

Do You Have the Right Fan Belt?

I decided to write this article for Wings based on my own experience and the experience of others finding the right sized v-belt for their Healey. As a Mechanical Engineer I have a good working knowledge of v-belts but will come clean and admit I tried three different v-belts on my car until I found one that fit properly.

First a little history, the 6 cylinder Healey's had two different v-belts sizes over the entire production run. The 100/6 and 3000's used 0.380" width pulleys, commonly called a 3/8" pulley, and this remained the standard until March 1966 during the BJ8 Phase 2 production. At engine number 29K/10272 the crankshaft pulley was changed to have a built-in damper but this new pulley was 0.500" (1/2") wide and the water pump and dynamo pulleys were changed to match. The OEM Part numbers are:

13H760 - Belt Fan - 3/8" x 44" replaced AEC932 at engine number 29K/101 but no change in size.

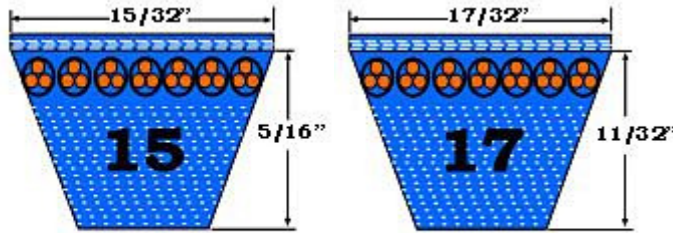
13H848 - Belt Fan - 'V'-type - 1/2" starting with engine number 29K/10272.

V-belts are a consumable part and should be changed before they wear out or break and leave you stranded on the side of the road. What could possibly be the problem, just go to the local Lordco and pick up a replacement 13H760 or 13H848. If the person at Lordco counter says those numbers are not in my system then ask for a 3/8" x 44" or 1/2" x 44". However, more than likely, despite good intentions, Lordco will suggest a v-belt that is the wrong size for a 1960's era Austin-Healey.

How do I tell the wrong size from the right size? It is not as easy as it looks. To size a v-belt these are steps to follow:

Get the right taper angle – There are many v-belts for different applications and not all are made for the same size of pulleys. Our Healey's have 36 degree groove angle pulleys and as long as the belt is an Automotive V-Belt it should have a compatible taper.

Get the right width – If something is going to go wrong it is likely at this step. Contrary to intuition a 3/8" pulley doesn't take a 3/8" wide belt it takes a 15/32" wide belt (15xxx series) and a 1/2" pulley takes a 17/32" wide belt (17xxx series).

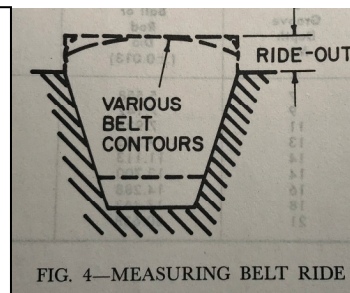


From what I have seen one of the problems is the conversion from imperial to metric for the 3/8" pulley, 3/8" x 44" converts to 9.5mm x 1118mm. In the metric v-belt world 101100 (10mm x 1100mm) is a very common size and was one of the belts, supplied by a Healey parts vendor, that didn't fit.

Get the right length – V-belts don't stretch and need to be long enough so they can be changed without removing the dynamo (who wants to do that on the side of the road) and short enough for ample adjustment to set the belt tension. V-belts have several possible length measurements: circumference, effective length and pitch length to name a few which further adds to the confusion. Automotive belt length is almost always measured by the effective length which is slightly less than the circumference and cannot be easily measured in situ. An effective length close to 44.3" is about right.

Fortunately there is a simple visual check to see if the v-belt on your car is the correct size but we need to introduce one more important measurement called Ride-Out.

Ride-Out is the distance from the outside diameter of the pulley to the top of the belt. For both the 3/8" and 1/2" pulley Ride-Out should be between 0.015" – 0.105" or about 1/16". If the Ride-Out is outside of this range either the belt is worn out or it is the wrong size belt.



Automotive v-belts have a standard numbering system that most manufacturers follow, however, there is a problem with some manufactures that lump 10mm and 15/32" belts into the same group. A 10mm belt is too narrow for a Healey but will fit except the Ride-Out will be out of specification. Ride-out is to ensure the belt is gripping the sides of the pulley, not touching the bottom of the pulley and to give a visual check of belt wear.

The standard numbering system is width in 32" and length in inches. Based on this system the belts for our Healey's are a 15440 and 17440 respectively. First two digits are width in 32nd's and the last three are the length in inches x 10.

Unfortunately, some manufacturers don't follow the numbering standard very closely and some xx440 designated belts may be too short. I have found a little bit longer belt is easier to fit and the one I settled on is a Continental 15446.

The ideal v-belt for a Healey would have these features:

Specified for automotive use

Classic v-belt and not a metric v-belt

Width 0.44 – 0.47" or 0.51 – 0.54"

Length 44.1 – 44.6"

Meets SAE Standard J636

Cogged belts are better for the small diameter pulleys on our Healey's but not a requirement

For those who have changed the dynamo to an alternator the pulley on the alternator must match the size of the water pump and crankshaft pulley. There isn't a belt that fits both a 3/8" and 1/2" pulley.

I hope this article will reduce some the confusion about v-belts and you can avoid my situation and get the right belt the first time.