



Coolant Reroute Kit

Installation Instructions

For 1994-2005 Miata 1.8L

PART # 910-850, 910-855, and 910-856

Tools required:

- Timing Light
- Jack, jack stands, wheel chocks
- Phillips Head and Flathead Screwdrivers
- ¼" Ratchet
- ⅜" Ratchet
- 10mm Socket
- 12mm Socket
- 19mm Deep Socket
- 1⅞" Deep Socket
- 7/16" Socket
- 5mm Allen Wrench
- 10mm Wrench
- 12mm Wrench
- 22mm or 7/8" Wrench
- Thread Sealant
- Razor blade or similar gasket scraper
- Radiator Hose Cutter
- Telescoping mirror (recommended)
- Spill-Free Funnel such as Lisle 24680 (recommended)
- Torque Wrench ¼" (recommended for 20 ft-lbs capacity)
- Cooling System pressure tester (recommended)

Note: 2001+ Miatas with VVT engines can ignore all steps related to the coil pack and Camshaft Angle Sensor.

Kit number 910-855 does not include an EGR tube, EGR block off plate, or block off nut. 910-855 is intended for an individual who has already done away with the EGR system.

If your car presently has a working EGR system, we recommend returning this kit and purchasing Coolant Reroute Kit part# 910-850 (for 94-97) or 910-856 (for 01-05) which includes a compatible EGR tube.

Removing the EGR tube and blocking off the ports will turn on the "Check Engine Light" and is illegal on any street driven vehicle. Check your local and state laws before proceeding.

Notes: The stock coolant routing on the Mazda 1.8L engine leaves much to be desired. Since the 1.8L was originally developed for light-duty transverse-mounted front wheel drive applications, little thought was given to the rear-wheel drive Miata. Coolant flows from the water pump at the front, through passages in the engine to the rear of the cylinder head. Some coolant can exit at the rear of the engine but only through the small heater hose leading to the heater core, a major flow restriction. The majority of the coolant has to reverse direction and travel back through the block again to exit at the thermostat at the front of the engine; transferring unwanted heat back into the block on the way. As a result of this inefficient design, the rear cylinders run hotter than the front. This can lead to a hotter running engine and premature failures of the rear cylinders. The design is especially problematic when a Miata is driven hard on the track or modified for increased power output.

This kit will relocate the thermostat from the front of the engine to the rear, thereby allowing coolant to flow more efficiently one direction through the block. The full-size radiator hose outlet at the rear of the engine ensures maximum coolant flow is directed out of the engine to the radiator. This helps to keep all cylinders at a more uniform lower temperature.

Installation Instructions

Warning:

- **Let the engine cool for at least 6 hours before opening the cooling system to avoid burn injury.**
- **Always use jack stands to support the weight of the vehicle. Never rely on jack alone.**
- **Make sure to dispose of old coolant properly at a recycling facility.**

Removal:

1. Chock the rear wheels, jack up the front of the vehicle and safely support on jack stands. Ensure engine is cold. Drain the cooling system then reinstall the drain plug. (You may need to remove the factory plastic splash guard (if equipped) to access the radiator drain plug.)
2. Remove the clamp retaining the hose to the Idle Air Control valve. Remove the IAC hose and PCV breather hose at the air tube. Loosen the screws retaining the air intake tube to the throttle body and air filter box. Remove the air intake tube. **Figure 2.**



Figure 2

3. Remove the two 10mm bolts retaining the metal vacuum line for the power brake booster and throttle cable. Remove the vacuum hose at the intake, and lift the vacuum line up and out of the way. **Figure 3.**



Figure 3

4. Remove the one-wire connector for the coolant temperature sensor (temp gauge) located on the driver's side back of the cylinder head, underneath the camshaft position sensor. ('94-'97 only. NB's do not have this one wire coolant temp sensor) **Figure 4.1.** Remove the connectors for the camshaft position sensor and oxygen sensor. Position the wiring harness out of the way. **Figure 4.2.**

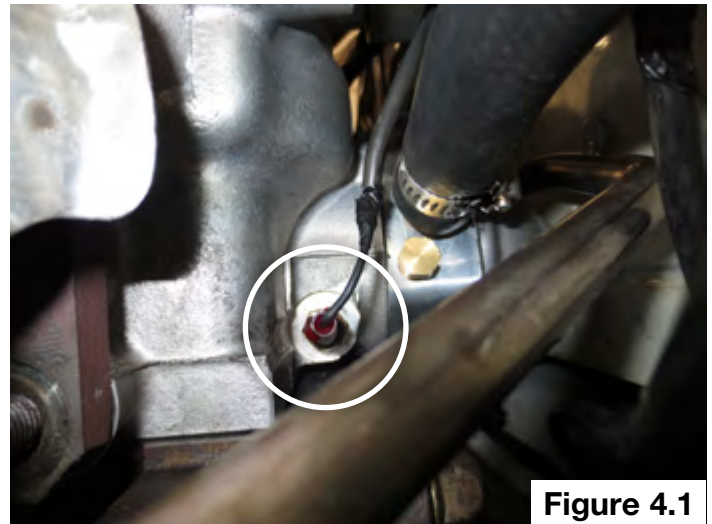


Figure 4.1



Figure 4.2

5. Remove the three 12mm bolts retaining the coil bracket to the back of the valve cover. You can leave the spark plug wires and electrical connectors connected to ease reassembly if desired. Carefully lift the coil bracket up and place on top of the valve cover, being careful not to damage the coil connectors. **Note: If you choose to remove the electrical connectors at the coil be sure to mark them, as they can be easily reversed and installed in the wrong coil causing a no start.** **Figure 5.1.** Remove the green electrical connector for the two-wire ECM coolant temperature sensor. **Figure 5.2.**



Figure 5.1



Figure 6.2

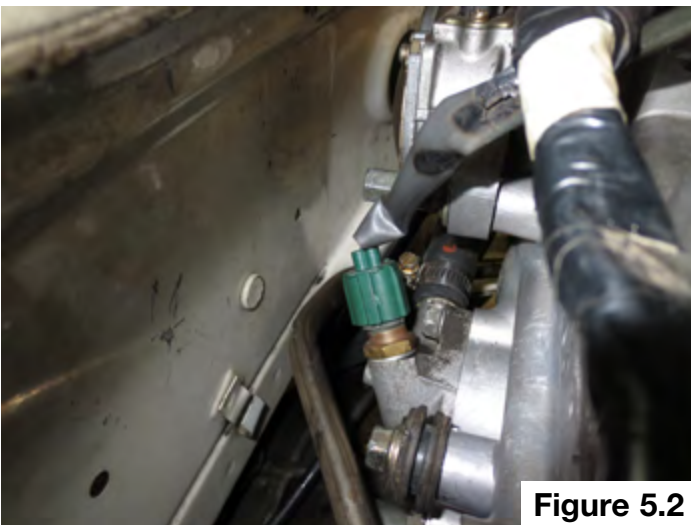


Figure 5.2

6. (1994-1997 models only) Mark the position of the camshaft position sensor, **Figure 6.1**. Then remove special retaining bolt with a 12 mm wrench, **Figure 6.2**. Only the bolt needs to be removed, the sensor can stay in place.

Caution: Due to the retaining bolt being removed, ignition timing **MUST** be checked when installation is completed. Driving with incorrect ignition timing may result in severe engine damage!



Figure 6.1

7. (2001-2005 models only) On the rear of the cylinder head on the exhaust side there is a small bracket that holds the small two wire ignition condenser and secures the steel/rubber blanking plug. Loosen the 12mm bolt and electrical connector and remove the bracket. The small bolt securing the condenser to the bracket should be replaced with the supplied M6 x 12 x1.0 button head cap screw at this time.

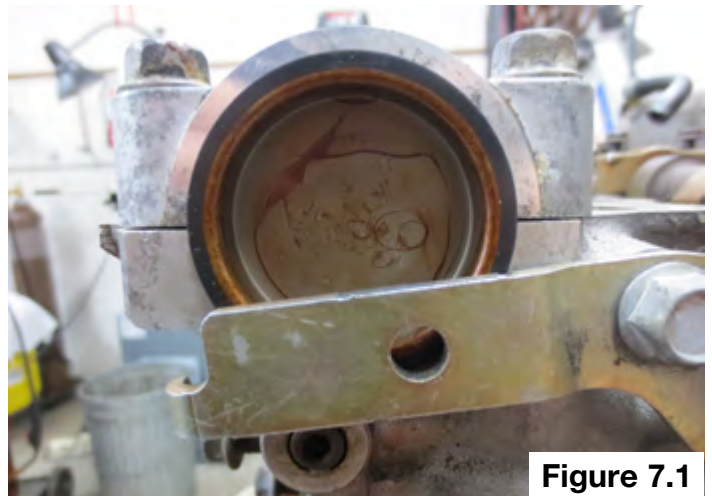


Figure 7.1

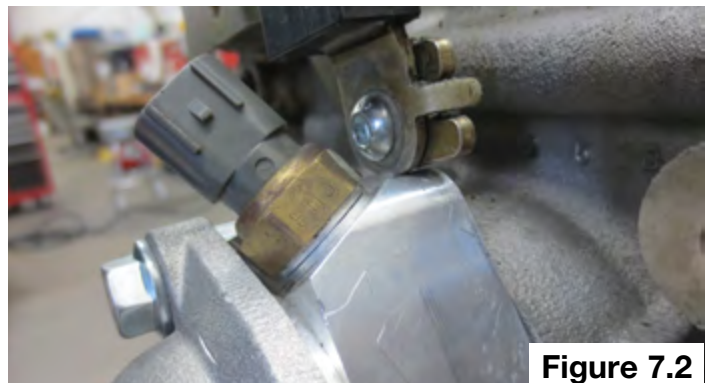


Figure 7.2

Installation Instructions

Note: When re-installing this bracket, the coolant reroute spacer may interfere slightly with the bracket. This is not a problem. The plug is a press fit; the bracket is only there to serve as a backup in case the plug were to somehow back itself out. As long as the bracket has some coverage over the plug it will serve its intended purpose. Simply clock the CAS blanking plug bracket slightly off the reroute spacer.

8. Remove the temp sensor using a 19mm deep socket.
9. Remove the electrical connector for the Mass Air Flow Sensor. Loosen the air intake duct and remove the two 12mm bolts retaining the factor air filter box, **Figure 9.1**. Remove the exhaust manifold heat shield to gain access to the EGR tube, **Figure 9.2**.



Figure 9.1



Figure 9.2

10. Loosen the EGR tube nut using a 7/8" or 22mm wrench. **Figure 10**.



Figure 10

11. Loosen the two 10mm nuts at the back of the intake manifold. Remove the stock EGR tube by rotating upwards to clear the intake, then counter-clockwise, **Figure 11.1** and **Figure 11.2**.



Figure 11.1



Figure 11.2

12. Remove the heater hose clamp and heater hose from the water neck at the rear of the cylinder head by the firewall. Inspect the heater hose. Replace the heater hose and clamp if they are old or in poor condition to ensure against leaks. **Figure 12.**

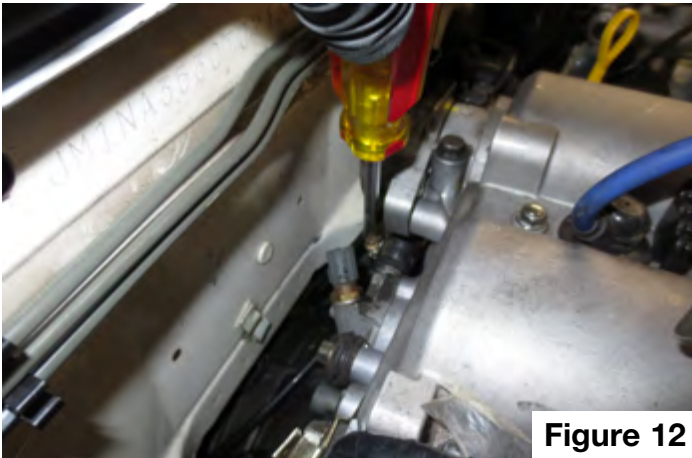


Figure 12

13. Remove the 12mm nut and bolt retaining the heater hose water neck at the rear of the cylinder head. Remove the heater hose water neck and set aside. Remove the stud from the rear of the cylinder head (Use double nut method. The other nut can be sourced from the front thermostat housing see step 12). Thoroughly remove all old gasket material with a razor blade and clean the mating surface. Take your time and clean thoroughly. It is helpful to use a telescoping mirror to clearly see the mating surface. Be sure that all old gasket material is removed. **Figure 13.**



Figure 13

14. Remove and discard the upper radiator hose. **Figure 14.**



Figure 14

15. Remove the 12mm nut and bolt retaining the thermostat housing at the front of the engine. Remove the housing and set the thermostat aside, **Figure 15.** Inspect the thermostat, you may wish to replace the thermostat at this time if there is any doubt that it is functioning properly. The thermostat will be more difficult to access when this modification is completed. Remove the stud from the housing and set aside. Thoroughly clean the gasket sealing surface.



Figure 15

Installation Instructions

Installation:

16. Apply a new thermostat gasket to the provided block off plate and install in the former thermostat housing location using the provided M8 bolts. Torque to 16 ft.-lbs. **Figure 16.**



Figure 16

17. Install the provided heater hose barb in the reroute spacer. The extra hole in the spacer is provided for an aftermarket coolant temperature sensor. Use the provided 1/8" NPT brass plug if you will not be installing another sensor. The heater hose barb and brass plug are pipe thread which means they seal on the threads and do not bottom out. Excessive torque may crack the reroute spacer or cause damage to the parts being threaded in. Transfer the two-wire coolant temperature sensor with washer from the old heater hose water neck to the new radiator hose water neck. Thread the sensor into the new spacer a few threads but do not tighten down at this time. You will use the loose sensor to bleed out air while filling the cooling system. **Figure 17.**



Figure 17

18. Install the thermostat in the recessed groove in the spacer as shown with the air bleed hole at the top as shown. The bleed hole should be clocked so that it is closest to the factory coolant temp sensor. Peel off the backing and stick a new thermostat gasket on both sides of the reroute spacer. The gasket should overlap over the thermostat slightly and help hold it in place. The bleed hole in the thermostat should be clocked so that it is closest to the factory coolant sensor. Place the new radiator hose outlet neck on the spacer oriented with the outlet neck opposite the heater hose barb as shown. **Figure 18.**

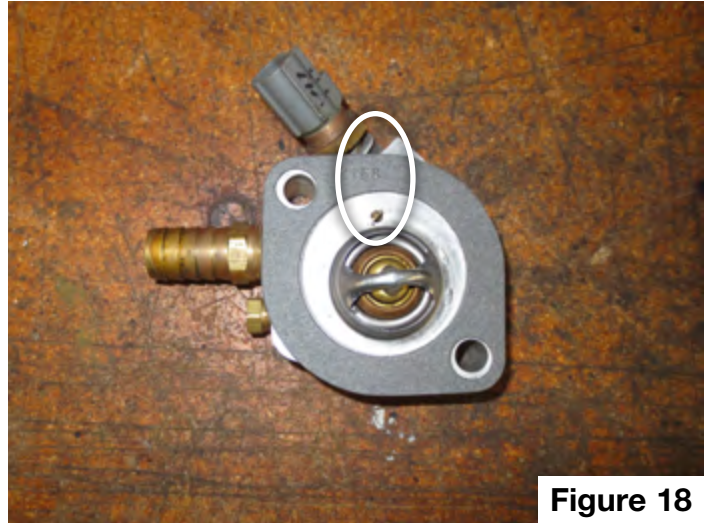


Figure 18

19. Check that your 19mm deep socket will fit on the coolant temp sensor. If your socket is thicker, you may need to grind a small amount of material where shown to make clearance for the socket.

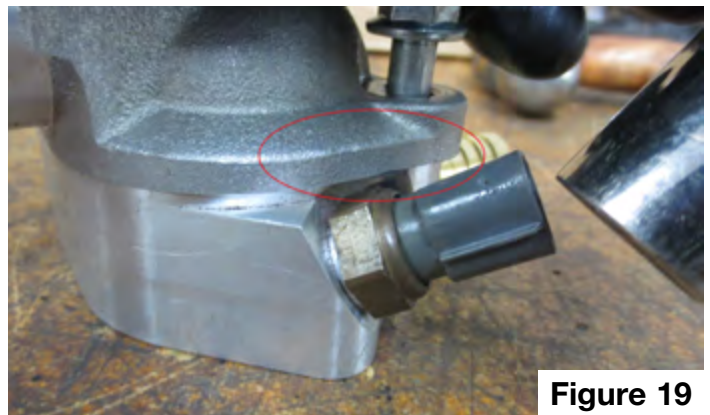


Figure 19

20. Install the assembly on the rear of the engine, ensuring the coolant temp sensor is on top and the radiator hose outlet is facing towards the intake side of the engine. Insert the 75mm and 50mm M8 bolts and keep the assembly sandwiched tightly together make sure the thermostat hasn't fallen out of it's recessed groove as you tighten the bolts to 16 ft.-lbs.



Figure 20

99-05 Miatas will not have a bracket here. Instead, attach a P clamp directly to the unused threaded hole in the intake manifold using the shortest M6 bolt. See **Figure 22.2**.

WARNING: The hose may move slightly with heat and pressure. Be sure that the hose is safely secured well clear of the throttle linkage!

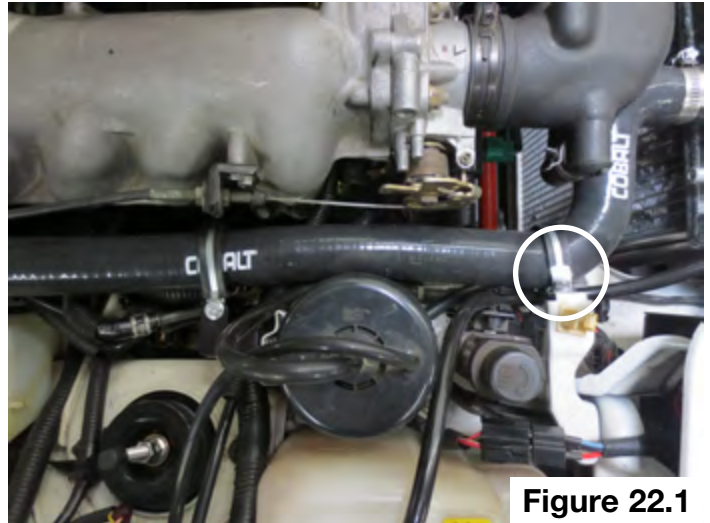


Figure 22.1

21. Install the heater hose to the heater barb on the spacer. Install the reroute radiator hose in the newly installed thermostat outlet and route hose to the radiator. **Figure 21**.

Note: The reroute radiator hose will need to be trimmed to fit at the radiator end for 1994-1997 applications.



Figure 21

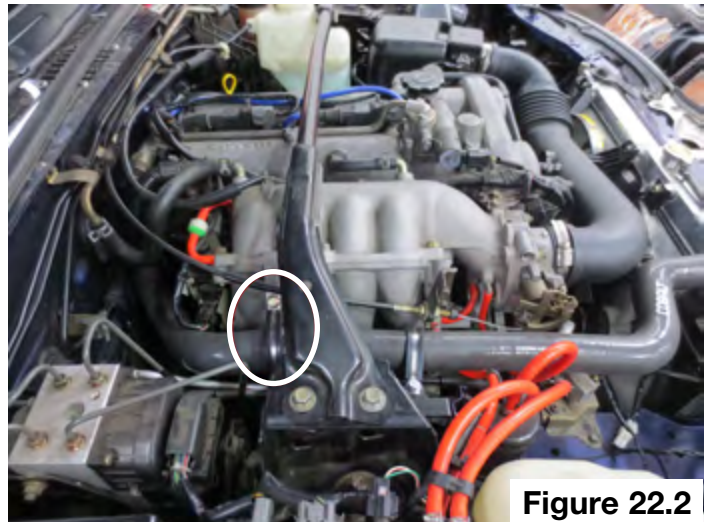


Figure 22.2

22. Remove the EVAP canister by sliding it upward off the bracket. Install the provided hose support bracket using an M6 Bolt and nut as shown. Slide the EVAP canister back into the housing. Install a P-clamp in the bracket as shown. A/C equipped vehicles will have a relay bracket at the location indicated in **Figure 22.1**. Remove this bracket (if equipped) and secure the relay out of the way with a zip-tie. Install a P-clamp as shown using the shortest M6 bolt.

Installation Instructions

23. Attach the spill-free funnel if you have one. Fill the cooling system slowly while watching for coolant at the coolant temp sensor. Continue filling until all air has bled out of the coolant temp sensor hole, then torque the sensor to 20 ft-lbs with a 19mm deep socket. **Figure 23.** Continue filling radiator until full and check for leaks. Top off coolant overflow tank. If you have a cooling system pressure tester, pressure test now to ensure there are no leaks.



Figure 23

24. Fit the new EGR tube behind the engine, apply anti-seize to the EGR tube threads on the exhaust manifold and thread the large tube nut on loosely. Leave the other end of the EGR tube loose at the intake manifold. If you tighten down the EGR tube at this time it will be difficult or impossible to install the lower bolt for the coil bracket. **910-855 does not include this tube.**
25. Install the two-wire coolant temp (ECM) connector. Connect the one-wire coolant temp sensor wire to the sensor. Install the special cam sensor retaining bolt and tighten to 16 ft.-lbs (94-97 models only). On 01-05 models reinstall the CAS blanking plug bracket and connector.

26. Reinstall coil bracket to rear of engine. The lower bolt must be replaced with the provided button head bolt for EGR tube clearance. Install with a 5 mm allen wrench. **910-855 does not include this button head bolt. (Optional)** The coil bracket can be modified to greatly ease future removal and installation if desired. Remove the coil bracket from the vehicle. Lubricate the rubber bushing with silicone spray. Remove the metal sleeve and carefully pry out the rubber bushing with a flathead screwdriver. **Figure 26.1.** The rubber is old and easily damaged. Grind out the fork as shown so that it will easily slide down onto the rubber bushing, **Figure 26.2.** Insert the metal sleeve back into the rubber bushing and install on the back of the

engine using the provided button head bolt. **Figure 26.3.**

Ensure that the bushing is oriented correctly. The raised part of the bushing shown in **Figure 26.4** should be facing down so it does not contact the fork on the coil bracket. Install the coil bracket on the rear of the valve cover by simply sliding it down onto the bushing and then tightening the two easily accessible bolts into valve cover. **Figure 26.5.**

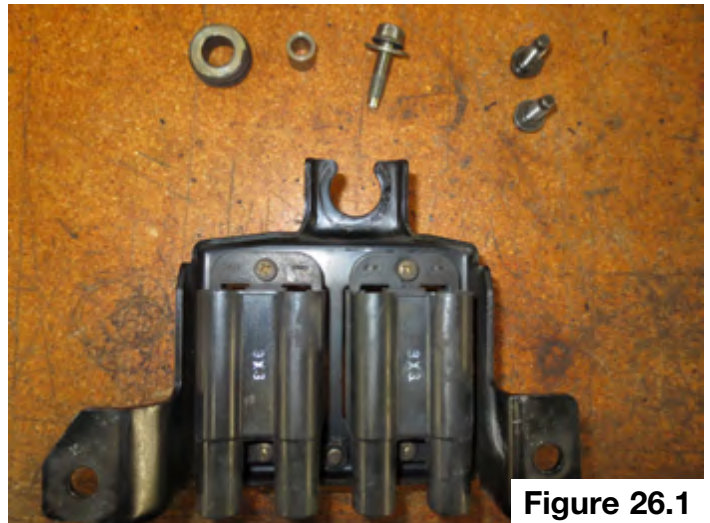


Figure 26.1

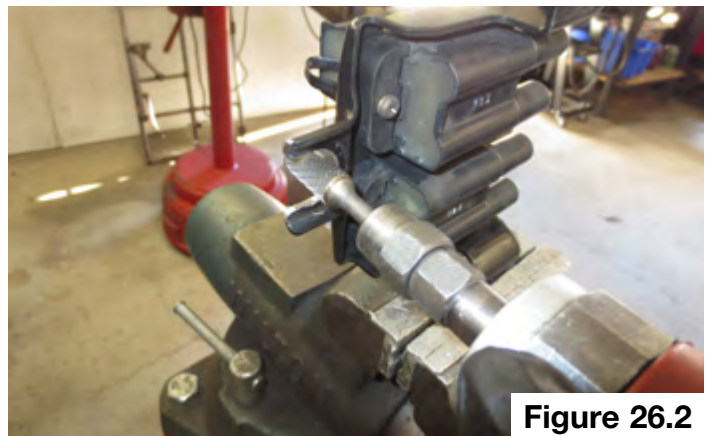


Figure 26.2



Figure 26.3

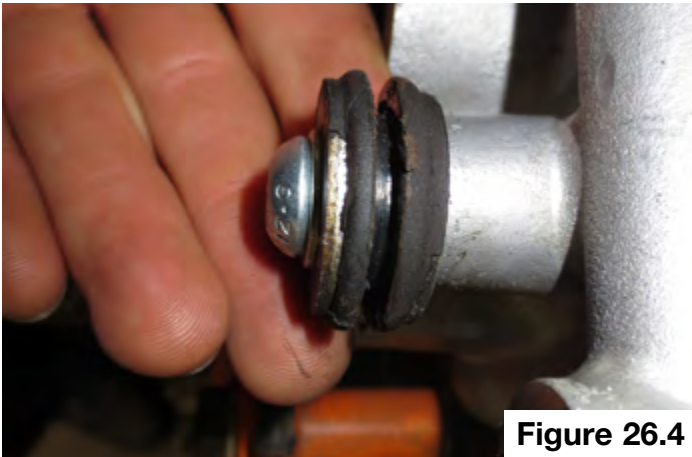


Figure 26.4



Figure 26.5

31. Start engine. Run vehicle at idle with radiator cap off (or with funnel attached) to bleed any remaining air from the cooling system. Do this with the front of the car still elevated on jack stands to help trapped air make its way to the radiator filler neck. The new upper hose will suddenly become warm to the touch when the thermostat opens. Once this happens any air trapped behind the thermostat will be pulled through the hose into the radiator. It may take a few cycles of the thermostat opening and then adding coolant to fully bleed all air from the system. Once the upper hose becomes warm, install radiator cap. Check/reset ignition timing to factory specs 10 deg BTDC. Timing must be checked with all loads off, vehicle idling at full operating temp, and check connector shorted from TEN to GRD. **Timing must be set correctly or severe engine damage may result!** Consult service information if further information is required.
32. Test drive vehicle while closely monitoring temperature and re-check for leaks. Allow engine to fully cool down overnight and recheck that radiator and overflow tank are full. Top off as necessary and enjoy your cooler running Miata!

27. Install and tighten the two 10mm nuts securing the EGR tube to the intake and then the large tube nut. Reinstall the exhaust manifold heat shield and the air filter box. Reinstall the harness for the Mass Air Flow Sensor.

28. Reconnect the oxygen sensor and Camshaft Position Sensor harnesses. **Figure 28.**



Figure 28

29. Reconnect the vacuum line for the brake booster at the intake and install the two 10mm bolts holding the metal vacuum line in place.

30. Reinstall the air intake tube, PCV breather hose and IAC hose.

Installation Instructions

910-850, 910-855, 910-856 Bill of Materials

Item No.	Description	Quantity
772-910	SPACER, COOLANT REROUTE	1
772-913	WATER NECK, COOLANT REROUTE	1
910-851	HOSE, COOLANT RE-ROUTE	1
051-132	HOSE BARB, 3/8 NPT X 5/8	1
051-203	PLUG, PIPE, 1/8 NPT, HEX HEAD	1
772-911	PLATE, COOLANT BLOCK OFF	1
051-860	BOLT, HEX FLANGE, M8 X 1.25 X 16	1
051-730	BOLT, HEX FLANGE, M8 X 1.25 X 50	1
771-330	BOLT, HEX FLANGE, M8 X 1.25 X 75	1
999-023	GASKET/T-STAT 160 DEGREE	3
051-810	P-CLAMP, 1.625IN. ID	2
772-947	BRACKET, HOSE	1
051-004	BOLT, HEX FLANGE, M6 X 1.0 X 16	2
051-787	NUT, HEX FLANGE, M6 X 1.0	2
051-074	WASHER, FLAT, M8	1
051-003	BOLT, HEX FLANGE, M6 X 1.0 X 12	1
772-631	INSTRUCTIONS FOR 901-850	1
052-947	BOLT, BHCS, M8X1.25X25, ZINC (910-850 and 910-856 Only)	1
772-956	TUBE, EGR, COOLANT REROUTE (910-850 Only)	1
771-955	TUBE, EGR, COOLANT REROUTE (910-856 Only)	1
052-668	BHCS, M6 x 12 x 1.0 (910-855 and 910-856 Only)	1

Although every effort has been made to ensure the accuracy and clarity of this information, any suggestions that you may have that will improve the information (especially detailed installation notes and photos) are welcome. These instructions were developed and written by Moss Technical Support. If you have any questions or difficulties with your installation of this product, telephone 800-667-7872 between 7:00 a.m. and 4:00 p.m., Pacific Time for assistance.

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