

Thermo-Bob™ FAQ for Snowbikes

(The most Frequently-Asked Questions)

1) What is a Thermo-Bob™ and what does it do?

The Thermo-Bob is a cooling system modification for your bike. Most all manufacturers are minimizing cost and weight by simply allowing coolant to circulate through the radiator(s) all year, independent of outside temperature. If it's cold outside, your coolant is cold. If it's hot outside, your coolant is hot. Thus the manufacturers select a large enough set of radiators to not overheat in the summer... but in the winter, this overcools the engine. Newer bikes with fuel injection are measuring that coolant temperature, and add more and more enrichment fuel, thinking the bike is in 'warm-up mode'. They get away with it when bikes are ridden in the dirt, but when used in the snow things get much colder quickly. Not only do riders find they're using more fuel and limiting range, they find some of that fuel at the end of the day in their oil – requiring an oil change after every ride in extreme cases.

The Thermo-Bob is an external thermostat with a coolant bypass. It allows coolant to flow through the engine at all times but bypasses the radiators during warm-up. Its goal is to hold UP minimum temperatures, usually shooting for around 180F in four-stroke applications.

2) Where did the name "Thermo-Bob" come from?

It is a little word play on 'Thing-a-ma-bob'... this product was originally invented for the Kawasaki KLR650, whose most well-known modification is a 'doohickey' (easier to remember than 'balancer chain idler sprocket adjustment quadrant'), I was originally going to name this thermostatic control as the 'Thingamabob'. But it seemed natural at that point to make it "Thermo-Bob".

3) What should my goal coolant temperatures be?

Snowbikes see big temperature swings because they might be in the trees at low speed where there's no cooling airflow over the radiators, resulting in high coolant temperatures - then a minute later they're plowing through powder that's getting all over the radiators and engine, chilling things down quickly. A minute after that, they're wide-open making 50 HP on a steep hill. With barely more than one quart of coolant in the entire system, you can see why the temps will swing. On 4-stroke bikes, you'd like to see it in the 160°F-210°F range all day, as you need that heat in the lubricating oil to boil away the water vapor that gets in the oil as a natural byproduct of burning gasoline and air. On 2-stroke bikes, the transmission is separate, and the lubricating oil is being injected with the fuel, so the goal range is more like 130°F-170°F. In either case, if you get above that upper number by 20 or 30 degrees, it's time to grab a handful of snow and put it in the radiator core(s). This is where a bike with a radiator fan is desirable, it can generate airflow over the radiators when your speeds are too low to provide cooling for the radiator(s).

4) Can I leave the Thermo-Bob on all year or should I remove it in Summer?

Leave it on all year. It just keeps minimum temps around 170-180 F, and the bike (whether it's carbureted or has EFI) likes it up there anyway... if the coolant is much colder, the EFI adds the enrichener circuit or the mixture supplied by the carb isn't quite right. If it's hot outside or you're riding slow (where there's not a lot of airflow through the radiators to provide cooling), your bike will get above 170-180 whether the Thermo-Bob is installed or not. The Thermo-Bob won't make it run any hotter than it would stock in those conditions. But it will warm up faster and keep min temps up where you want them.

Thus - win-win to leave it on all year.

5) Can I run coolant-heated handlebars?

Yes you can. Plumb the bypass flow from the Thermo-Bob through the handlebars, then to our bypass tee on the cold side of the radiator(s). You can deadhead the bypass flow if you wish with a ball valve in the line.

6) I've just installed the Thermo-Bob and I'm letting the bike idle in my garage as its first test. The coolant temp just keeps climbing and climbing! Is something wrong?

Yes, you aren't riding with air flowing over the radiator(s). Therefore, even though the engine is running and making heat, there is no airflow over the radiators to provide cooling – the temps will continue to climb well past the thermostat temperature. For a 'garage test' you need a good box fan in front of the bike (or have a factory radiator fan that should come on when coolant temps in the Thermo-Bob are around 200-220F).

7) What is the thread rate of the temp sensor port in the Thermo-Bob?

We use the most commonly-available size: known as "1/8-28 BSPP". TrailTech and KOSO temperature gauges have this size as an option. The TrailTech 742-ES2 gauge is our favorite.

8) My bike already has a factory thermostat and bypass. Why should I remove it to install a Thermo-Bob?

There are four reasons that people upgrade:

- 1) The factory thermostat housing is plastic: the Thermo-Bob is machined aluminum.
- 2) The factory thermostat has a large bleed hole in it, allowing flow through the radiators even when the thermostat is closed. They get away with this design in dirt use, but in the snow, it provides too much cooling.
- 3) The factory thermostat is 158°F in almost all cases. The Thermo-Bob comes with a 180°F thermostat and also has other temperature options such as 195°F.
- 4) The Thermo-Bob has a machined port for the addition of a temperature gage.

9) What coolant should I use?

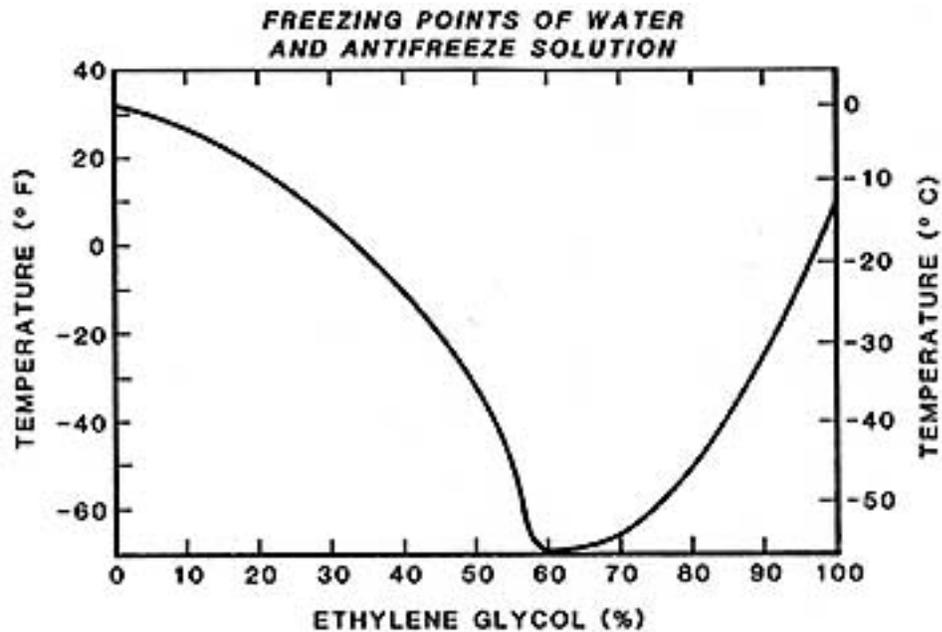
Traditional

This subject can be tricky, like an oil discussion.... there are tons of opinions. Overall, I'm a believer in using distilled, not tap water with my coolant, and changing it every 2 years. The bike only holds barely over a quart, so it's cheap insurance in my opinion. I've seen cooling systems that were ignored, and it's not pretty.

You can tweak the cooling system's effectiveness by changing the ratio of distilled water to Ethylene Glycol (abbreviated as 'EG'). Lower ratios of EG (i.e., more water) improve system effectiveness and this helps bikes that run hot a lot of the time. The converse is true, where higher ratios of EG decrease system effectiveness and this helps bring up temps of bikes that run cold. However, snowbikes are sitting overnight in cold climates so you CANNOT IGNORE the effect that different ratios have on the freezing point of your coolant.

The following chart provides some insight that most people are unaware of. Starting with 0% EG, (pure water), the freezing point is 32°F (0°C). It is pretty well known that adding EG to your water mixture lowers the freezing point – but interestingly, once past about 60% EG, the freezing point actually decreases, where 100% EG freezes at 9°F (-13°C)!

Therefore, you need to select your ratio of EG and water carefully.



Evans Waterless Coolant

Evans Waterless Coolant freezes at -40°F (-40°C). However, it is advertised very cautiously to avoid telling you a downside: it's poor thermal properties RAISE operating temperatures, usually around 20 to 30 degrees on most vehicles. Their advertising relies on people reading the words "doesn't boil over" to mean that it runs cooler. It does not. It's just that it boils at 375°F. If your bike is always running on the cold side, Evans might be for you.