires. 28 x 1 1/2 635 mm English, Dutch, Chinese, Indian rod-brake roadsters (Also marked F10, F25, 700 B) 622 mm (F.13) Rare Canadian name 28 x 1 5/8 x 1 1/2 Northern European name for 622 mm (700 C) size 635 mm Old Swedish name 27 x anything but 27 five and 609 mm Danish 630 mm Older road bikes. 27 x 1 1/2 609 mm Rare Danish size 26 x 1 (650 C) 571mm Triathlon, timing, small road bikes. Old Schwinn S-4 26 x 1 1/4 597 mm Older British Sports & Club Bikes 26 x 1 3/8(S-6) Schwinn Lightweight 26 x 1 3/8 (E.A.3) 590 mm More English 3 speeds, department store or juvenile 10 speeds 26 x 1 1/2 (650B) 584mm French utility, tandem and loaded-touring bikes, a very few Raleigh (USA) & Schwinn mountain bikes. 26 x 1 3/4 (S-7) 571 mm Schwinn middleweight cruisers 26 x 1, 1 1/8 High performance wheels for smaller riders, common to Cannondale bikes 24 x 1 520 mm High performance wheels for smaller riders; Terry forward 24 1 1/8 520 mm or 540 mm! Warning. 540mm is common in wheelchairs. 24 x 1 1/4 547 mm British or Schwinn Juvenile 24 x 1 3/8(S-5) Schwinn Juvenile Lightweight 24 x 1 3/4 (S7) 520 mm Schwinn Middleweights 24 x 1 3/8(E-5) 540 mm British Minors, most wheelchairs; common to women's utility bikes in Japan. 20 x 1 1/8 20 x 1 1/4 20 x 1 3/8 451 mm Juvenile Lightweight, BMX BMX light riders, some recumbents, some folding bikes 20 x 1 3/4 419 mm Schwinn juvenile 18 x 1 3/8 400 mm British juvenile 17 x 1 1/4 369 mm Alex Moulton AM series 16 x 1 3/8 349 mm Older Moulton; Brompton & other folders, recumbed front, juvenile 16 x 1 3/8 337 mm Mystery tire 16 x 1 3/8 335 mm Polish youth 16 x 1 3/4 317 mm Schwinn Juvenile 12 1/2 x anything 203 mm Juvenile, scooter 10 x 2 152 mm wheelchair wheelchair 8 x 1 1/4 137 mm wheelchair wheel Traditional, fractional sizes are made for straight-sided rims. High-performance sizes (520 mm, 571, 622 mm, etc.) are preferably used with hook wheels, which can hold higher pressure and center tyres more reliably. Tubeless tires can use special hook-edge wheels that form an airtight seal. Decimal sizes: Decimal APPLICATIONS ISO 29 inch 622 mm This is a marketing term for wide tires 622 mm (700C). 28 x decimal Some German tire companies use this non-standard name for 622mm (700C) tires - it violates Brown's law! 27 five (meaning 27.5) 584 mm Marketing term for wide tires 584 mm. Some mountain bikes 26 x 1.00 to 5.0 559 mm Most mountain bikes, cruisers, fatbikes etc. Old Schwinn name was S-2 26 x 1.25 (rarely) 599 mm Very old US lightweight 26 x 1,375 (rarely) Very old USA. lightweight 24 x 1.5-24 x 2.125 507 mm Juvenile mountain bikes, cruisers 22 x 1.75, 22 x 2.125 457 mm Juvenile 20 x 1.5-20 x 2.125 406 mm Most BMX, juvenile, envelopes, trailers, some recumbens 18 x 1.5 355 mm Birdy folding bikes 18 x 1.75-18 x 2.125 Juvenile 16 x 1.75-16 x 2.125 305 mm Juvenile, envelopes, trailers, some reclining 14 x 1.75-14 x 2.125 254 mm Juvenile 12 1/2 x anything 203 mm Juvenile, scooter French sizes: In the French system, the first number is the nominal outer diameter in mm, followed by a letter code for width : A is narrow, D is wide. The letter codes no longer correspond to the width of the tires, since narrow tires are often made for rim sizes that initially got wide tires; For example, 700 C was originally a wide size, but is now available in very narrow widths, with actual external diameters as small as 660 mm. French size ISO Applications 700 A 642 mm Obsolete 700 B 635 mm Rod-brake roadsters. 700 C 622 mm Road bikes, hybrids, 29 inch MTB. (28 x 1 1/2 F.13 Canada) 650 A 590 mm French version of 26 x 1 3/8; Italian high performance bikes for smaller riders 650 B 584 mm French utility bikes, tandems, and loaded-touring bikes; some older Raleigh and Schwinn mountain bikes. He also called 27 five. See We have a page about this size. 700 D 583 mm Oddball size previously used in some GT. 650B tyre models mm) is close enough, perhaps with wide rim tape. 650 C 571 mm Triathlon, timing, high performance road bikes for 600 A 540 mm European youth road bikes, most wheelchairs 550 A 490 mm European youth bikes ROAD 500 A 440 mm European Beaster, Beaster, Diameter, mm Bead Seat Radius, mm Traditional Designations 787 393.5 36 inch 686 343 32 inch 635 317.5 28 x 1 1/2, 700 B, 28 x 1 5/8 x 1 1/2 (old, Sweden) 630 315 27 x anything except 27 five and 609 mm 622 311 700 C, 28 x 1 5/8 x 1 1/2 and other pairs of numbers, (but also see 635), 29 inch, 28 x 1 1/2 F.13 Canada 609 304.5 Rare Danish size, 27 x 1 1/2 599 299.5 26 x 1.25, x 1.375 -- old US size 597 298.5 26 x 1 1/4, 26 x 1 3/8 (S-6) 590 295 26 x 1 3/8 (E.A.3), 650 A 584 292 650B, 26 x 1 1/2, 27 five 583 291.5 700 D -- oddball size made by GT 571 285.5 26 x 1 , 26 x 1 3/4, 650 C 559 279.5 26 x 1.00- x 2.125, also fatbike tires up to 5 inches wide 547 273.5 24 x 1 1/4, 24 x 1 3/8 (S-5) 541 270.5 600 A 540 270 24 x 1 1/8, 24 x 1 3/8 (E.5), 520 260 24 x 1, 24 x 1 1/8, 24 x 1 3/4 507 253.5 24 x 1.5- x 2.125 501 250.5 British, 22 x 1 3/8, 22 x 1.00 4 90 245 550 A 489 244.5 Dutch minor 22 x 1 1/8 NL, 22 x 1 3/8 NL 484 242 550 B 457 228.5 22 x 1.75; x 2.125 451 225.5 20 x 1 1/8- x 1 3/8 440 220 500 A 438 219 Swedish, 20 x 2 419 209.5 20 x 1 3/4 406 203 20 x 1.5- x 2.125 390 195 450 A 369 184.5 17 x 1 1/4 355 177.5 18 x 1.5- x 2.125 349 174.5 16 x 1 3/8 340 170 400 A 337 168.5 16 x 1 3/4 305 152.5 16 x 1.75- x 2.125 288 144 350 A 254 127 14 x 1.75 203 101.5 12 1/2 X anything. 152 76 10 x 2 137 68.5 8 x 1 1/4 Most of this information was gathered by John Allen for Sutherland's Handbook on Bicycle Engineering, the Bible of Bicycle Technology. Sutherland, 6th edition has a more detailed, more detailed version of this diagram. You have an unmarked lip, but no tire? Click here for how to measure the size of the lip. Width issues Although you can use almost any combination of tyres/seats that shares the same bead-seat diameter, as has already been noted, it is not wise to use widely different sizes. If you use a very narrow tyre on a wide rim, there is a risk of pinching compartments and lip damage from road hazards. If you use a very wide tyre on a narrow rim, you are at risk of a side wall or lip failure. This combination causes very sloppy handling at low speeds. Unfortunately, the current mountain bike fashion pushes the edge of this. In the interest of weight saving, most current mountain bikes have overly narrow rims. Such narrow wheels work very badly with wide tires, unless the tires are overinflated... but this defeats the purpose of wide tires, and puts undue pressure on the side rim wall. The fatbike phenomenon has led to the availability of very wide tires and rims. These should only be used together. Georg Boeger has kindly provided a diagram showing the recommended combinations Which tyre fits safely on which rim? [all dimensions in millimetres] Tyre width Rim width (inner) 18 20 23 25 28 32 35 37 40 44 47 50 54 57 13 X 15 X 17 X 19 X 21 X 23 X 25 X Note: This chart may be a little wrong on the attention side. Many cyclists use slightly wider tyres without any problems. Desert Desert Global Bicycle Measurement System by WTB Website: GMS Global Measurement System The current industry standard for determining the actual inflated size of a bicycle tyre does not represent the subtle variation in tread and casing size. To address this problem and provide you with more information on tyre comparison, WTB has introduced the Global Measurement System (GMS) for tire measurement. GMS uses a two-number system: the first number is the width of the housing, and the second number is the width of the tread, both in millimetres. These measurements are taken on a rim 20 mm wide at the point of capture of the bead, with a tyre inflated to 60psi and maintained for 24 hours. In addition to being able to size a tyre accurately, knowledge of the actual size of the housing and the width of the tread provides an indication of the volume of air, the characteristics of the tread and the contact area of the tread; all of which provide you with a more concise idea of what ride features to expect from each of WTB's tires. Sew-ups Are mainly used for racing. A tubular rubber has no beads. Instead, the two ends of the carcass are sewn together (hence the term sew-up) with the inner tube inside. The tubulars only fit on special rims, where they are preserved from cement. Unless the special cement that does not allow replacement in the path of a tyre is used, tubular squirm against the rims and is slower than the best wired tires, even if lighter - see details from Jobst Brandt. Tubulars existed in several different sizes, but only 700c and 26-inch tubular are readily available these days. Caution: the sizes of tubes 26 and 24 are not well standardized. Take the rim with you when you buy a tyre, and vice versa. The size variants of the tubes are covered in sutherland manual for bicycle mechanics, 7th edition, available from Sutherland, and on the engineer's shelf in the best bike shops. Full-size tubular tubes match rims of the same diameter as 622 mm (700c) clinchers. This size is sometimes referred to as 28 inches or 700. It is also confusing, sometimes referred to as 27 inch. The 27-inch rating is inaccurate and outdated, but sometimes you'll run it on older printed material. In clincher tires, there is a real difference between 700c and 27 inch sizes, but for tubular this is a false distinction. Every time you see mention of the 27 inch tubular the author is actually referring to standard full-size tubular as used for most racing bikes. 26 inch or 650 tubular is mainly used for time-trial or motorpacing track bikes. There are two common sizes of 26 inches, corresponding to ISO sizes 584 mm and 571 mm. There are some oddball sizes as well. 24-inch (two slightly different sizes), 22-inch 20-inch and 18-inch tubular were previously used for children's racing bikes, but are pretty much extinct these days. The size of 18 inches corresponds to the size of 17 inches (369 mm) used in Moulton bikes. Tubulars are also sometimes sew-ups or tubs (British use.) If you want to sound like an ignorant yahoo, call them tukies or tubeless tires. Tubeless tires for bikes have bead cables, and are special only to be designed to keep the air free of internal pipe. 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