

WHEEL FITMENT GUIDE

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These days the trend has been the fitment of Porsche and aftermarket wheels onto air-cooled VW's. The popularity of large diameter wheels on air-cooled Vdubs has grown and with it the confusion regarding fitment. So what does it take to fit those 16, 17, 18 and 19 (19?!@*) inch wheels on a beetle? Provided here is a guide as to which wheels and tires will work on your Vdub and how to fit them onto air-cooled VWs.

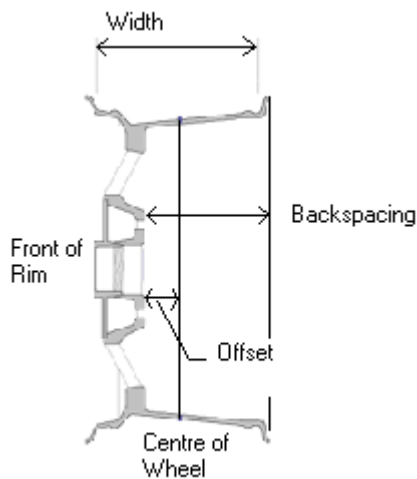
Advantages to upgrading to larger wheels include:

- Wider width – larger contact patch and cornering performance.
- Lower profile tires – increased steering response.
- Cosmetic benefits - there are currently many wheel styles available.

The disadvantages should also be noted:

- The need to change the bolt pattern of your vehicle.
- Potential loss of turning radius.
- Increase in unsprung weight with most wheel/tire combinations.
- Stiffer ride due to reduced side-wall height.
- The necessity to narrow the suspension to clear the tires on lowered vehicles.

Wheel Terminology



Wheel dimensions are given in the following format:

7by17+40 or 7J17ET40 , 4-100mm

Confused? Here's what it means:

7 = Nominal rim width (J). This distance is measured from wheel mounting bead to bead (in inches) and does not take into account the rim lip on each side. The total width of the rim if measured including the rim lip would be about 1 to 1.2 inches wider than the nominal width.

17 = Rim diameter in inches

+40 or ET40 = Offset. The offset in mm of the wheel mounting face from the true center of the wheel. Positive moves the mounting face outward, negative means inward relative to the center of the wheel. Pictured above is a positive offset wheel. Sometimes the backspacing dimension is given for a rim. This is the measurement from the mounting surface to the rearmost edge of the rim.

4-100mm = A 4 bolt pattern on 100mm pitch circle diameter (PCD).

Tire Terminology

Tire sizes are given in the following format:

205/40 ZR 17

205 = width of tire section (mm)

40 = aspect ratio. i.e. the height of the side-wall is 40% of width

Z = one of many lettered designations for speed rating

R = radial construction

17 = rim diameter (inches)

In the front of a VW you typically want to install the smallest possible tire to minimize tire interference when turning. On a 17-inch rim this is commonly a 205/40. In the rear, you want to maintain the stock overall diameter (OD) of 24.8" so that you do not alter the performance of your vehicle. This translates to a 215/45 17 or 225/45 17.

Wheel Patterns

Unfortunately the 4-130mm and 5-205mm VW PCD's are not very popular with the aftermarket rim manufacturers. More commonly wheel patterns such as 4-100mm (Japanese cars/older waterpumper VW's), 5-100mm (newer VW's), 4-114.3mm (Japanese cars), 5-130mm (Porsche) and 5-114.3 mm (Chrysler and Japanese Cars) are prevalent.

Two options are available to make the rim fit; the existing drum/disk can be drilled in the new pattern or new pre-drilled drums/disks are available through many part shops. An additional third option is using wheel adapters but these are not ideally suited for this application as they increase track and can cause fender interference.

Applications

Listed below are suggestions for popular Beetle applications. All rim sizes are given as the nominal (advertised) wheel width, not the actual measured width. The intention is to provide information as to which wheels will fit under stock fenders however fitting considerably wider wheels is possible with after-market fenders that are wider than the stock fenders. The suggestions are also generally applicable for Ghias, Type IIs and Type IIIs. Note however, that with Ghias and Type IIs the selection of the wheel offset is critical as these cars have less fender clearance than Beetles.

The following suggestions only mention the rim width rather than the diameter because the diameter is not the critical factor (with appropriate tire size, the overall diameter of the rim/wheel can be maintained at 24.8"). What really matters is whether the rim fits inside the stock fender. In general, a 7-inch wide rim is the limit on a vehicle with stock fenders. Anything wider has the potential of fouling the fender on lowered vehicles. Also, a +38mm offset or deeper (numerically higher) is required. A larger positive offset

pushes the wheel further into the fender. A smaller offset would make the rim stick out beyond the edge of the fender. Therefore, a larger offset is preferred because the wheel can always be spaced out if it comes too close to the suspension or inner fenders. Porsche wheels are typically 7ET55, while the after-market 'knock offs' of Porsche wheels are 7.5ET52. Depending on the application, these after-market wheels may not tuck under stock fenders on lowered cars. Many wheels for modern 'tuner' cars are in the range of 7ET38 to 7ET42. These wheels are perfect for air-cooled v-dubs. In general, any wheel that is 7ET38 (or one with a numerically higher offset) can fit an old v-dub and will tuck under the stock fenders.

Strut Front Suspension (Super Beetle):



The original coil spring will interfere with the rim and must be replaced. Narrow aftermarket coil springs are available. Rear springs belonging to some Honda Civics/Crx's also fit the bill nicely. (Honda coils have an OD of 85mm vs 123mm for the original VW coil). The drums/disk can be drilled to the new bolt pattern. On a 7 inch wheel the offset should be +40 or deeper. A wheel with a shallower offset will cause the wheel to rub against the fender. 7.5 inch wide rims can be also fitted, however interference with the coil spring may be an issue. Therefore, on a 7.5"

wheel, the offset should be at least +46 to clear the fender.

[caption for above: 16 x 7 + 40 rims with 205/45 tires on front of 72 super. The original coils have been exchanged for narrower honda coils. The disks have been redrilled to the new pattern.]

Ball Joint (BJ) and Link Pin (LP) front suspension:

Any of the suggested wheel offsets will fit vehicles with these kinds of front suspensions. When mounted, a 7ET38 rim will be right on the edge of the fender and may interfere with the fender on radically lowered cars. Also, the steering is limited to about 70-80% of original due to the rim contacting the lower trailing arm when turned.

To overcome these limitations, it is highly suggested (but not necessary) that the front beam be narrowed. Ball joint beams can be narrowed 3" without body modifications and LP beams about 1.75" to 2". With the narrowed beams, the wheels can then be spaced out about 1/4" to 1/2" away from the disk/drum to reduce trailing arm interference and hence increase steering swing. A 7.5 inch rim would require a +46 or deeper offset and most certainly require the maximum allowable amount of beam narrowing.

Cast and welded dropped spindles that are wider than stock spindles also effectively



increase the track of a narrowed beam and which can reduce or eliminate the spacing. BJ drums can be drilled to accommodate the new bolt pattern however LP drums cannot since there is a raised surface in the center of the drum that prevents wheel mounting. The solution is to use aftermarket disk brake kits or dropped spindles that enable the use of BJ drums.

[caption: front of 74 with 17 x7 +38 rims shod with 205/40 tires. The Ball joint beam has been narrowed 3

inches and drums redrilled.]

IRS Rear suspension:



For the rear wheels, the rim will interfere in two locations and clearancing is required. First, the outermost $\frac{1}{2}$ " – $\frac{3}{4}$ " of the bumpstop plate has to be cut off.



Second, the forward most spring plate-to-IRS arm bolt will have to be replaced with a flat head cap screw that must be countersunk into the flange on the IRS arm. This will prevent the tire from rubbing on the head of the bolt.

Tire width should be limited to a 215 or 225-section width tire to eliminate any possible fender clearance issues. Again, a 7.5" rim requires at least a +46 offset.



[caption: 16 x 7 +40 with 205/45 tires on on IRS rear suspension. Drum redrilled to 4-100mm pattern. No Spacers required.]

Swing Axle Rear Suspension:

Refer to the IRS rear suspension for directions with regards to the bump-stop plate. With 66 and earlier vehicles with short axles, you will find that the wheel may be too far inboard and may require spacing to prevent interference with the shock tower and spring plate (typically $\frac{1}{4}$ " to $\frac{1}{2}$ " spacers are required). Also, a short axle car can easily accommodate wider rear wheels up to 7.5" (+46 or deeper offset) and possibly 8". Five-bolt drums cannot be drilled for a new bolt pattern because of the raised ridges in the center of the drum. However, 1958-67 beetles can use a modified 68+-rear drum. The outer snout of the drum has to be trimmed on a lathe and $\frac{5}{8}$ " removed. The backing plate/shoes/cylinder can be changed to 1968 and later assemblies take advantage of the wider drums, but it is not necessary. 1957 and earlier cars must switch to the entire backing plate assembly to that of a 58 and later car (preferably 68+). Swing axle cars in general can accommodate wider tires than an IRS suspension car since the wheel/tire will camber in and tuck under the fender. On radically lowered cars the wheels may camber in too much, and the top of the tire can foul the shock tower.

To recap, a 7 inch wide rim with at least 38 positive offset can fit all air-cooled VW's and will tuck under stock fenders provided the above mentioned modifications are made. If the vehicle is not lowered excessively a 7.5" wide rims will also fit. To tuck 7.5" rims the offset has to be greater +46mm and it may not tuck the stock fenders. The information provided here are general guidelines but the best suggestion is to test fit a set of rims to insure suspension and fender clearance. So guys and girls, I want to see some big-rimmed dubs prowling the shows next season.