



Carburetor Ice Protection Systems

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CozyCarb 912 Coolant-Based Carburetor Heater – MKIII

Read these Instructions Thoroughly BEFORE Attempting to Install or Use the CozyCarb 912 Coolant-Based Carburetor Heater.

This Carburetor heater is suitable for installation on Rotax 912 UL and 912 ULS series engines installed in **NON-CERTIFIED** aircraft. The fitting of this carb heater may require approval. You should therefore consult with the appropriate aviation governing body in your area before installing a CozyCarb heater to your engine.

When in operation, the CozyCarb adds a small amount of heat to the carburetor body at its downstream end in order to keep the temperature of the carb body above freezing point. The intention is, that any ice formed will not adhere to the carburetor throat. Because the heater block is adjacent to the throttle spindle, some heat is also transferred through the spindle to the butterfly plate. This discourages ice from building up on the butterfly, which with the type of carburetor used, can be a cause of rough running and possible engine stoppage.

Because there is no significant heating of the intake air when hot coolant is circulating through the CozyCarb heating blocks, there will be negligible loss of full engine power. We encourage that the CozyCarb system be left permanently operating. This has no negative effect and means that you will never forget to turn it on.

Extensive testing of the system has been carried out in adverse winter conditions. It has been demonstrated that the system will prevent the formation of ice. The system has not been tested under all possible conditions that may prevail and therefore its effectiveness cannot be guaranteed in all circumstances. Aircraft equipped with this device should always be flown in circumstances where a successful 'power off' landing can be made in the event of engine failure.

INSTALLATION PROCEDURE

WARNING

Incorrect installation of this carburetor heat system could result in engine damage or complete engine failure, which could lead to personal injury or death. Fisher Flying Products cannot be held responsible for loss or damage caused by incorrect installation. If the procedure for installing this system is not completely understood, please contact Fisher Flying Products for assistance before proceeding. Professional installation assistance is encouraged!

NOTE: The installation of the CozyCarb system will move both Carburetors approximately 17mm further away from the power take off end of the engine. If your engine installation will not permit this small change, do not attempt to install the system, as it will be extremely difficult or impossible to remove the heating blocks once mated to the carburetors.

The Material Safety Data Sheet for the WEICON AN 302-62 Thread Sealant can be found at the following web address - https://www.weicon.ca/media/pdf/d1/1c/16/MSDS_302620_US_EN_.pdf

- 1) Disconnect aircraft battery. Drain all coolant from the engine and collect it in a suitable container. Turn off fuel supply from aircraft fuel tank. Remove air filters from the Carburetors. Disconnect throttle and choke cables and fuel lines from the Carburetors.
- 2) Carburetor Preparation
 - Remove each carburetor from the engine by loosening the clamp around the rubber flange assembly, disconnecting one end of the support spring and ease the Carburetor out.
 - Remove the float chambers from the carbs and empty out the fuel and dispose of it safely. Replace the float chambers into the carb body, ensuring that the floats are correctly oriented.
 - Looking at the output flange of the carburetor (where it fits into the rubber intake boot) look to see if a small line of casting flash exists (Photo 1 below). Tape over the open end of the output flange to prevent any metal particles from getting into the carburetor throat. Carefully remove any casting flash from both sides of the flange, using a small needle file or emery cloth until it is smooth with the flange. Take care not to remove any more material than just the casting flash as this may cause an air leak later.
 - Perform this procedure on both carbs then clean and degrease the output flanges of both Carburetors.

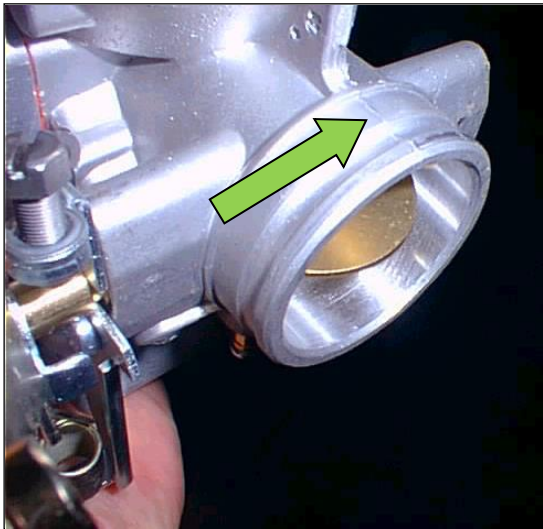


Photo 1



Photo 2

3) Install Heater Blocks

- Remove any tape from the previous procedure. Clean and degrease the bore of each heater block. Position each heater block exactly square with the Carburetor as shown in Photo 2 above. Tap the heater block very gently with a wooden or plastic mallet, just enough to hold it in position on the carb flange. Position the carb and heater block in a wide jawed vice or under a suitable press. Protect both the heater block end and the inlet end of the Carburetor with a piece of soft wood or soft jaws. (Photo 3 on the following page). Tighten the vice gently, checking that the heater block pushes on squarely. Only push the block on about 4mm (3/16"), so it only just starts to overlap the groove in the carburetor flange.
 - Remove the assembly from the vice and carefully recheck for squareness in all planes. If the position is not correct it may be possible to gently pry the heater block off by hand and start again, but once it is pushed further on during the next stage, this will be impossible.
- 4) Using the rounded end of one of the medium length cable ties as a spatula, smear a thin film of the high strength retainer on the visible portion of the carburetor flange (Photo 4 on the following page). Be sure to cover the entire area between the groove and the carburetor end of the flange with a very thin film. This is necessary to both bond the heater block in place and to prevent air leaks which would affect the

running of the engine. Be very careful not to get any high strength retainer on the outside, exposed end of the throttle spindle, as it would creep into the bearing, seize the spindle, and ruin the carburetor.

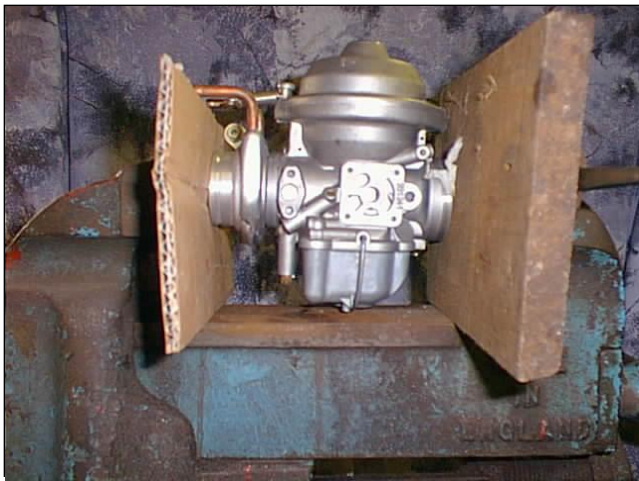


Photo 3



Photo 4

- 5) Reposition the assembly in the vice as before and tighten the vice until the heater block is pushed right home (until it contacts the carburetor body at the end of the flange). Remove the assembly from the vice. Clean off any high strength retainer that squeezed out, again being very careful not to get any on the throttle exterior spindle. Hold the carburetor upright, put about 10 drops of high strength retainer down the threaded hole on top of the heater block. It may take a few minutes for the high strength retainer to run down inside the hole, so be patient. Then drive the set screw fully home using a 2.5mm Allen key.

Lay the carburetor on its side in a warm place with the throttle lever on top so any seeping high strength retainer will run away from the spindle. Leave it in this position for a couple of hours to allow the high strength retainer to cure. During this time check for any high strength retainer creeping into the carb bore from the join between the carb body and the heater body. Clean off any that seeps through.

6) Reinstall Carburetors

- The Carburetors can now be reinstalled. Carefully push each carburetor into the rubber intake adapter.
- Make sure the clamp is positioned with the screw at the bottom. Tighten the clamp only enough to give a gap between the lugs of the carb socket as shown in Fig 1, 7mm for part number 267787 or 8mm for part number 267788 & 267789 (a spacer is provided on 267788 & 267789 to prevent over tightening).

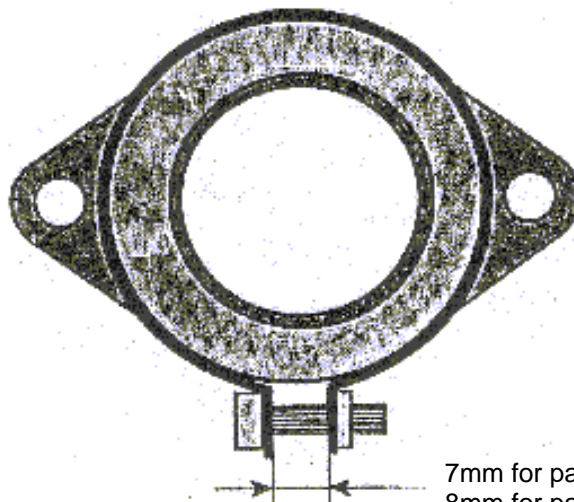


Fig. 1

7mm for part number 267787
8mm for part number 267788 & 267789

- Because the carburetor is now 17 mm further away, the clamp with the small bracket that the carburetor support spring attaches to will have to be reversed so that the spring maintains the same approximate amount of stretch. Completely remove the clamp on the end of each balance pipe. Note the bracket orientation on the clamp as it will have to be reversed to retain the spring.
- Turn the clamp completely round (so the head of the screw is towards the Carburetor). Also turn the small bracket over so the slight bend in it helps to prevent the end of the spring from slipping off. Tighten the screw and refit the spring (Photo 5 on the following page). Reconnect the fuel feed pipe, choke and throttle cables, making sure that the throttles are exactly synchronised. Refit the air filters.

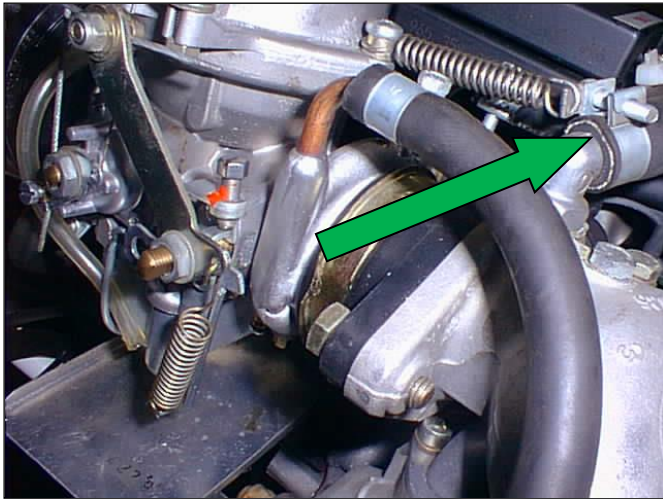


Photo 5



Photo 6

7) Install Coolant Hoses for the Heater Blocks

- Cut the hose between the cylinder head of No 2 cylinder and the expansion tank and fit the smaller of the two 'T' pieces using the hose clamps supplied (Fig 2. below is for cylinder head identification). Angle the small outlet at approximately 45° so that the small feed hose to the heater block will curve smoothly (Photo 6 above).
- Cut a piece of the small hose to length and fit to the 'T' tube fitting using one of the small clamps provided. Make sure that the hose is pushed in fully and the clamp is entirely beyond the flare on the outlet of the 'T' tube fitting to ensure that the hose cannot be pushed off by pressure in the cooling system. Observe this requirement for all small hose connections. Do not yet connect the other end to the heater block.

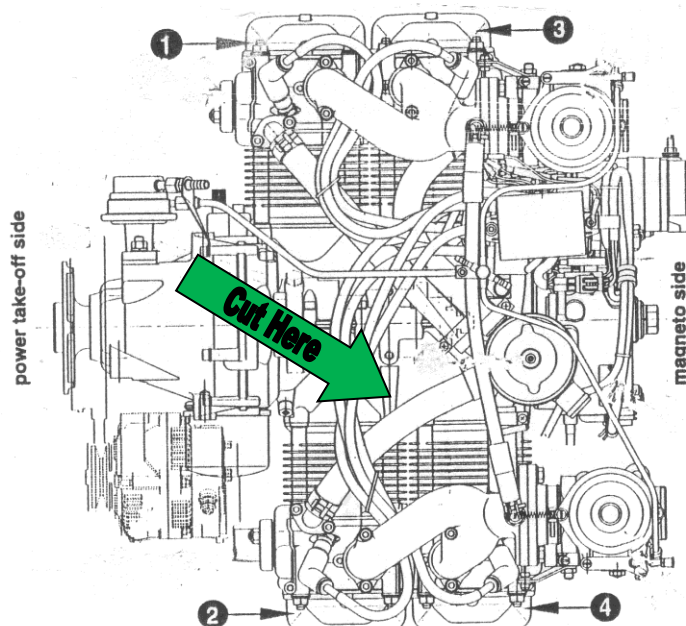


Fig 2.

- 8) Install the larger of the two 'T' tube fittings supplied in the kit into the hose just before the water pump inlet (underneath the magneto) using the supplied hose clamps. The 'T' tube fitting is installed by cutting the hose and inserting it as close as possible to the water pump. Making sure there is space for the hose fitted to the small hose barb on the 'T' hose fitting to be routed away without touching any metal components of the engine.
- 9) Cut a length of hose and install between the inner hose barbs on the two heater blocks. Secure to the hose barbs with the supplied hose clamps. Use some of the cable ties provided to firmly fix the hose to the balance pipe to prevent chafing.
- 10) Install a length of hose to the outer hose barb on the heater block attached to the carb that supplies Cylinders 1 and 3. This hose should then return to the large 'T' piece near the water pump. Use the hose clamps supplied to secure the ends of the hose to the heater block and 'T' tube fitting.

Fig 3 shows a schematic of the complete system. Ensure that all hoses are securely fixed with cable ties to prevent chafing and avoid contact with the exhaust system.

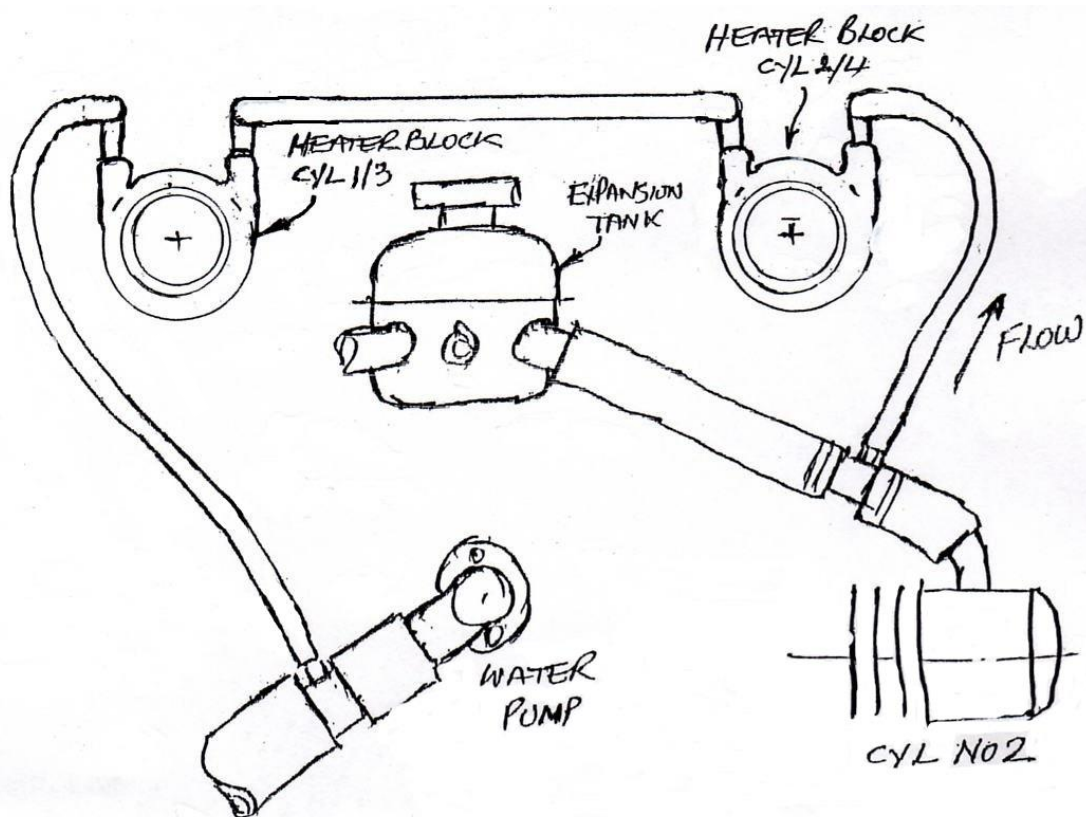


Fig. 3

11) Filling and Priming the System:

- Check that the hose from the upper 'T' piece is not yet connected to the heater block on carburetor for number 2 and 4 cylinders. Raise the loose end of the hose higher than the filler cap on the expansion tank. Put a small container under the open hose barb on the heater block to catch any leakage. Slowly fill the cooling system with the water/antifreeze mixture recommended by Rotax.
- When the level gets close to the top of the expansion tank, coolant may start to seep from the open hose barb. If this happens, connect the loose hose to the connector and clamp it up tight. Top up the coolant to the brim and refit the expansion tank cap.

- If no coolant comes from the open connector when the expansion tank is full right to the brim, this is probably because there is air in the system that needs to be purged. To purge the system, push the end of the transparent plastic tube supplied into the open end of the rubber hose (see Fig 4 on the following page). Check that the coolant is full to the brim and refit the filler cap. Blow gently into the transparent plastic tube until coolant drips steadily from the hose barb on the heater block (DO NOT SUCK ON THE TUBE OR YOU WILL GET ANTIFREEZE IN YOUR MOUTH, WHICH IS HARMFUL) – if preferred a bicycle pump can be used to gently blow into the hose.
- Remove the transparent plastic hose from the end of the rubber hose. Connect and clamp the rubber hose to the hose barb on the heater block. Remove the filler cap, top up the coolant to the brim, replace and secure the cap.

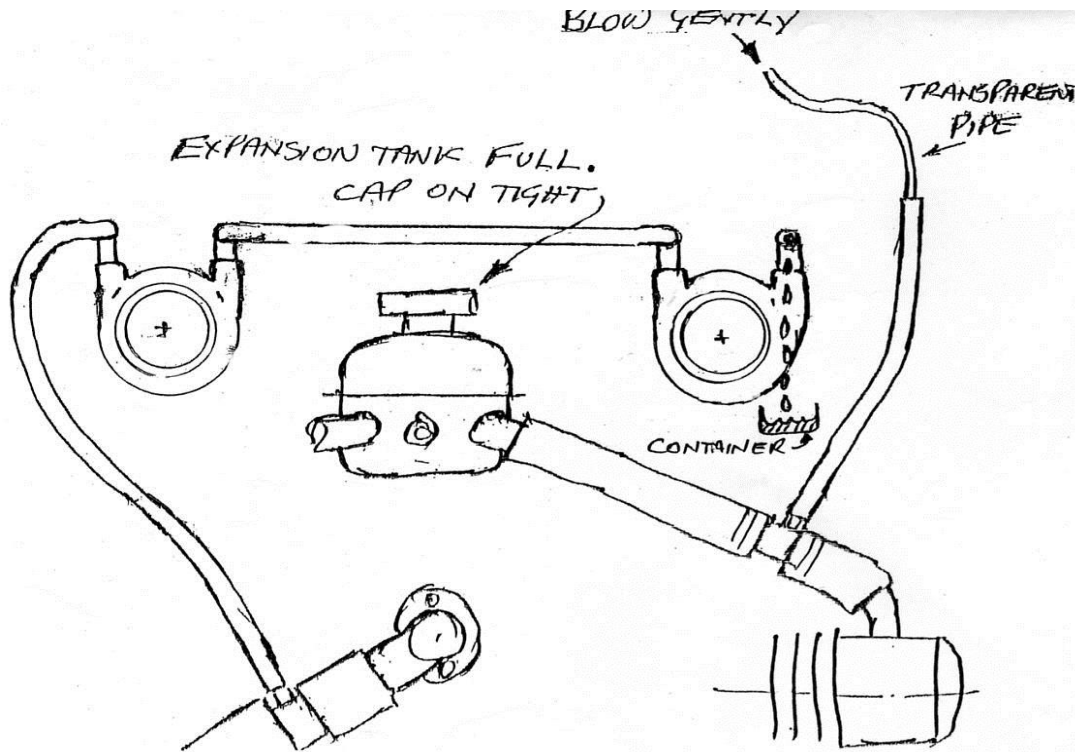


Fig. 4

12) Final Check:

- Check all hose connections for security and visually check for any coolant leakage. Check all hoses for chafing and proximity to hot engine parts. If necessary, use additional cable ties to secure hoses.
- The engine can now be started, observing all the normal precautions. Run the engine at around 2500 rpm. Stop the engine after about 10 minutes, check for leaks and security of all components and top up the coolant. Check that the heater bodies have become warm. If not, it will be necessary to repeat the priming procedure (refer to earlier instructions).

13) Operation:

- The carb heat system will work automatically, but an occasional check that the heater bodies get warm after engine running is advisable.

14) Maintenance:

- Your daily inspection should include a check for coolant leakage, chafing of hoses, and security of all components. Check the carburetor attachment and security of the support spring. Rubber hoses should be replaced if they show signs of damage or cracking. It is advisable to change all hoses after 5 years even if no deterioration is visible.