

WARNING! USING THE WRONG TYPE OF COOLANT/ANTIFREEZE CAN DAMAGE YOUR SILICONE HOSES OR YOUR ENGINE. PLEASE READ THE GUIDANCE BELOW BEFORE BUYING OR USING ANY COOLANT WITH SILICONE HOSES. PROBLEMS CAUSED BY INCORRECT COOLANT USE ARE NOT COVERED UNDER WARRANTY.

SILICONE HOSES AND COOLANT/ANTIFREEZE

Several types of coolant exist, the main two being traditional Inorganic Acid Technology (IAT) coolants, used in vehicles up to around 1998, and the newer long life Organic Acid Technology (OAT) Coolants used in vehicles after around 1998. Hybrid Organic Acid Technology (HOAT) coolants have also increased in popularity recently which are a combination of the two. Some types of coolant can be harmful to silicone hoses so it's important to choose a coolant that is suitable for both your vehicle and silicone hoses.

The first step is to determine whether your vehicle originally used IAT coolant or OAT/HOAT coolant. If you are unsure check the coolant change interval in your vehicle manual. Vehicles using IAT coolant will have a coolant change interval of around 2-3 years. Vehicles using OAT or HOAT coolant will have a coolant change interval of 5 years or longer.

IF YOUR VEHICLE USES IAT COOLANT

IAT coolants are usually silicate or phosphate based and need replacing every 2-3 years. **All IAT coolants are safe for use with silicone hoses.**

If your vehicle manual specifies a 2-3 year coolant change interval you should continue to use IAT coolant and **not** OAT coolant, as the seals, gaskets and some engine components may not be suitable for use with OAT coolant.

However, we strongly recommend flushing the coolant system with clean water thoroughly before filling the system with new coolant, as some vehicles may have had OAT/HOAT coolant put into them at some point, and mixing different types of coolant can be harmful to your coolant system.

It is very important to flush and refill the coolant system properly before fitting silicone hoses. Follow the instructions in the "Silicone Coolant Hose Fitting" section below carefully to avoid problems caused by incorrect filling, diluting or mixing of coolant.

IF YOUR VEHICLE USES OAT COOLANT

OAT coolants only need replacing every 5 or even 10 years. Other than the increase in service life and improved protection from mixing with "hard" tap water (which should not be used in vehicles anyway) there is no real benefit to OAT coolants. However, **some** OAT coolants contain 2-Ethylhexanoic acid (**2-EHA**) which is a plasticizer and may **damage silicone rubber and plastics over time**, including silicone hoses, engine gaskets, RTV sealant and other rubber/plastic components.

All vehicles that use OAT coolant can safely use IAT coolant instead. If your coolant change schedule is normally 5 years or longer you would need to increase the coolant change interval to every two years if you switch to IAT coolant. Regular coolant changes are better for the vehicle so **if you are willing to change your coolant every two years we strongly recommend switching to IAT coolant.**

If you would like to keep the 5 year+ coolant change interval it is **important to choose a coolant that does not contain 2-EHA**. This can be difficult as many coolant manufacturers do not specify the ingredients of their coolant, or the ingredients will only specify "corrosion inhibitors" or "proprietary inhibitors" which may or may not include 2-EHA. However we have included a list of OAT coolants below that are compatible with silicone hoses. Some of the products below are available in both pre-mixed and concentrate versions and in all cases either can be used.

- Comma Xstream G30
- Halfords OAT Antifreeze
- Peak Global Lifetime Antifreeze/Coolant
- Prestone Extended Life Coolant/Antifreeze
- Toyota Long Life "Red" Coolant
- Honda Long Life Antifreeze/Coolant Type 2
- Mazda FL22 Coolant

In addition any Hybrid OAT Coolant can replace any OAT coolant and at the time of printing all Hybrid OAT coolants are safe to use with silicone hoses. Please note however that vehicles which specify Hybrid OAT coolant should **NOT** be filled with a conventional OAT coolant.

It is very important to flush and refill the coolant system properly before fitting silicone hoses. Follow the instructions in the "Silicone Coolant Hose Fitting" section below carefully to avoid problems caused by incorrect filling, diluting or mixing of coolant.

IF YOUR VEHICLE USES HYBRID OAT (HOAT) COOLANT

Modern Hybrid OAT (or HOAT) coolants combine Organic Acid Technology with traditional silicates or phosphates found in IAT coolants, without any significant amount of 2-EHA. If your vehicle uses Hybrid OAT coolant as standard you should use the vehicle manufacturers own coolant or an equivalent compatible Hybrid OAT coolant. It is also safe to switch to IAT coolant if you prefer more regular coolant changes, which can be beneficial for the engine, but you should **NOT** use OAT coolant in a vehicle designed for HOAT coolant.

It is very important to flush and refill the coolant system properly before fitting silicone hoses. Follow the instructions in the "Silicone Coolant Hose Fitting" section below to avoid problems caused by incorrect filling, diluting or mixing of coolant.

SILICONE COOLANT HOSE FITTING

IMPORTANT! READ THE COOLANT/ANTIFREEZE GUIDANCE ABOVE AND THE INSTRUCTIONS BELOW IN FULL BEFORE STARTING ANY SILICONE HOSE INSTALLATION.

IMPORTANT! SILICONE HOSES CANNOT BE USED TO CARRY LIQUID FUEL OR OIL, OR SOME TYPES OF OAT COOLANT

Tools & Materials Needed

- Coolant **suitable for your vehicle and silicone hoses** (See guidance above)
- Deionised Water
- Workshop/Safety Gloves
- Safety Goggles
- Overalls or old clothes
- Silicone-based Lubricant or Washing-Up Liquid (Dish Soap)
- Pliers suitable for removing your OEM hose clamps
- Hair dryer or heat gun (Optional)
- Flat-blade Screwdriver
- Socket Set
- 7mm Ratchet Spanner
- Jack & Axle Stands or Vehicle Ramp
- Large clean funnel
- Rags

1) Disconnect the vehicle battery and ensure the vehicle is fully cooled down before starting. Set the vehicles heater control on the dashboard to hot to open the heater valve. Coolant is an irritant and can damage eyes, skin and clothing so ensure you are wearing safety goggles and gloves whilst working with coolant and don't wear any clothes that you don't want to ruin!

2) You may need to jack up or raise the vehicle for this stage. If so, **do so safely in accordance with your vehicles jacking instructions** and put the vehicle on correctly rated axle stands or ramp. **Ensure the radiator and engine are cool** and remove the Radiator/Pressure Cap. Remove any coolant drain plugs on the vehicle, catching the old coolant in a tray or bucket. Many vehicles have a coolant drain point at the bottom of the radiator and at least one on the engine block. If your vehicle doesn't have a radiator drain point disconnect the lower radiator hose to drain from there.

3) Also drain the vehicles expansion tank/overflow reservoir where possible. Some vehicles have a drain plug or bottom hose that can be removed, on others the expansion tank needs removing to empty from the top. You can also flush it out from the top cap with a garden hose until the water runs clear if removal is difficult, but take care not to get water on any electrical components in the engine bay. Once as much coolant as possible has been drained, replace the drain plug(s) and any hoses/expansion tanks removed so the coolant system is complete again.

4) Dispose of your old coolant responsibly at your local recycling centre, or refer to their guidance on disposal of coolant if they don't take it. Coolant is highly toxic to people and animals and harmful to the environment, so don't pour it onto the ground.

5) Refill the system with clean water and run the vehicle until it is up to normal operating temperature. **Allow the vehicle to cool fully** and then remove the drain plugs to empty the system again, flushing out the system. Repeat the flushing process of refilling, running the vehicle up to temp and draining the coolant system until the water draining out runs clear. **This step is very important, mixing different coolant types or leaving significant amounts of the wrong coolant in the system can be harmful to your new hoses and other rubber/metal parts of the coolant system.**

6) Remove the existing clamps and the hoses that you are replacing and label each hose so you know where it came from. Old hoses can be stubborn to remove, twisting the hose around the metal pipe rather than pulling often helps. Heating the hose end with a heat gun or hair dryer can also help to loosen the rubber.

7) Clean up all the metal pipes that the hoses connect to, using a wire brush/sandpaper to remove any rust, crusted old coolant etc. If the pipe coupling is in poor condition it may cause the hose to leak.

8) Size up your clamps to the correct silicone hoses. If using your original clamps simply remove them from the original hoses and set them out with the replacement silicone hoses. If you've bought one of our clamp kits the easiest method is to work from the smallest hose end in the kit applying the smallest clamp, and move upwards in hose end and clamp sizes until all hose ends have a clamp assigned.

9) Fit the new silicone hoses one at a time, sliding the clamps onto the hose and generously lubricating the inside of the hose ends with a silicone-based lubricant or washing up liquid (dish soap). **Do not use WD40 or any oil-based lubricant as these can damage silicone hoses.**

10) Once the hose is fitted slide the clamps into place and tighten to the correct specification. Repeat for all other hoses in the kit.

11) Refit all drain plugs removed in the coolant flushing process.

12) **Check you have a coolant that is compatible with silicone hoses before proceeding. See the guidance at the top of this document on coolant types.**

13) If the coolant you are using is premixed, skip to step 14. If you are using concentrated coolant mix it with the de-ionised water in the correct ratios according to the coolant manufacturer's instructions, usually 33% to 50% coolant depending on your climate. We recommend 33% if that provides sufficient anti-freeze protection for your climate.

14) Place the funnel in the expansion tank and fill to the correct level (often approx half way, refer to vehicle manual if unsure) with your new coolant.

15) Now place the funnel in the radiator/pressure cap neck and **slowly** fill the coolant system. The slower you pour the less air will be introduced to the system and the less bleeding the system will require.

16) Once the coolant system is full, leaving the radiator cap off, go around all the new hoses in the coolant system and squeeze them to expel as much trapped air as possible from the system. Top up again to replace any air that has been removed from the system.

17) If it isn't already raised, raise the front of the vehicle **safely and in accordance with your vehicles jacking instructions**. Put the vehicle on correctly rated axle stands or ramp, so that

the radiator cap is the highest point in the coolant system where possible. Bleed the coolant system in accordance with the correct procedure for your vehicle, which will vary by make/model. As a general guide, fit bleed tubes to any bleed points available on the vehicle and open the bleed valve(s). With the heater set to hot and the radiator/pressure cap open run the vehicles engine. Rev the engine to approx 2,500rpm-3,500rpm for short periods at a time, keeping an eye on the temperature gauge. Once the vehicle is up to normal operating temperature top up the system until full again, and switch off the vehicle

18) Lower the vehicle and **allow it to cool fully**. Close any bleed valves and ensure the coolant system and expansion tank are both filled to the correct levels. Replace the radiator cap and check the system over thoroughly for leaks, tightening hose clamps as necessary if required. Clean up any spilled/leaking coolant with a rag.

19) Take the vehicle for a test drive, ensuring it reaches operating temperature and keeping an eye on the coolant temperature gauge to ensure it doesn't overheat. Ensure the heater is working and reaches its normal "hot" temperature. If all seems ok allow the vehicle to cool on your return and then top up the coolant in the system and the expansion tank once more.

20) For the next few weeks keep an eye on your temperature gauge, check the vehicle regularly for leaks and continue to top up the coolant as any extra air bleeds its way out of the

CLEANING SILICONE HOSES

Engine bays can get very dirty so it is a good idea to clean your hoses regularly to keep them looking at their best.

Hoses can be cleaned with hot soapy water, or any product specifically designed for cleaning silicone hoses.

Do not use any **oil-based** or **alcohol-based** cleaning products on silicone hoses. This includes WD40 and similar maintenance sprays which are oil-based.