

Service Manual: ENGINE COOLING SYSTEM

DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION

The cooling system regulates engine operating temperature. It allows the engine to reach normal operating temperature as quickly as possible, maintains normal operating temperature and prevents overheating.

The cooling system also provides a means of heating the passenger compartment and cooling the engine oil. The cooling system is pressurized and uses a centrifugal water pump to circulate coolant throughout the system. A separate and remotely mounted, pressurized coolant bottle is used.

- When the engine is cold the thermostat is closed. The cooling system has no flow through the radiator or engine oil cooler. The coolant flows through the engine, water pump, and passenger compartment heater core.
- When the engine is warm the thermostat is full open. Coolant flows through the engine, radiator, engine oil cooler, passenger compartment heater core, and water pump.

The cooling system consists of:

- Electric cooling fan
- Radiator
- A pressurized coolant de-aeration bottle
- Thermostat
- Water pump
- Engine Coolant Temperature (ECT) sensor
- Cooling system pressure cap
- Coolant
- Engine oil cooler
- Hoses and hose clamps
- Thermostat housing assembly

DIAGNOSIS AND TESTING > COOLING SYSTEM DIAGNOSIS

CONDITION	POSSIBLE CAUSE	CORRECTION
TEMPERATURE GAUGE READS LOW	1. Diagnostic Trouble Code (DTC) has been set indicating a stuck open engine thermostat.	1. Replace the thermostat, if directed by DTC diagnosis. Refer to THERMOSTAT, REMOVAL AND

		INSTALLATION . If a DTC has not been set, the problem may be with the temperature gauge.
	2. Engine Coolant Temperature (ECT) sensor.	2. Check connector at Engine Coolant Temperature (ECT) sensor. Repair as necessary.
	3. Inoperative temperature gauge.	3. Check gauge operation. Refer to DESCRIPTION AND OPERATION .
	4. Coolant level low during cold ambient temperature, accompanied by poor heater performance.	4. Check coolant level in the pressurized coolant bottle. Inspect the system for leaks. Refer to LEAK TESTING . Repair as necessary. Refer to all WARNINGS in this Service Information before removing the pressure cap.
TEMPERATURE GAUGE READS HIGH OR ENGINE COOLANT WARNING LAMP ILLUMINATES. COOLANT MAY OR MAY NOT BE LOST FROM SYSTEM.	1. Trailer being towed, a steep hill being climbed, vehicle being operated in slow moving traffic, or engine idling during high ambient (outside) temperatures with air conditioning on. High altitudes could also cause these conditions.	1. This may be a temporary condition and repair is not necessary. Turn off the air conditioning and drive the vehicle without any of the previous conditions. Observe the temperature gauge. The gauge should return to the normal range. If the gauge does not return to the normal range, determine the cause of the overheating and repair.
	2. Inoperative temperature gauge.	2. Check gauge operation. Refer to DESCRIPTION AND OPERATION .
	3. Is temperature warning lamp (if equipped) illuminating unnecessarily?	3. Check warning lamp operation. Refer to DESCRIPTION AND OPERATION .
	4. Coolant level low in pressurized coolant bottle?	4. Check for coolant leaks and repair as necessary. Refer to LEAK TESTING .
	5. Pressure cap not installed tightly. If cap is loose, boiling point of coolant will be lowered. Also refer to the following step 6.	5. Tighten cap.
	6. Poor seals at pressure cap.	6. (a) Check condition of cap and cap seals. Refer to CAP, RADIATOR, DIAGNOSIS AND

		TESTING . Replace cap if necessary.
		(b) Check condition of filler neck. If neck is warped or damaged, replace the pressurized coolant bottle. Refer to BOTTLE, PRESSURIZED COOLANT, REMOVAL AND INSTALLATION .
	7. Freeze point of coolant not correct. Mixture ratio may be too rich.	8. Check coolant concentration. Refer to COOLANT, DIAGNOSIS AND TESTING . Adjust glycol-to-water ratio as required.
	8. Coolant not flowing through system.	9. Check for coolant flow in the pressurized coolant bottle with some coolant removed, engine warm, and thermostat open. Coolant should be observed flowing into the bottle. If flow is not observed, determine the reason for lack of flow and repair as necessary.
	9. Radiator air seals missing or improperly installed.	10. Inspect air seals. Correct as necessary.
	10. Radiator or A/C condenser fins are dirty or clogged.	11. Clean obstruction from fins.
	11. Radiator core is plugged or corroded.	12. Clean or replace the radiator. Refer to RADIATOR, ENGINE COOLING, REMOVAL AND INSTALLATION .
	12. Fuel or ignition system problems.	1. Refer to appropriate Powertrain Diagnostic Procedures. Repair as necessary.
	13. Dragging Brakes.	14. Inspect the brake system and repair as necessary. Refer to DIAGNOSIS AND TESTING .
	14. Bug screen or other aftermarket accessory is being used causing reduced air flow.	15. Remove bug screen or accessory.
	15. Thermostat partially or completely closed.	16. Check thermostat operation and replace as necessary. Refer to THERMOSTAT, REMOVAL AND INSTALLATION .

	16. Cooling fan not operating properly.	17. Check electric fan operation and repair as necessary.
	17. Cylinder head gasket leaking.	18. Check cylinder head gasket for leaks. Refer to LEAK TESTING .
	18. Heater core leaking.	19. Check heater core for leaks.
TEMPERATURE GAUGE READING IS INCONSISTENT (FLUCTUATES, CYCLES OR IS ERRATIC)	1. The gauge may cycle up and down. This is due to the cycling of the electric radiator fan.	1. A normal condition. No correction is necessary. If gauge cycling is the hot zone, check electric fan operation and repair as necessary.
	2. During cold weather operation with the heater blower in the high position, the gauge reading may drop slightly.	2. A normal condition. No correction is necessary.
	3. Temperature gauge or Engine Coolant Temperature (ECT) sensor is defective or shorted.	3. Check gauge operation. Refer to DESCRIPTION AND OPERATION .
	4. Gauge reading rises when vehicle is brought to a stop after heavy use (engine still running).	4. A normal condition. No correction is necessary. The gauge should return to normal range after vehicle is driven.
	5. Gauge reading high after restarting a warmed-up (hot) engine.	5. A normal condition. No correction is necessary. The gauge should return to normal range after a few minutes of engine operation.
	6. Coolant level low in radiator (air will build up in the cooling system causing the thermostat to open late).	6. Check and correct coolant leaks. Refer to LEAK TESTING .
	7. Cylinder head gasket leaking allowing exhaust gas to enter cooling system. This will cause thermostat to open late.	7. (a) Check for cylinder head gasket leaks. Refer to LEAK TESTING . Repair as necessary.
		(b) Check for coolant in the engine oil. Inspect for white steam emitting from exhaust system. Repair as necessary.
	8. Water pump impeller loose on shaft.	8. Check water pump and replace as necessary. Refer to PUMP, WATER, REMOVAL AND INSTALLATION .

	9. Air leak on the suction side of water pump allows air to build up in cooling system. This will cause the thermostat to open late.	9. Locate leak and repair as necessary.
PRESSURE CAP IS BLOWING OFF STEAM AND/OR COOLANT FLOWING INTO PRESSURIZED COOLANT BOTTLE. TEMPERATURE GAUGE READING MAY BE ABOVE NORMAL, BUT NOT HIGH. COOLANT LEVEL MAY BE HIGH IN THE BOTTLE.	1. Pressure relief valve in pressure cap is defective.	1. Check condition of pressure cap and seals. Refer to CAP, RADIATOR, DIAGNOSIS AND TESTING . Replace as necessary.
COOLANT LOSS TO THE GROUND WITHOUT PRESSURE CAP BLOWOFF. GAUGE IS READING HIGH OR HOT.	1. Coolant leaks in radiator, cooling system hoses, water pump or engine.	1. Pressure test cooling system and repair as necessary. Refer to LEAK TESTING .
DETONATION OR PRE-IGNITION (NOT CAUSED BY IGNITION SYSTEM). GAUGE MAY OR MAY NOT BE READING HIGH.	1. Engine overheating.	1. Check reason for overheating and repair as necessary.
	2. Freeze point of coolant not correct.	2. Check the freeze point of the coolant. Refer to COOLANT, DIAGNOSIS AND TESTING . Adjust glycol-to-water ratio as required.
HOSE OR HOSES COLLAPSE WHEN ENGINE IS COOLING	1. Vacuum created in cooling system on engine cool-down is not being relieved through the pressure cap relief valve.	1. (a) Pressure cap relief valve stuck. Refer to CAP, RADIATOR, DIAGNOSIS AND TESTING . Replace as necessary.
		(b) Vent in pressure cap is plugged. Clean vent and repair as necessary.
		(c) Pressurized coolant bottle is internally blocked or plugged. Check for blockage and repair as necessary.
RADIATOR FAN OPERATES ALL THE TIME	1. Malfunctioning electrical component or circuit.	1. Refer to appropriate Powertrain Diagnostic Procedures. Repair as necessary.
	2. Check for low coolant level.	2. Repair as necessary.
RADIATOR FAN WILL NOT OPERATE, GAUGE READING HIGH OR HOT	1. Fan motor defective.	1. Refer to appropriate Powertrain Diagnostic information for operation of the scan tool. Repair as necessary.

	2. Fan control circuit, powertrain control module (PCM) or engine coolant temperature sensor defective.	2. Refer to appropriate Powertrain Diagnostic information for operation of the scan tool. Repair as necessary.
	3. Blown fuse in power distribution center (PDC).	3. Determine cause for blown fuse and repair as necessary.
NOISY FAN	1. Fan blade loose.	1. Replace the engine cooling fan assembly. Refer to FAN, COOLING, REMOVAL AND INSTALLATION .
	2. Fan blade striking a surrounding object.	2. Locate point of fan blade contact and repair as necessary.
	3. Air obstructions at radiator or A/C condenser.	3. Remove obstructions and/or clean debris from radiator and/or A/C condenser.
	4. Electric fan motor defective.	4. Replace the engine cooling fan assembly. Refer to FAN, COOLING, REMOVAL AND INSTALLATION .
INADEQUATE AIR CONDITIONER PERFORMANCE (COOLING SYSTEM SUSPECTED)	1. Electric radiator fan not operating when A/C is on.	1. Refer to appropriate Powertrain Diagnostic information for operation of the scan tool. Repair as necessary.
	2. Radiator and/or air conditioning condenser is restricted, obstructed or dirty.	2. Remove restriction and/or clean as necessary.
	3. Radiator air seals missing or improperly installed.	3. Inspect air seals. Repair as necessary.
	4. Engine is overheating (heat may be transferred from radiator to A/C condenser). High underhood temperature due to engine overheating may also transfer heat to A/C components.	4. Correct overheating condition. Refer to ENGINE COOLING SYSTEM OVERHEATING .
INADEQUATE HEATER PERFORMANCE	1. Has a diagnostic trouble code (DTC) been set?	1. Refer to appropriate Powertrain Diagnostic Procedures.
	2. Coolant level low.	2. Check cooling system for leaks. Refer to LEAK TESTING . Repair as necessary.
	3. Obstructions in heater hose fittings at engine.	3. Remove heater hoses at both ends and check for obstructions. Repair as necessary.

	4. Heater hose kinked.	4. Locate kinked area and repair as necessary.
	5. Water pump is not pumping coolant through the heater core. When the engine is fully warmed up, both heater hoses should be hot to the touch.	5. Check accessory drive belt operation. Repair as necessary.
HEAT ODOR	1. Various heat shields are used at certain components. One or more of these shields may be missing.	1. Locate missing shields and replace or repair as necessary.
	2. Is temperature gauge reading above the normal range?	2. Check gauge operation. Refer to DESCRIPTION AND OPERATION .
	3. Is cooling fan operating correctly?	3. Repair as necessary.
	4. Has undercoating been applied to any unnecessary component.	4. Clean undercoating as necessary.
	5. Engine may be running rich causing the catalytic converter to overheat.	5. Refer to appropriate Powertrain Diagnostic information for operation of the scan tool. Repair as necessary.
POOR DRIVEABILITY (THERMOSTAT POSSIBLY STUCK OPEN). GAUGE MAY BE READING LOW	1. Has a diagnostic trouble code (DTC) been set?	1. Refer to the Powertrain Diagnostic information for checking a DTC related to the thermostat.
STEAM IS COMING FROM FRONT OF VEHICLE NEAR GRILLE AREA WHEN WEATHER IS WET, ENGINE IS WARMED UP, RUNNING, AND VEHICLE IS STATIONARY. TEMPERATURE GAUGE IS IN NORMAL RANGE.	1. During wet weather, moisture (snow, ice or rain condensation) on the radiator will evaporate when the thermostat opens. This opening allows heated water into the radiator. When the moisture contacts the hot radiator, steam may be emitted. This usually occurs in cold weather with no fan or airflow to blow it away.	1. Occasional steam emitting from this area is normal. No repair is necessary.
COOLANT COLOR	1. Coolant color is not necessarily an indication of adequate corrosion or temperature protection. Do not rely on coolant color for determining condition of coolant.	1. Check the freeze point of the coolant. Refer to COOLANT, DIAGNOSIS AND TESTING . Adjust the glycol-to-water ratio as required.

COOLANT LEVEL CHANGES IN COOLANT RECOVERY/RESERVE BOTTLE	1. Level changes are to be expected as coolant volume fluctuates with engine temperature. If the level in the bottle was between the FULL HOT and ADD marks at normal engine operating temperature, the level should return to within that range after operation at elevated temperatures.	1. A normal condition. No repair is necessary.
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DIAGNOSIS AND TESTING > AERATION

If coolant level drops below a certain point, aeration will occur drawing air into the water pump resulting in the following:

- High reading shown on the temperature gauge.
- Loss of coolant flow through the heater core.
- Corrosion in the cooling system.
- Water pump seal may run dry, increasing the risk of premature seal failure.



NOTE:

Combustion gases leaking into the coolant can also cause the above problems.

DIAGNOSIS AND TESTING > DEAERATION

As air is removed from the cooling system, it gathers in the pressurized coolant bottle. This pressure is released into the atmosphere through the pressure valve located in the radiator pressure cap when pressure reaches 1.4 bar (20.3 psi).



NOTE:

Deaeration does not occur at engine idle, higher engine speeds are required. Normal driving will deaerate the cooling system.

To effectively deaerate the system, multiple thermal cycles of the system may be required.

DIAGNOSIS AND TESTING > ENGINE COOLING SYSTEM OVERHEATING

Establish what driving conditions caused the complaint. Abnormal loads on the cooling system such as the following may be the cause:

- Prolonged idle in a confined location
- Very high ambient temperature
- Slow traffic
- Traffic jams
- High speed or steep grades
- Trailer towing
- Debris on front of the grill or the cooling module that are restricting airflow

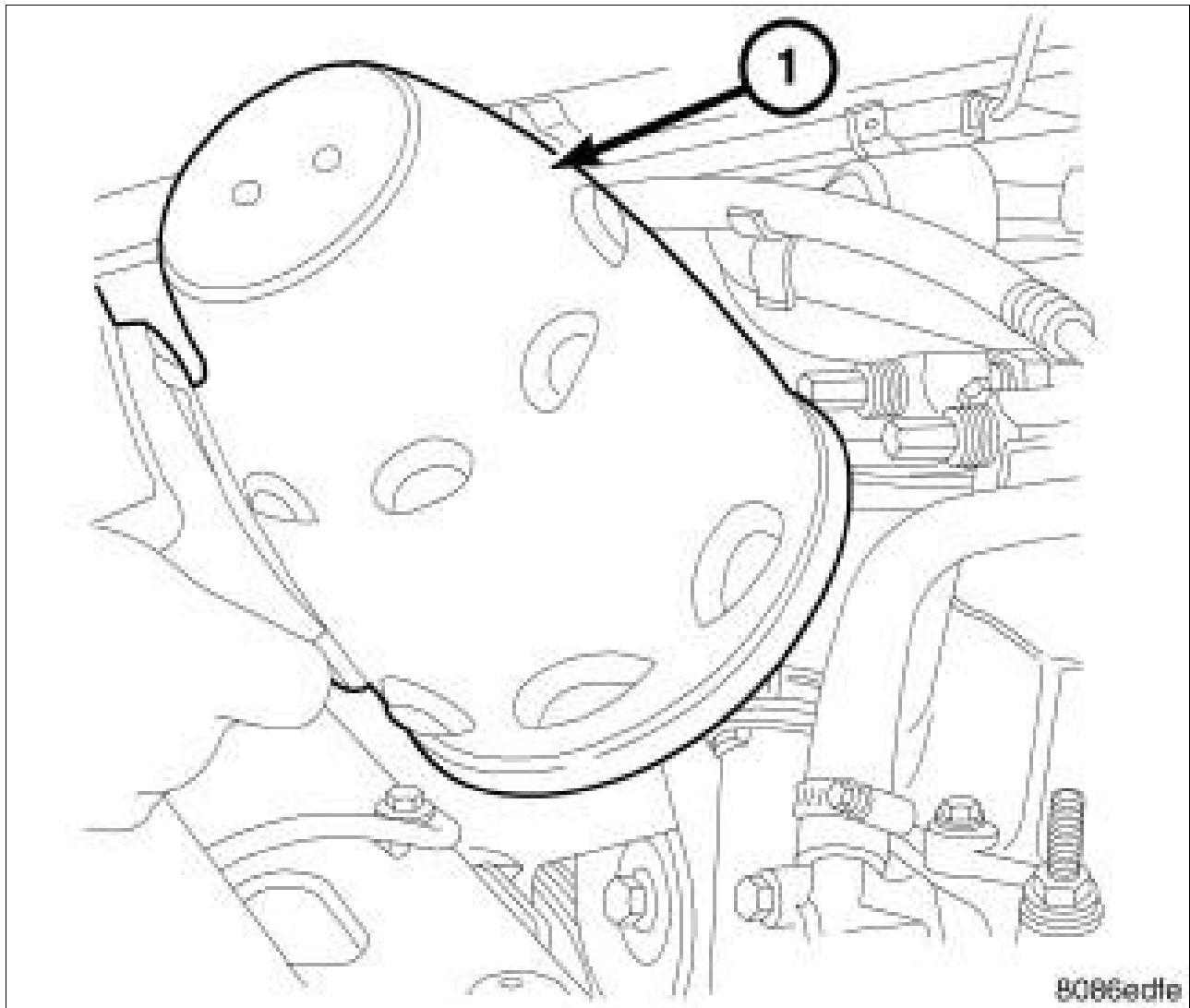


NOTE:

Idling the engine with A/C off may be a driving technique that avoids overheating.

DIAGNOSIS AND TESTING > LEAK TESTING > ULTRAVIOLET LIGHT METHOD

Fig 1: Ultraviolet Light



Courtesy of CHRYSLER GROUP, LLC

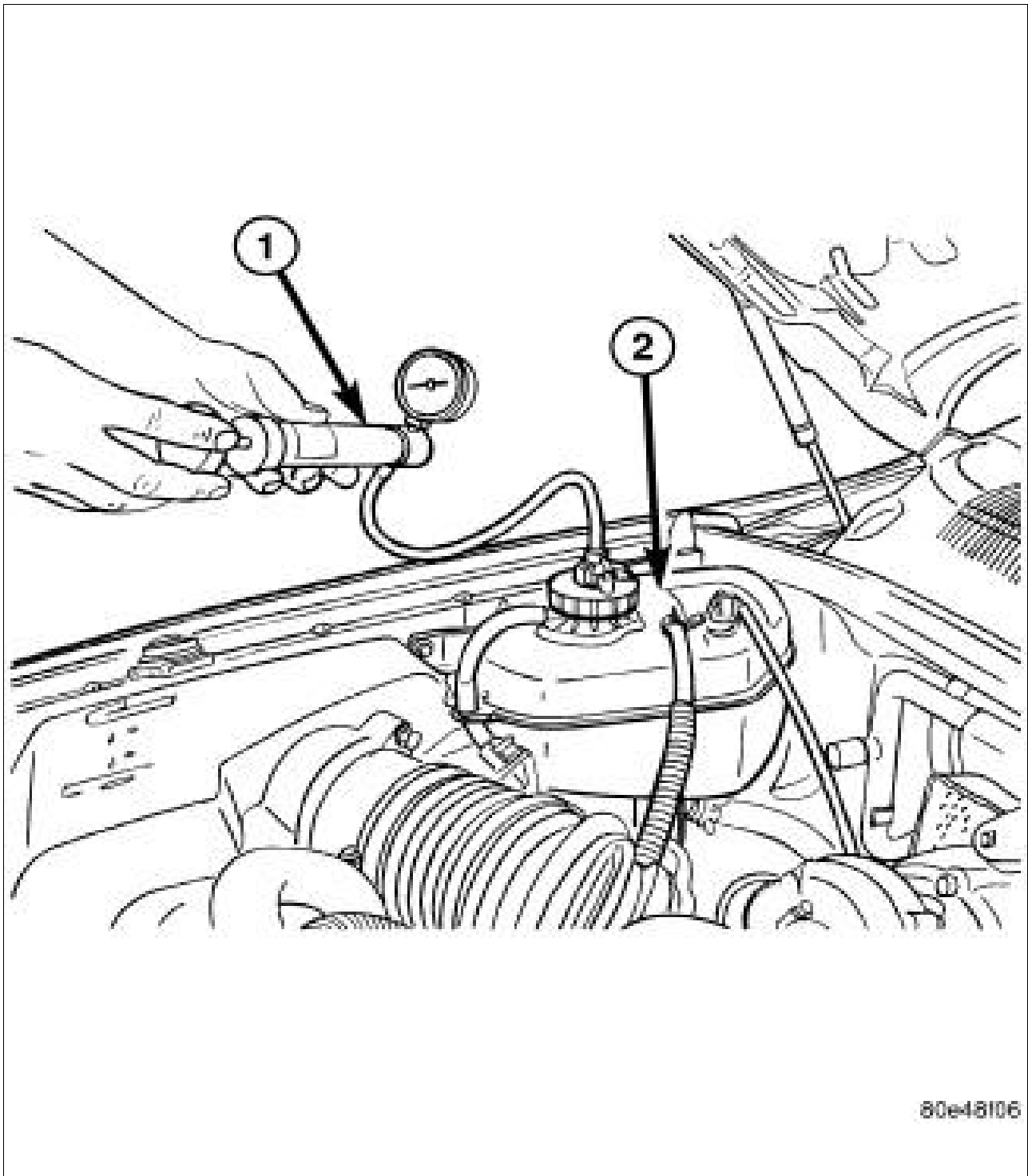
1 - TYPICAL BLACK LIGHT TOOL

A leak detection additive is available through the parts department that can be added to cooling system. The additive is highly visible under ultraviolet light (black light) (1). Pour one ounce of additive into cooling system. Place heater control unit in HEAT position. Start and operate the engine until the radiator upper hose is warm to the touch. Aim the commercially available black light tool at the components to be checked. If leaks are present, the black light will cause the additive to glow a bright green color.

The black light can be used in conjunction with a pressure tester to determine if any external leaks exist.

DIAGNOSIS AND TESTING > LEAK TESTING > PRESSURE TESTER METHOD

Fig 1: Cooling Pressure Tester & Pressurized Coolant Bottle



Courtesy of CHRYSLER GROUP, LLC

The engine should be at normal operating temperature. Recheck the system cold if cause of coolant loss is not located during the warm engine examination.

 WARNING:

Hot, pressurized coolant can cause injury by scalding.

Carefully remove the pressure cap. Wipe inside of filler neck and examine lower inside sealing seat for nicks, cracks, paint, dirt and residue.

Inspect the outside of the filler neck. If damaged, seating of the pressure cap valve and tester seal will be affected.

Attach (special tool #7700, Tester, Cooling System) (1) or an equivalent to the pressurized coolant bottle (2).

Operate tester pump to apply 103.4 kPa (15 psi) pressure to system. If hoses enlarge excessively or bulges while testing, replace as necessary. Observe gauge pointer and determine condition of cooling system according to following criteria:

Holds Steady: If pointer remains steady for two minutes, serious coolant leaks are not present in system. However, there could be an internal leak that does not appear with normal system test pressure. If it is certain that coolant is being lost and leaks cannot be detected, inspect for interior leakage or perform the Internal Leakage Test. Refer to INTERNAL LEAKAGE INSPECTION .

Drops Slowly: Indicates a small leak or seepage is occurring. Examine all connections for seepage or slight leakage with a flashlight. Inspect radiator, hoses, gasket edges and heater. Seal small leak holes with a Sealer Lubricant (or equivalent). Repair leak holes and inspect system again with pressure applied.

Drops Quickly: Indicates that serious leakage is occurring. Examine system for external leakage. If leaks are not visible, inspect for internal leakage.

DIAGNOSIS AND TESTING > LEAK TESTING > INTERNAL LEAKAGE INSPECTION

Remove the engine oil pan drain plug and drain a small amount of engine oil. If coolant is present in the pan, it will drain first because it is heavier than oil. An alternative method is to operate the engine for a short period to churn the oil. After this is done, remove the engine dipstick and inspect for water globules.

 WARNING:

With radiator pressure tester tool installed on radiator, do not allow pressure to exceed 145 kPa (21 psi). Pressure will build up quickly if a combustion leak is present. To release pressure, rock tester from side to side. When removing tester, do not turn tester more than 1/2 turn if system is under pressure.

Operate the engine without the pressure cap on the pressurized coolant bottle until the thermostat opens. Attach a Pressure Tester to the filler neck. If pressure builds up quickly it indicates a combustion leak exists. This is usually the result of a cylinder head gasket leak or a crack in the engine. Repair as necessary.

If there is not an immediate pressure increase, pump the Pressure Tester. Do this until indicated pressure is within the system range of 110 kPa (16 psi). Fluctuation of the gauge pointer indicates compression or combustion leakage into the cooling system.

Because the vehicle is equipped with a catalytic converter, **do not** short out cylinders to isolate the compression leak.

If the needle on the dial of the pressure tester does not fluctuate, race engine a few times to check for an abnormal amount of coolant or steam. This would be emitting from the exhaust pipe. Coolant or steam from the exhaust pipe may indicate a faulty cylinder head gasket, cracked engine cylinder block or cylinder head.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > DRAINING - 1.4L MULTIAIR TURBO



NOTE:

Make sure the coolant is not HOT and under pressure.

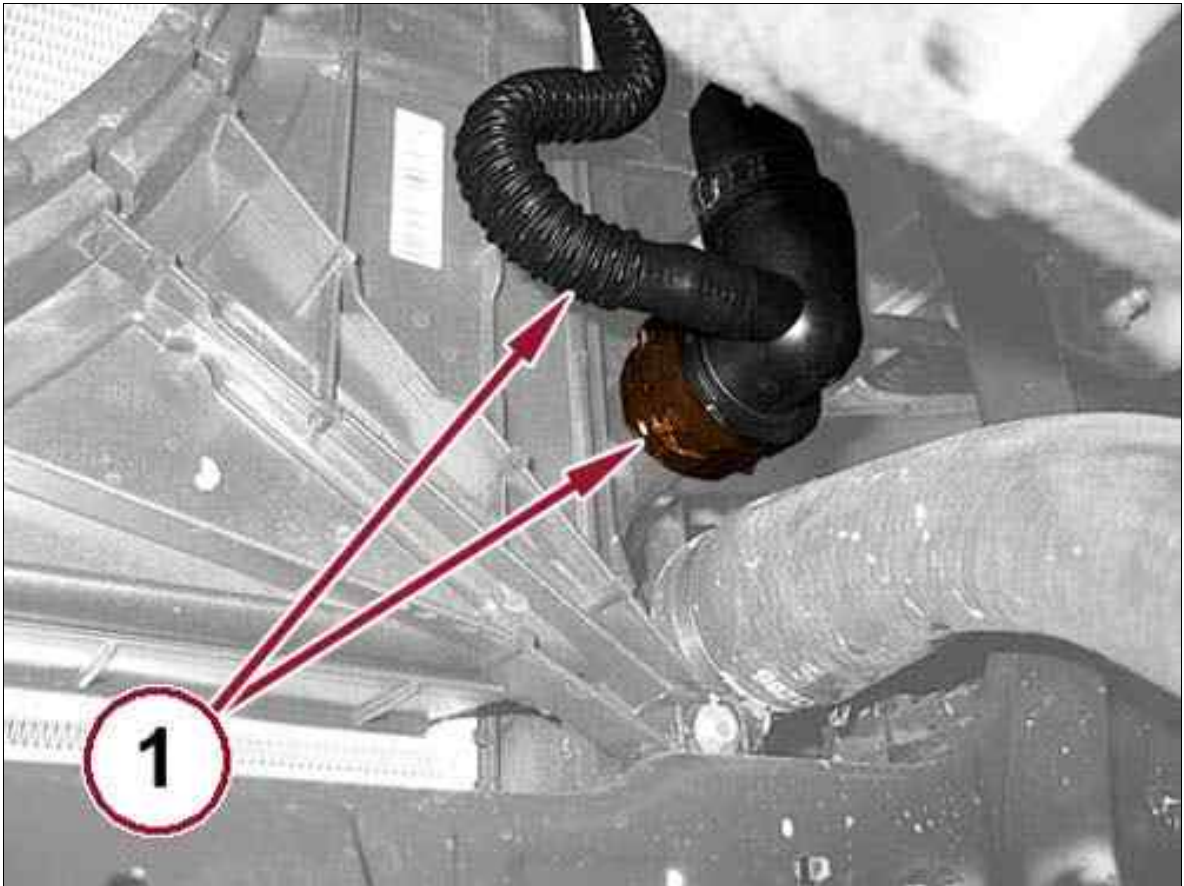


NOTE:

DO NOT WASTE reusable coolant. If the solution is clean, drain the coolant into a clean container for reuse.

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. When the engine is cold, remove the filler cap from the pressurized coolant bottle.

Fig 1: Quick-Connect Coupling



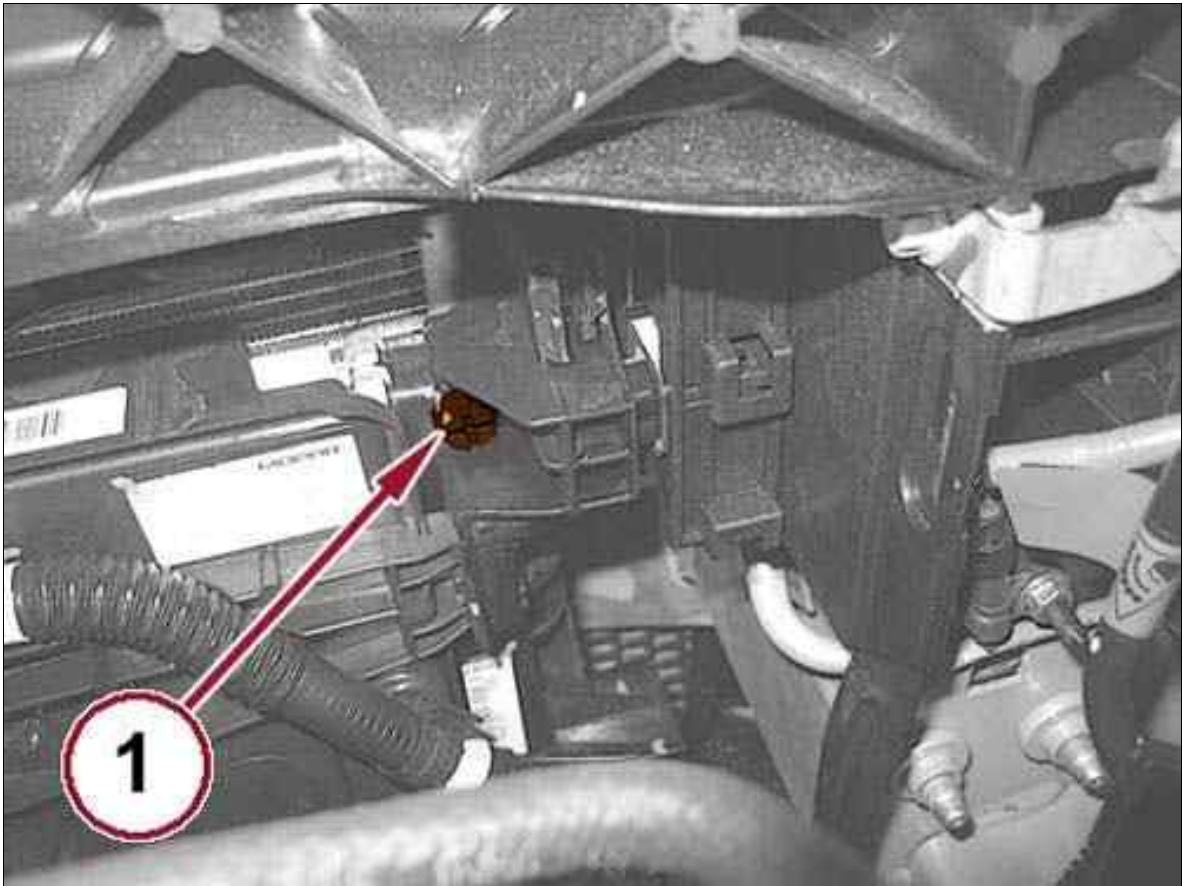
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Recover the coolant into a suitable container.

4. Disengage the quick-connect coupling (1) and carefully remove the lower radiator inlet hose from the radiator.

Fig 2: Drain Valve



Courtesy of CHRYSLER GROUP, LLC

5. Open the drain valve (1) on the right rear of the radiator.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > FILLING - 1.4L MULTIAIR TURBO

1. Install the lower radiator outlet hose to the radiator and engage the quick-connect coupling.
2. Slowly add the engine coolant through the filler neck until the fluid begins to leak from the bleed screw.
3. Close the bleed screw.

Fig 1: MIN & MAX Levels



Courtesy of CHRYSLER GROUP, LLC

4. Continue to add coolant to the MAX level of the tank.
5. Tighten the cap on the pressurized coolant bottle.
6. Start the engine and run it at idle for about 2 minutes.
7. Bleed the circuit by performing a quick accel to an engine speed of 3000 RPM followed by a gradual decel (every 30 seconds). The operation must be performed in order to obtain the opening of the thermostat and operation of the electric fan.

 NOTE:

In the course of this operation, keep the air conditioning system switched off to avoid operation of the electric fan that is not due to heating of the coolant. If at this stage there has been a dramatic drop in the level in the tank, return the engine speed to idle and open the cap very carefully, topping up the liquid to the MAX mark; then install the cap and complete deaeration.

8. Stop the engine and after it has cooled check that the fluid level is positioned at the MAX mark on the tank.
9. Upon completion of this procedure, be sure the quantity of fluid added is at least equal to that

recovered during the emptying phase.

10. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

11. Remove the vehicle from the lift.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > DRAINING - 1.6L TURBO DIESEL



NOTE:

Make sure the coolant is not HOT and under pressure.



NOTE:

DO NOT WASTE reusable coolant. If the solution is clean, drain the coolant into a clean container for reuse.

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .

2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

3. When the engine is cold, remove the filler cap from the pressurized coolant bottle.

Fig 1: Quick-Connect Coupling



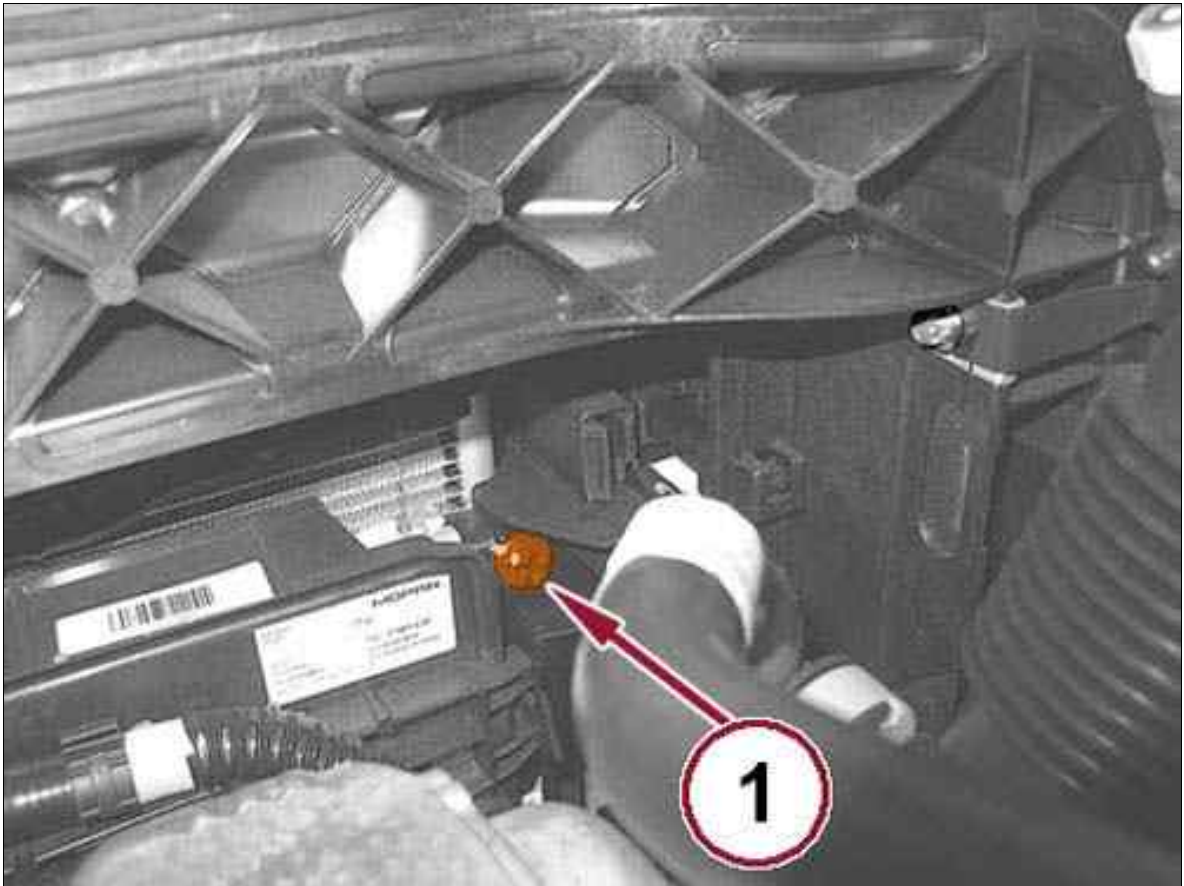
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Recover the coolant into a suitable container.

4. Disengage the quick-connect coupling (1) and carefully remove the lower radiator inlet hose from the radiator.

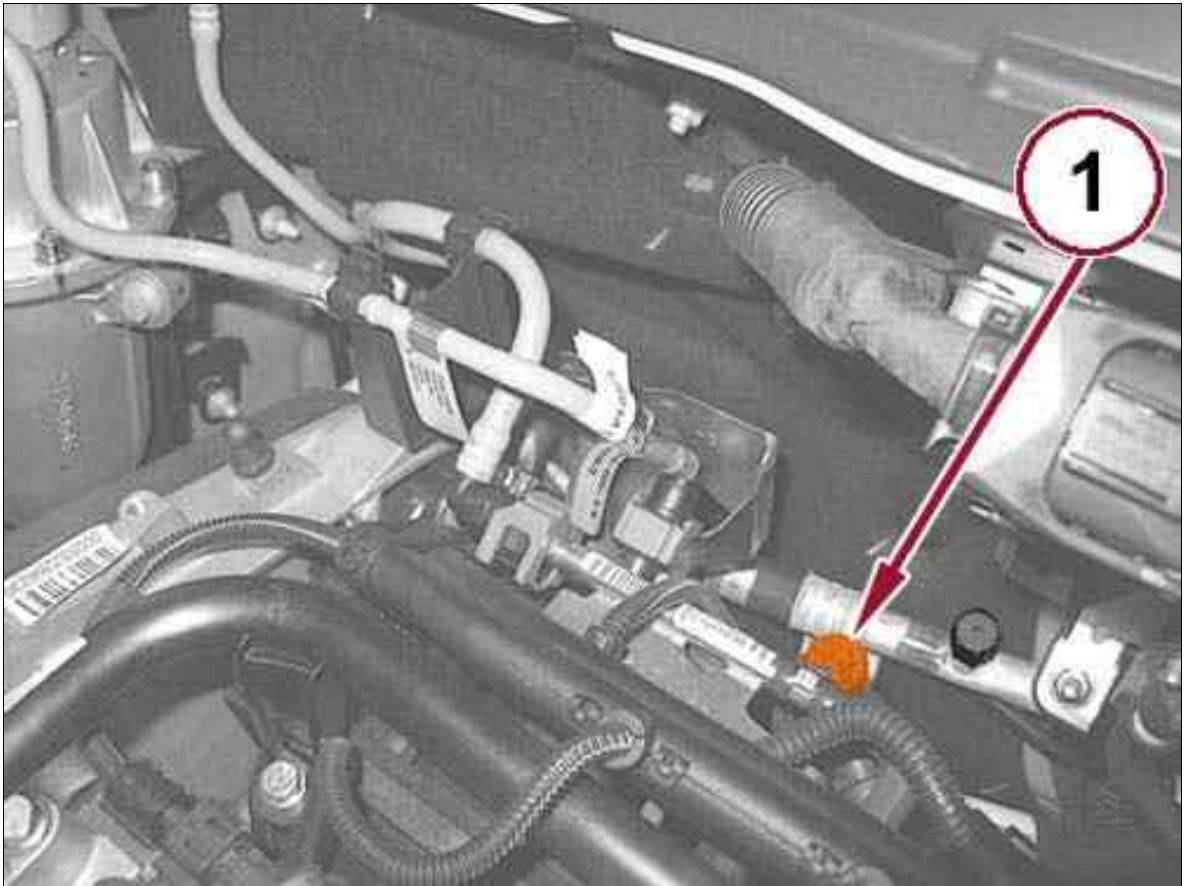
Fig 2: Drain Valve



Courtesy of CHRYSLER GROUP, LLC

5. Open the drain valve (1) on the right rear of the radiator.

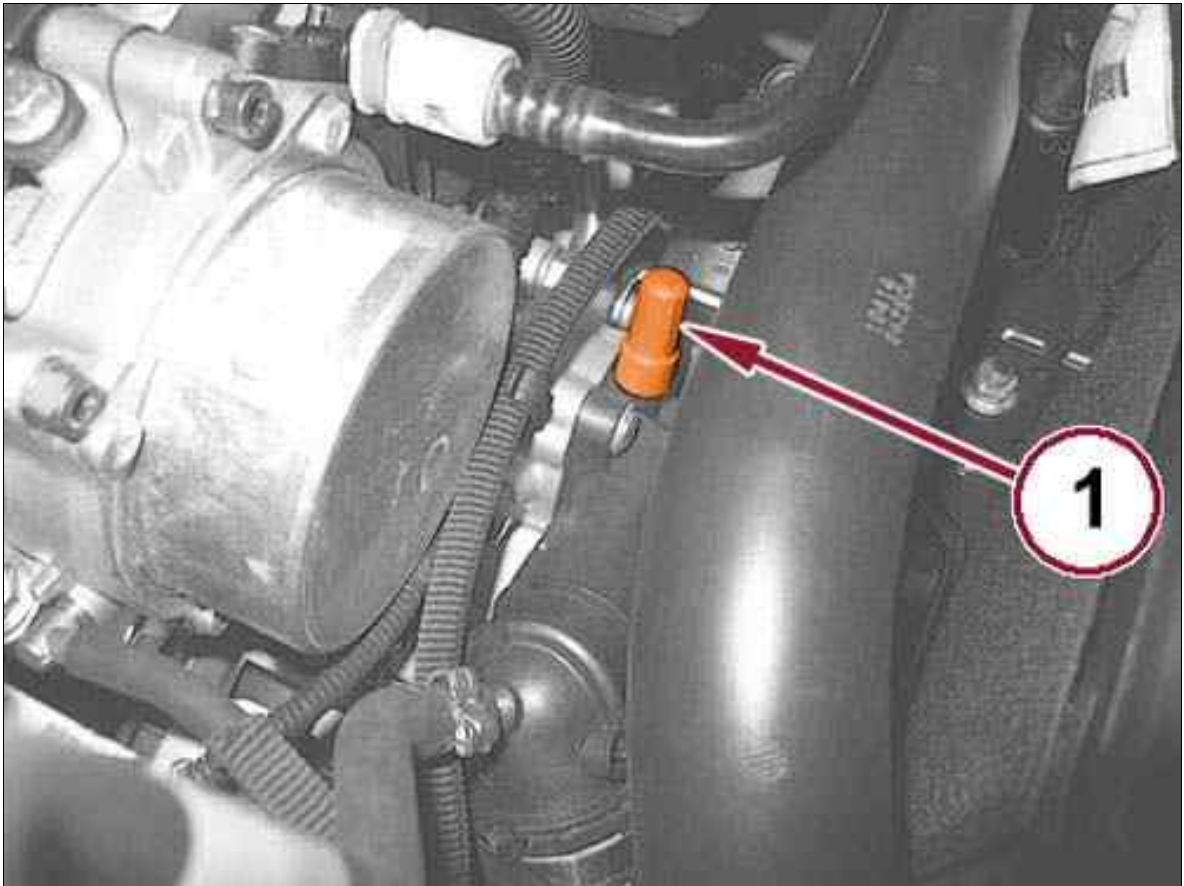
Fig 3: Bleed Valve On Return Line



Courtesy of CHRYSLER GROUP, LLC

6. Open the bleed valve (1) on the return line from the heater core.

Fig 4: Bleed Valve On Thermostat



Courtesy of CHRYSLER GROUP, LLC

7. Open the bleed valve (1) on the thermostat.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > FILLING - 1.6L TURBO DIESEL

1. Install the lower radiator outlet hose to the radiator and engage the quick-connect coupling.
2. Slowly add the engine coolant through the filler neck until the fluid begins to leak from the radiator and thermostat bleed screws.
3. Close the radiator and thermostat bleed screws.
4. Continue adding coolant until fluid begins to leak from the bleed valve located on the return line from the heater core.
5. Close the bleed screw.

Fig 1: MIN & MAX Levels



Courtesy of CHRYSLER GROUP, LLC

6. Continue to add coolant to the MAX level of the tank.
7. Tighten the cap on the pressurized coolant bottle.
8. Start the engine and run it at idle for about 2 minutes.
9. Bleed the circuit by performing a quick accel to an engine speed of 3000 RPM followed by a gradual decel (every 30 seconds). The operation must be performed in order to obtain the opening of the thermostat and operation of the electric fan.

 NOTE:

In the course of this operation, keep the air conditioning system switched off to avoid operation of the electric fan that is not due to heating of the coolant. If at this stage there has been a dramatic drop in the level in the tank, return the engine speed to idle and open the cap very carefully, topping up the liquid to the MAX mark; then install the cap and complete deaeration.

10. Stop the engine and after it has cooled check that the fluid level is positioned at the MAX mark on the tank.
11. Upon completion of this procedure, be sure the quantity of fluid added is at least equal to that

recovered during the emptying phase.

12. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

13. Remove the vehicle from the lift.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > DRAINING - 2.0L TURBO DIESEL



NOTE:

Make sure the coolant is not HOT and under pressure.



NOTE:

DO NOT WASTE reusable coolant. If the solution is clean, drain the coolant into a clean container for reuse.

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. When the engine is cold, remove the filler cap from the pressurized coolant bottle.

Fig 1: Quick-Connect Coupling



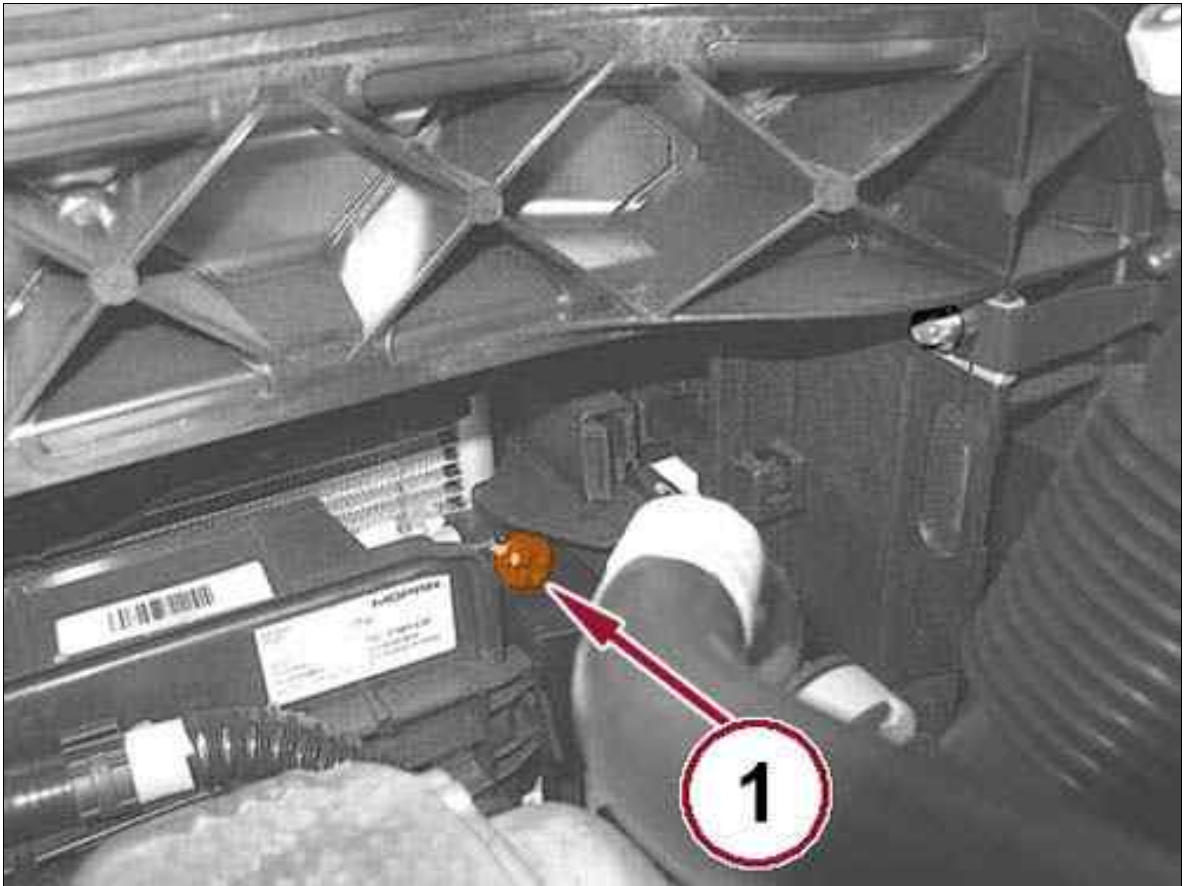
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Recover the coolant into a suitable container.

4. Disengage the quick-connect coupling (1) and carefully remove the lower radiator inlet hose from the radiator.

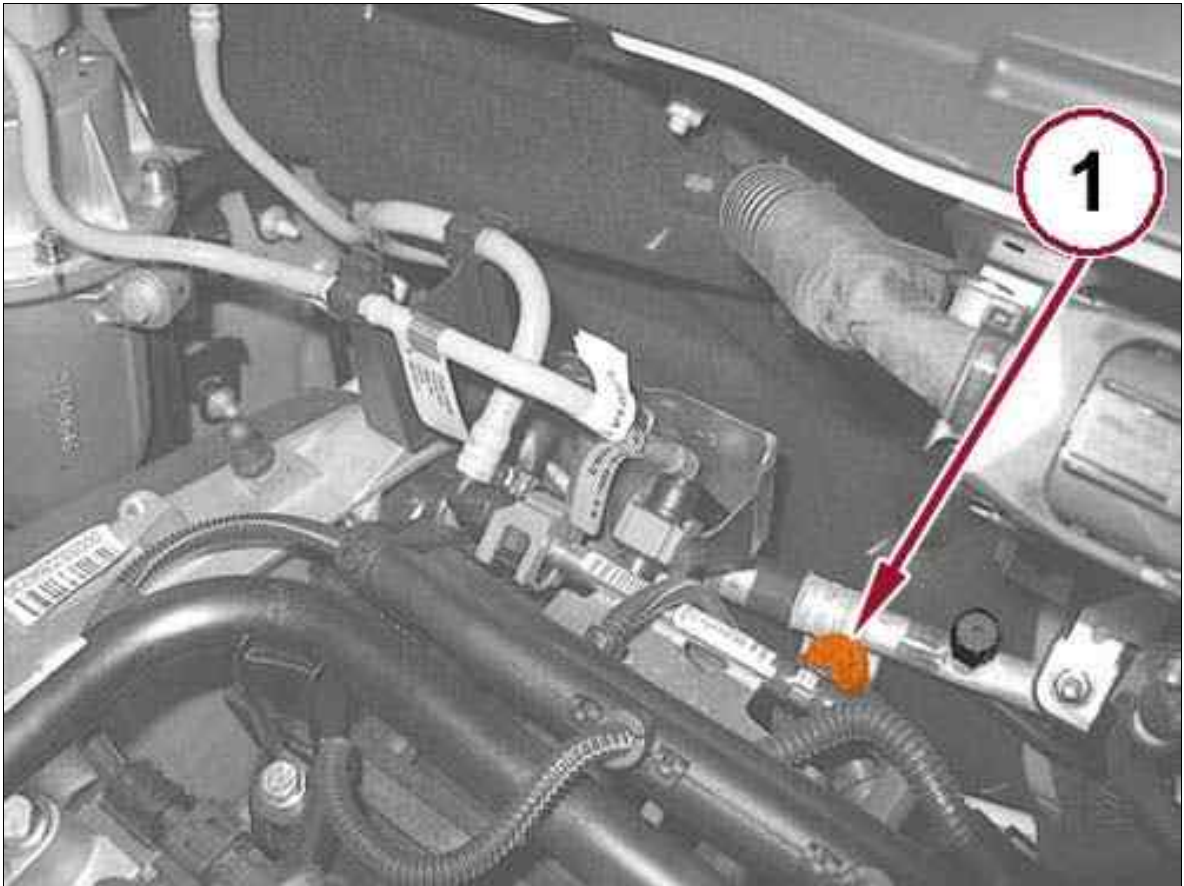
Fig 2: Drain Valve



Courtesy of CHRYSLER GROUP, LLC

5. Open the drain valve (1) on the right rear of the radiator.

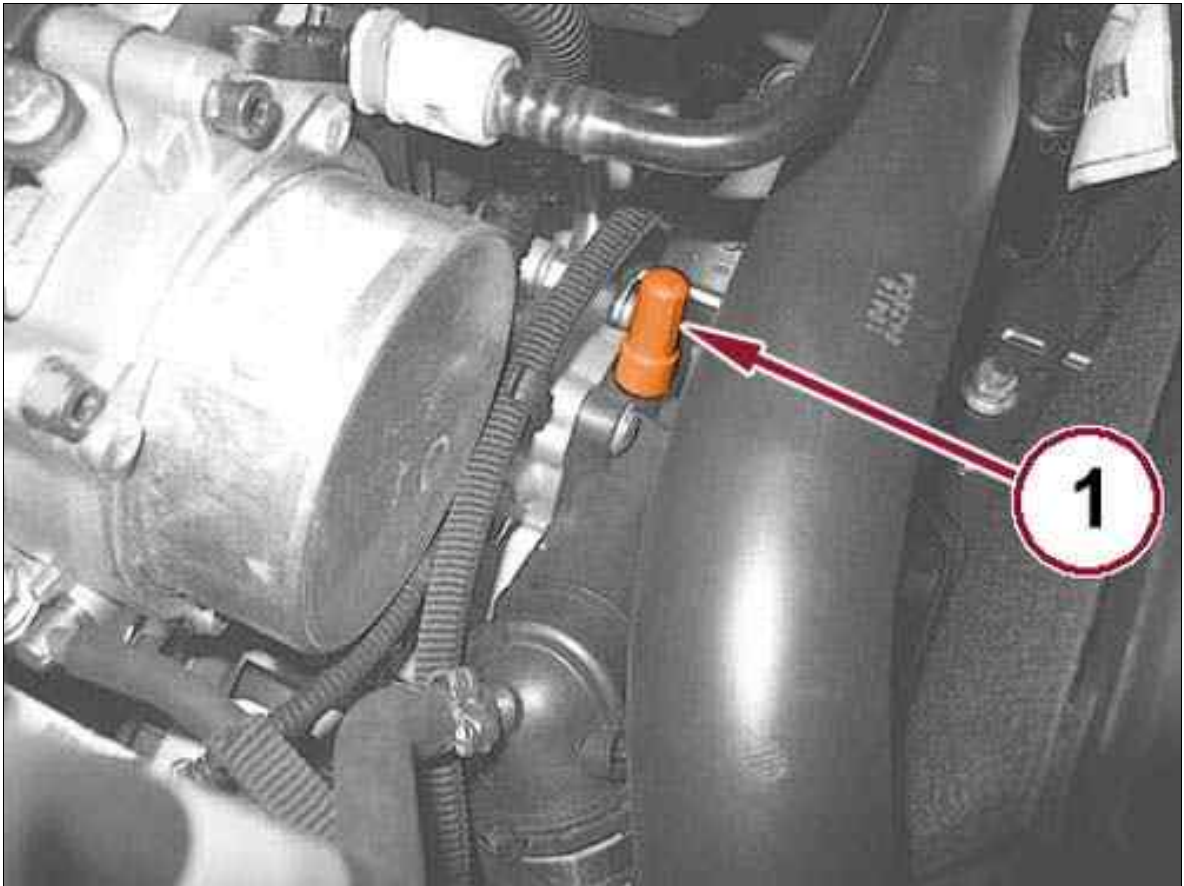
Fig 3: Bleed Valve On Return Line



Courtesy of CHRYSLER GROUP, LLC

6. Open the bleed valve (1) on the return line from the heater core.

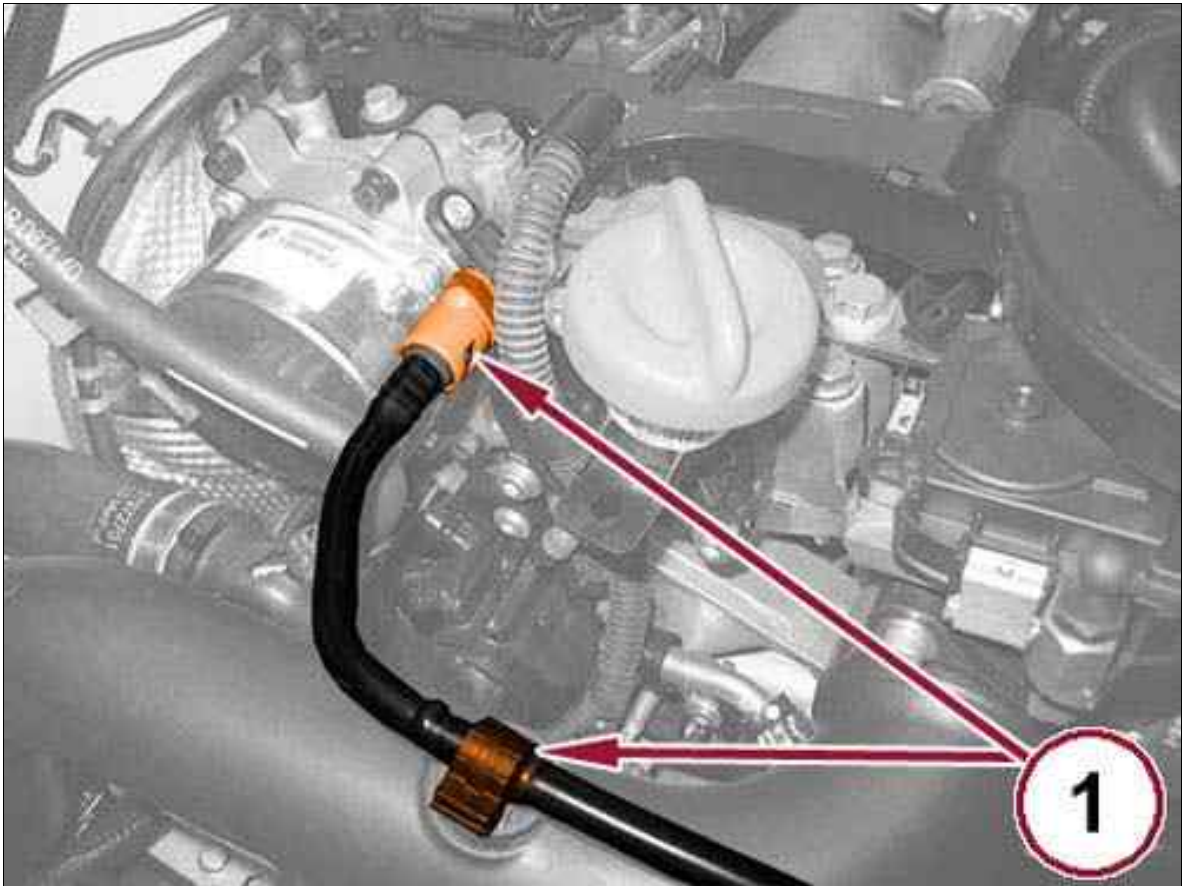
Fig 4: Bleed Valve On Thermostat



Courtesy of CHRYSLER GROUP, LLC

7. On 120/140CV engines, open the bleed valve (1) on the thermostat.

Fig 5: Bleed Valve On Thermostat



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8. On 170CV engines, open the bleed valve (1) on the thermostat.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > FILLING - 2.0L TURBO DIESEL

1. Install the lower radiator outlet hose to the radiator and engage the quick-connect coupling.
2. Slowly add the engine coolant through the filler neck until the fluid begins to leak from the radiator and thermostat bleed screws.
3. Close the radiator and thermostat bleed screws.
4. Continue adding coolant until fluid begins to leak from the bleed valve located on the return line from the heater core.
5. Close the bleed screw.

Fig 1: MIN & MAX Levels



Courtesy of CHRYSLER GROUP, LLC

6. Continue to add coolant to the MAX level of the tank.
7. Tighten the cap on the pressurized coolant bottle.
8. Start the engine and run it at idle for about 2 minutes.
9. Bleed the circuit by performing a quick accel to an engine speed of 3000 RPM followed by a gradual decel (every 30 seconds). The operation must be performed in order to obtain the opening of the thermostat and operation of the electric fan.

 NOTE:

In the course of this operation, keep the air conditioning system switched off to avoid operation of the electric fan that is not due to heating of the coolant. If at this stage there has been a dramatic drop in the level in the tank, return the engine speed to idle and open the cap very carefully, topping up the liquid to the MAX mark; then install the cap and complete deaeration.

10. Stop the engine and after it has cooled check that the fluid level is positioned at the MAX mark on the tank.
11. Upon completion of this procedure, be sure the quantity of fluid added is at least equal to that

recovered during the emptying phase.

12. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

13. Remove the vehicle from the lift.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > DRAINING - 2.4L MULTIAIR2



NOTE:

Make sure the coolant is not HOT and under pressure.

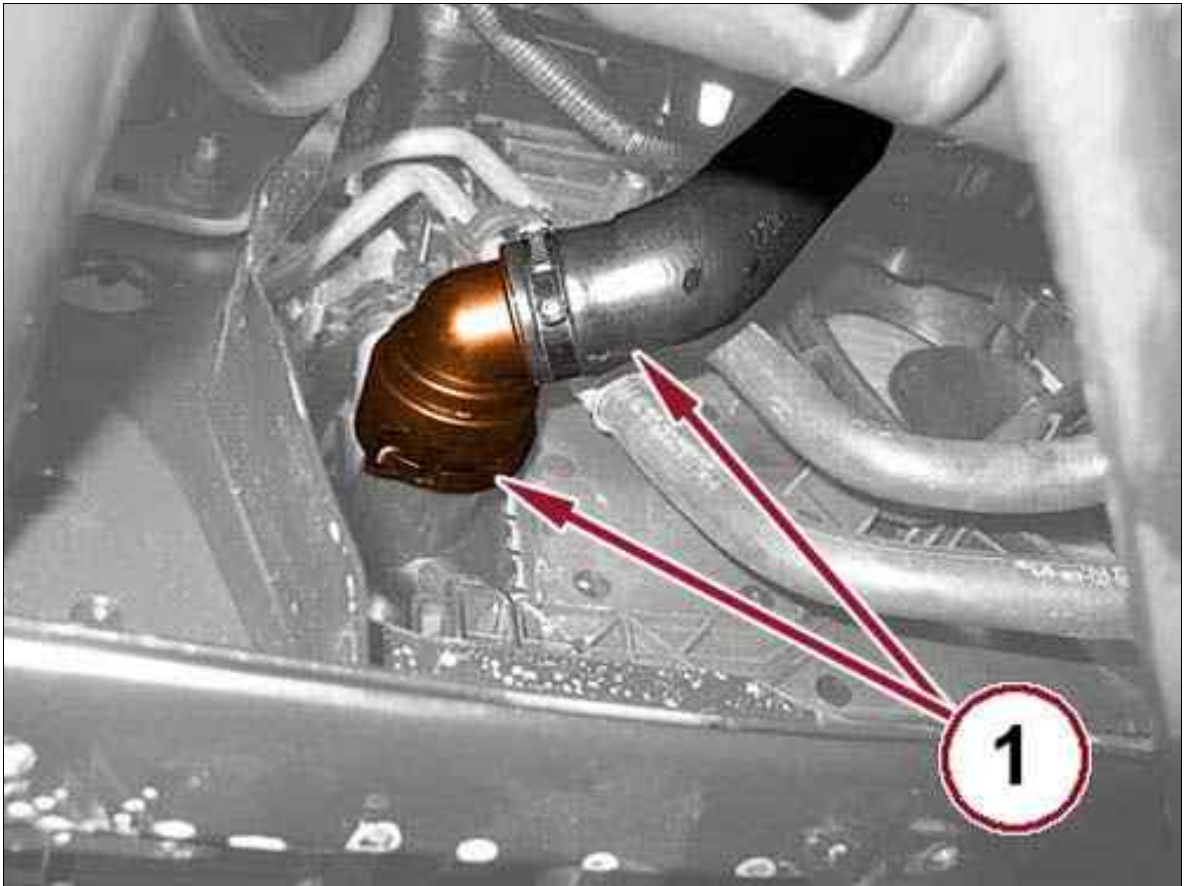


NOTE:

DO NOT WASTE reusable coolant. If the solution is clean, drain the coolant into a clean container for reuse.

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. When the engine is cold, remove the filler cap from the pressurized coolant bottle.

Fig 1: Quick-Connect Coupling



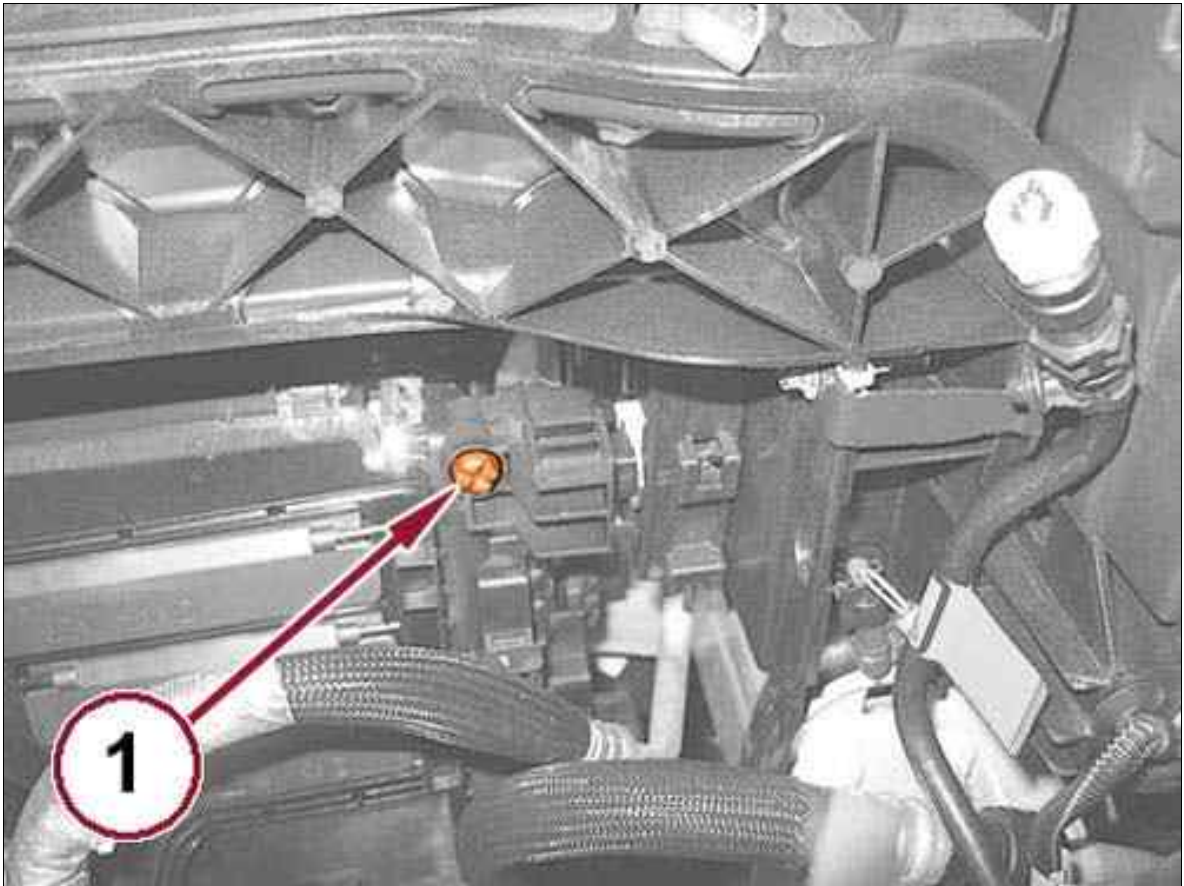
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Recover the coolant into a suitable container.

4. Disengage the quick-connect coupling (1) and carefully remove the lower radiator inlet hose from the radiator.

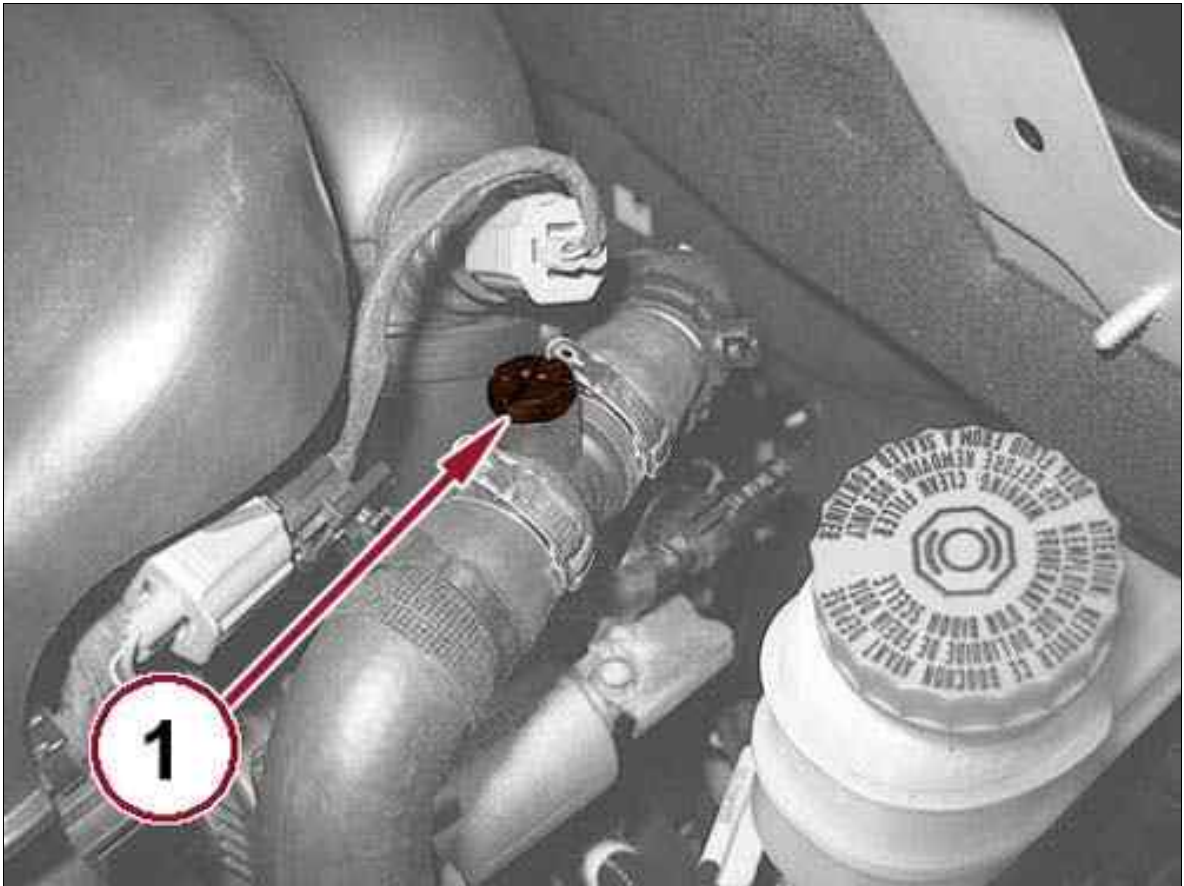
Fig 2: Drain Valve



Courtesy of CHRYSLER GROUP, LLC

5. Open the drain valve (1) on the right rear of the radiator.

Fig 3: Bleed Valve On Return Line



Courtesy of CHRYSLER GROUP, LLC

6. Open the bleed valve (1) on the return line from the heater core.

STANDARD PROCEDURE > DRAINING AND FILLING THE COOLING SYSTEM > FILLING - 2.4L MULTIAIR2

1. Install the lower radiator outlet hose to the radiator and engage the quick-connect coupling.
2. Slowly add the engine coolant through the filler neck until the fluid begins to leak from the radiator bleed screw.
3. Close the radiator bleed screw.
4. Continue adding coolant until fluid begins to leak from the bleed valve located on the return line from the heater core.
5. Close the bleed screw.

Fig 1: MIN & MAX Levels



Courtesy of CHRYSLER GROUP, LLC

6. Continue to add coolant to the MAX level of the tank.
7. Tighten the cap on the pressurized coolant bottle.
8. Start the engine and run it at idle for about 2 minutes.
9. Bleed the circuit by performing a quick accel to an engine speed of 3000 RPM followed by a gradual decel (every 30 seconds). The operation must be performed in order to obtain the opening of the thermostat and operation of the electric fan.

 NOTE:

In the course of this operation, keep the air conditioning system switched off to avoid operation of the electric fan that is not due to heating of the coolant. If at this stage there has been a dramatic drop in the level in the tank, return the engine speed to idle and open the cap very carefully, topping up the liquid to the MAX mark; then install the cap and complete deaeration.

10. Stop the engine and after it has cooled check that the fluid level is positioned at the MAX mark on the tank.
11. Upon completion of this procedure, be sure the quantity of fluid added is at least equal to that

recovered during the emptying phase.

12. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

13. Remove the vehicle from the lift.

STANDARD PROCEDURE > STANDARD PROCEDURE - COOLANT AIR EVACUATION



CAUTION:

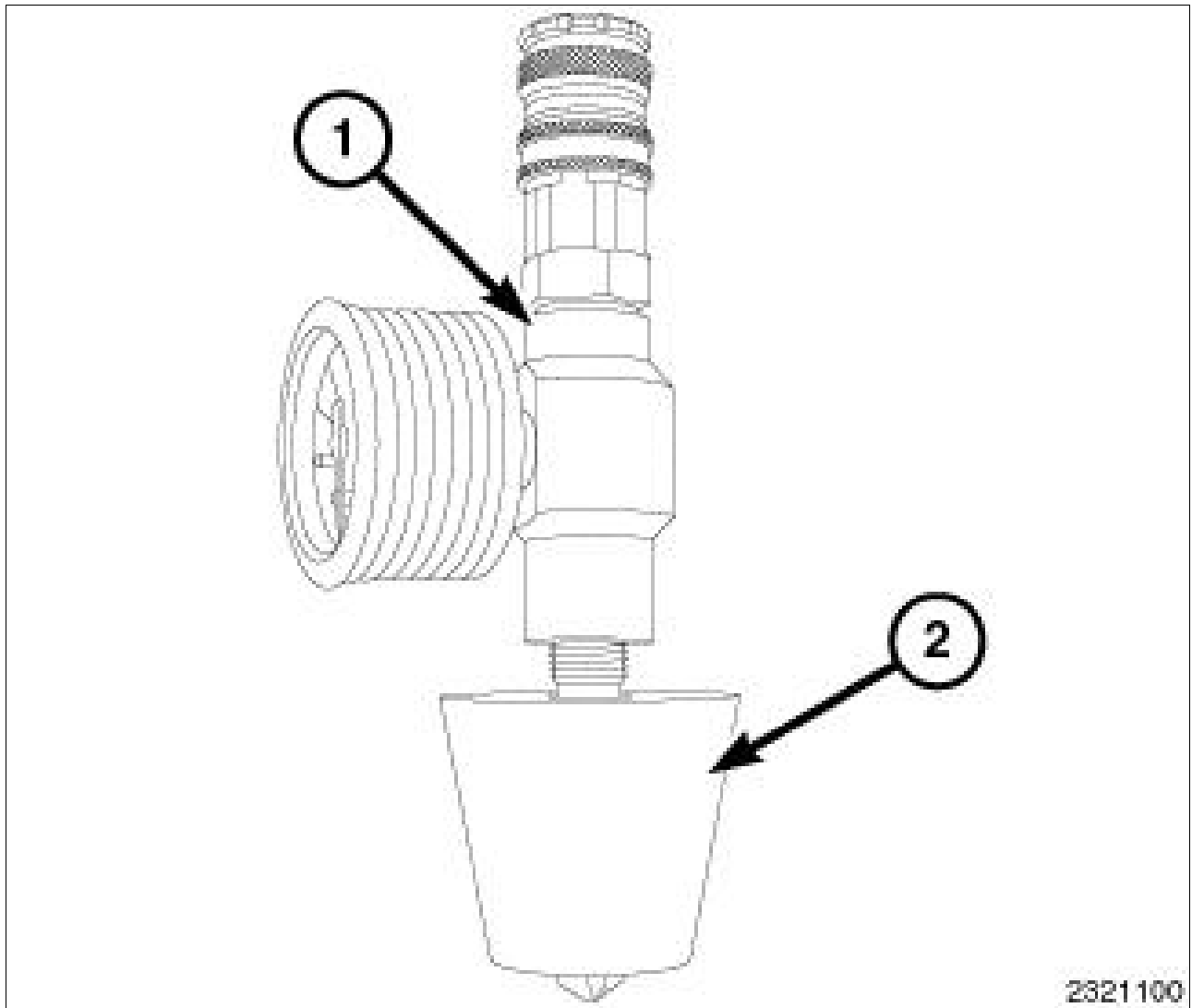
Failure to purge air from the cooling system can result in an overheating condition and severe engine damage.



NOTE:

The preferred method to remove air from the cooling system is to use (special tool #399-550000, Tool, UView Airlift™ Cooling System Refill).

Fig 1: Pressurized Air Operated Vacuum Generator



Courtesy of CHRYSLER GROUP, LLC

Evacuating or purging air from the cooling system involves the use of a pressurized air operated vacuum generator. The vacuum created allows for a quick and complete coolant refilling while removing any airlocks present in the system components.



NOTE:

To avoid damage to the cooling system, ensure that no component would be susceptible to damage when a vacuum is drawn on the system.



WARNING:

ANTIFREEZE IS AN ETHYLENE GLYCOL BASE COOLANT AND IS HARMFUL IF SWALLOWED OR INHALED. IF SWALLOWED, DRINK TWO GLASSES OF WATER AND INDUCE VOMITING. IF INHALED, MOVE TO FRESH AIR AREA. SEEK MEDICAL

ATTENTION IMMEDIATELY. DO NOT STORE IN OPEN OR UNMARKED CONTAINERS. WASH SKIN AND CLOTHING THOROUGHLY AFTER COMING IN CONTACT WITH ETHYLENE GLYCOL. KEEP OUT OF REACH OF CHILDREN. DISPOSE OF GLYCOL BASED COOLANT PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA. DO NOT OPEN A COOLING SYSTEM WHEN THE ENGINE IS AT OPERATING TEMPERATURE OR HOT UNDER PRESSURE; PERSONAL INJURY CAN RESULT. AVOID RADIATOR COOLING FAN WHEN ENGINE COMPARTMENT RELATED SERVICE IS PERFORMED; PERSONAL INJURY CAN RESULT.



WARNING:

WEAR APPROPRIATE EYE AND HAND PROTECTION WHEN PERFORMING THIS PROCEDURE.



NOTE:

The service area where this procedure is performed should have a minimum shop air requirement of 80 PSI (5.5 bar) and should be equipped with an air dryer system.

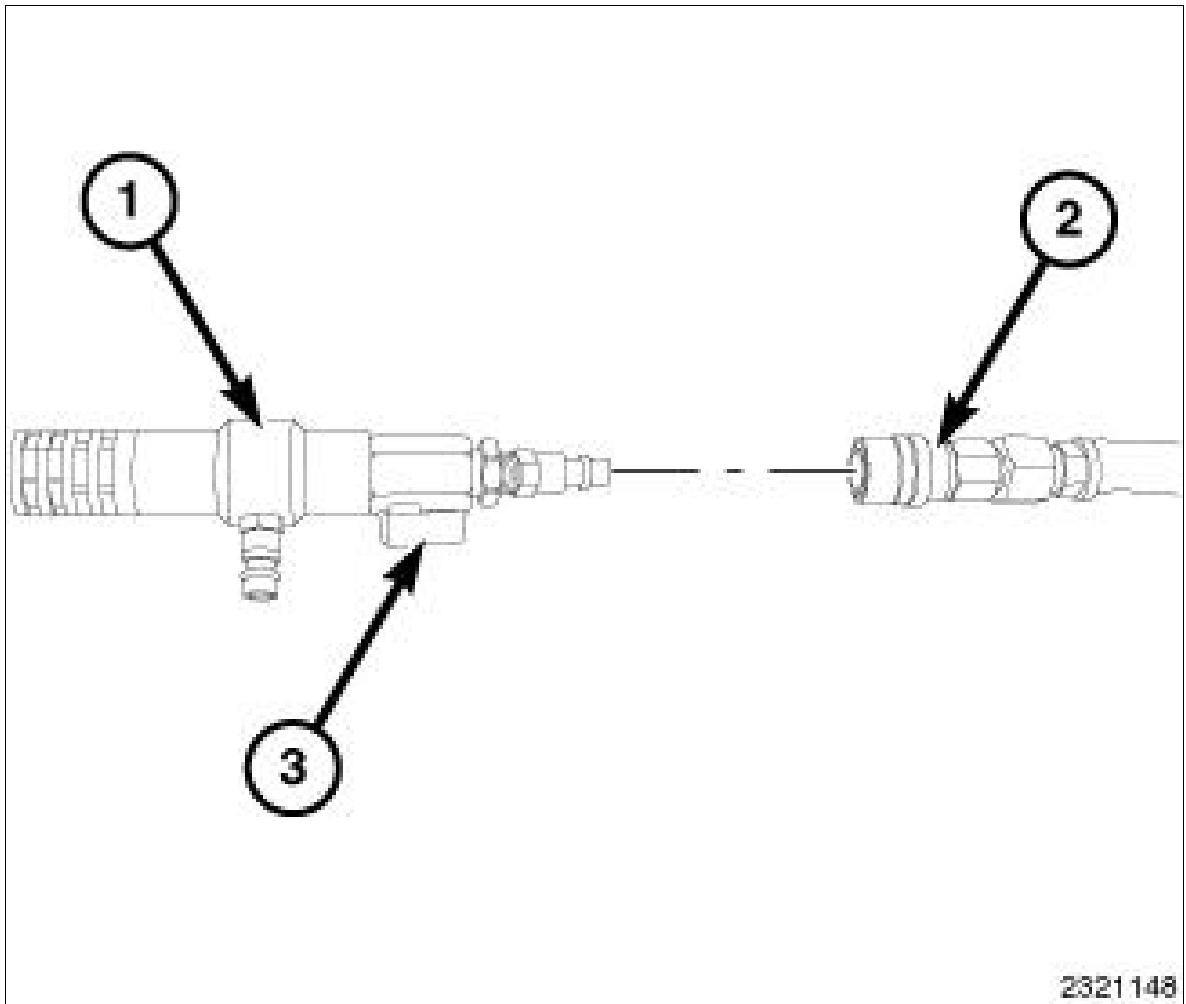


NOTE:

For best results, the radiator should be empty. The vehicle's heater control should be set to the heat position (ignition may need to be turned to the on position but do not start the engine).

1. Refer to the service equipment tool's operating manual for specific assembly steps.
2. Choose an appropriate adapter cone that will fit the vehicle's cooling system filler neck.
3. Attach the adapter cone (2) to the vacuum gauge (1).

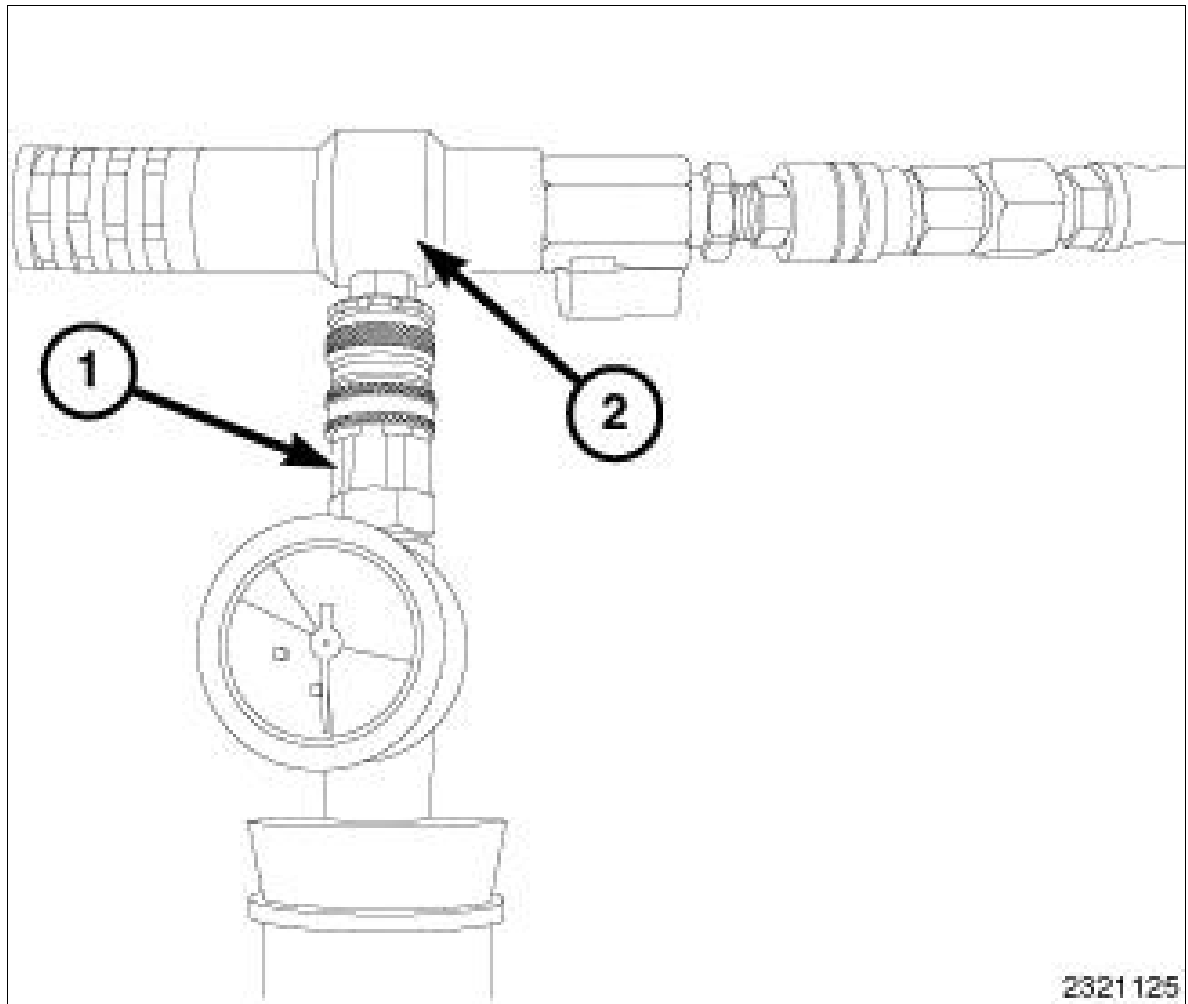
Fig 2: Vacuum Generator/Venturi Ball Valve



Courtesy of CHRYSLER GROUP, LLC

4. Make sure the vacuum generator/venturi ball valve (3) is closed and attach an airline hose (2) (minimum shop air requirement of 80 PSI/5.5 bar) to the vacuum generator/venturi (1).
5. Position the adaptor cone/vacuum gauge assembly into the filler neck. Ensure that the adapter cone is sealed properly.

Fig 3: Vacuum Generator/Venturi



Courtesy of CHRYSLER GROUP, LLC

6. Connect the vacuum generator/venturi (2) to the positioned adaptor cone/vacuum gauge assembly (1).
7. Open the vacuum generator/venturi ball valve.

 NOTE:

Do not bump or move the assembly as it may result in loss of vacuum.

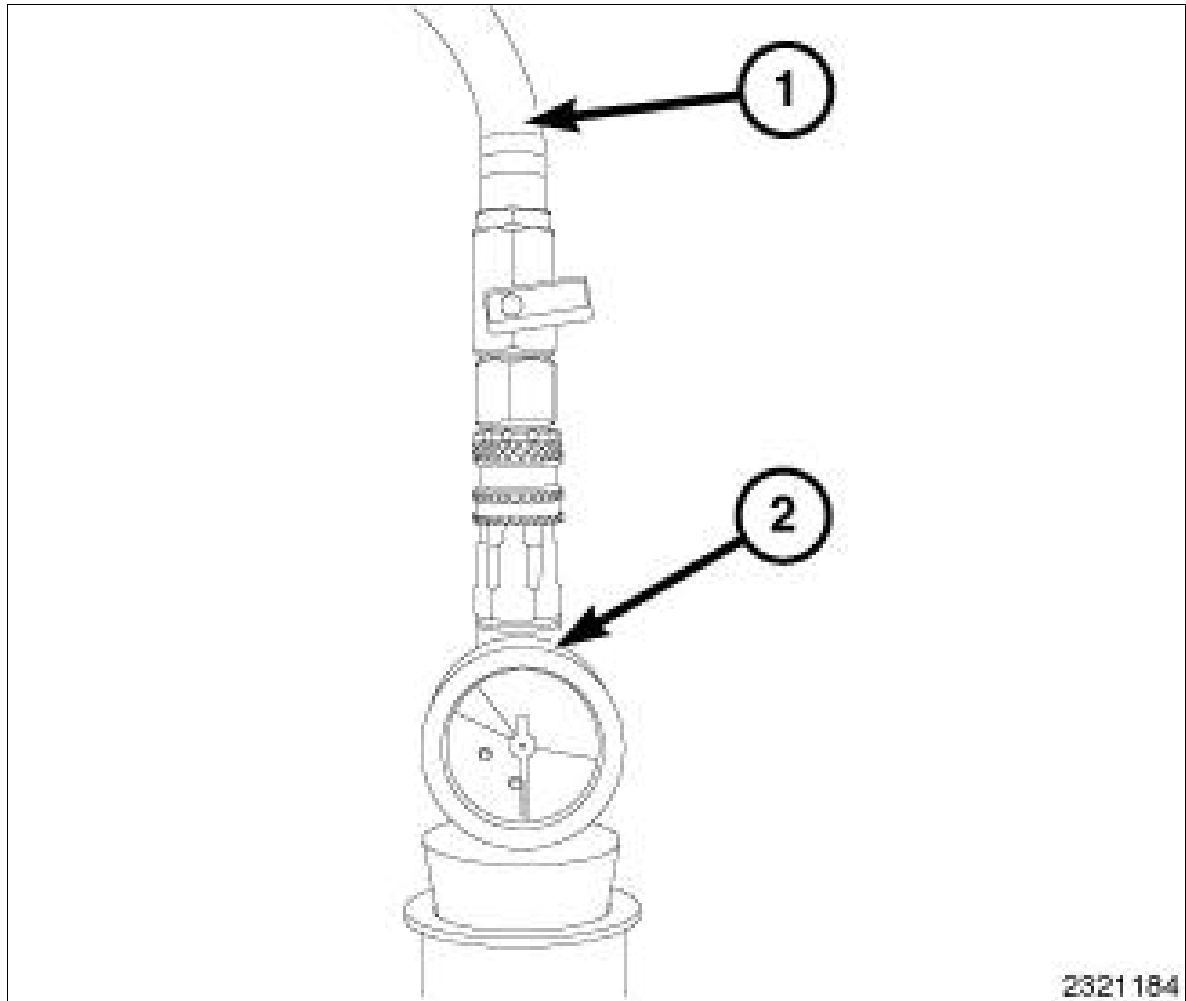
8. Let the system run until the vacuum gauge shows a good vacuum through the cooling system. Refer to the tool's operating manual for appropriate pressure readings.

 NOTE:

If a strong vacuum is being created in the system, it is normal to see the radiator hoses collapse.

9. Close the vacuum generator/venturi ball valve.

Fig 4: Vacuum Generator/Venturi And Air Line



Courtesy of CHRYSLER GROUP, LLC

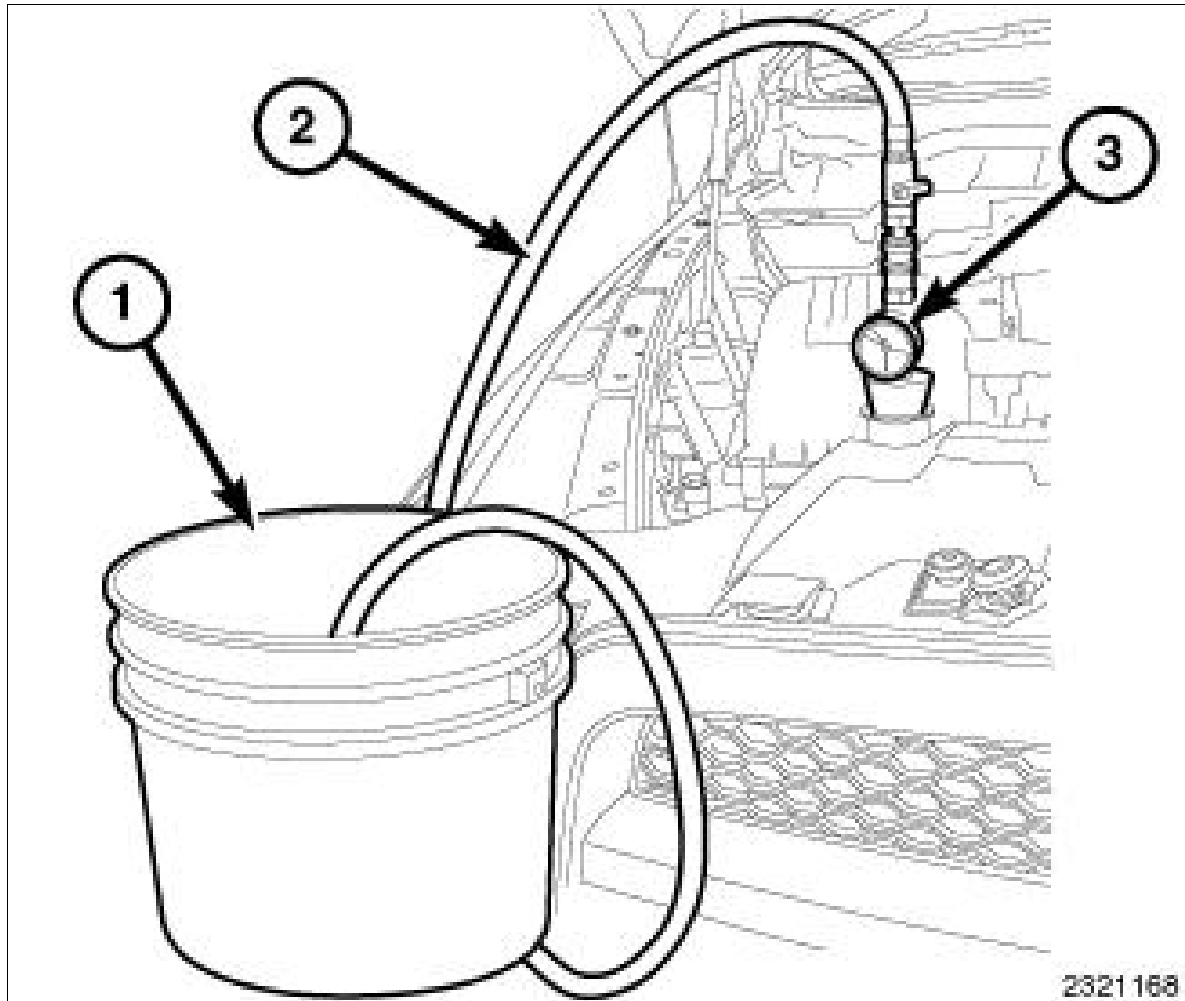
10. Disconnect the vacuum generator/venturi and airline (1) from the adaptor cone/vacuum gauge assembly (2).
11. Wait approximately 20 seconds, if the pressure readings do not move, the system has no leaks. If the pressure readings move, a leak could be present in the system. Check for leaks and repeat the procedure.
12. Place the tool's suction hose into the coolant's container.

 NOTE:

Ensure there is a sufficient amount of coolant, mixed to the required strength/protection level available for use. For best results and to assist the refilling procedure, place the coolant container at the same height as the filler neck. Always draw more coolant than required. If the coolant level is too low, it will pull air into the cooling system which could result in airlocks within the system.

13. Connect the tool's suction hose (1) to the adaptor cone/vacuum gauge assembly (2).

Fig 5: Refilling Cooling System



Courtesy of CHRYSLER GROUP, LLC

 **NOTE:**

View typical

14. Open the suction hose's ball valve to begin filling the cooling system.

15. When the vacuum gauge reads zero, the system is filled.

 **NOTE:**

If filling through a pressurized coolant bottle, stop filling when the proper level is reached.

16. Close the suction hose's ball valve and remove the suction hose from the adaptor cone/vacuum gauge assembly.

17. Remove the adaptor cone/vacuum gauge assembly from the filler neck.
18. Install the cap on the filler neck.
19. Start and run the engine with the heater control unit in the HEAT position.
20. After the engine has reached normal operating temperature, shut the engine off and allow it to cool. When the engine is cooling down, coolant will be drawn into the radiator.
21. Add coolant to the pressurized coolant bottle or reservoir tank as necessary. **Only add coolant to the container when the engine is cold. Coolant level in a warm engine will be higher due to thermal expansion.** Add necessary coolant to raise container level to the COLD MINIMUM mark after each cool down period.
22. Once the appropriate coolant level is achieved, install the cap on the filler neck.

STANDARD PROCEDURE > ADDING ADDITIONAL COOLANT



WARNING:

ANTIFREEZE IS AN ETHYLENE GLYCOL BASE COOLANT AND IS HARMFUL IF SWALLOWED OR INHALED. IF SWALLOWED, DRINK TWO GLASSES OF WATER AND INDUCE VOMITING. IF INHALED, MOVE TO FRESH AIR AREA. SEEK MEDICAL ATTENTION IMMEDIATELY. DO NOT STORE IN OPEN OR UNMARKED CONTAINERS. WASH SKIN AND CLOTHING THOROUGHLY AFTER COMING IN CONTACT WITH ETHYLENE GLYCOL. KEEP OUT OF REACH OF CHILDREN. DISPOSE OF GLYCOL BASED COOLANT PROPERLY. CONTACT YOUR DEALER OR GOVERNMENT AGENCY FOR LOCATION OF COLLECTION CENTER IN YOUR AREA. DO NOT OPEN A COOLING SYSTEM WHEN THE ENGINE IS AT OPERATING TEMPERATURE OR HOT UNDER PRESSURE; PERSONAL INJURY CAN RESULT. AVOID RADIATOR COOLING FAN WHEN ENGINE COMPARTMENT RELATED SERVICE IS PERFORMED; PERSONAL INJURY CAN RESULT.

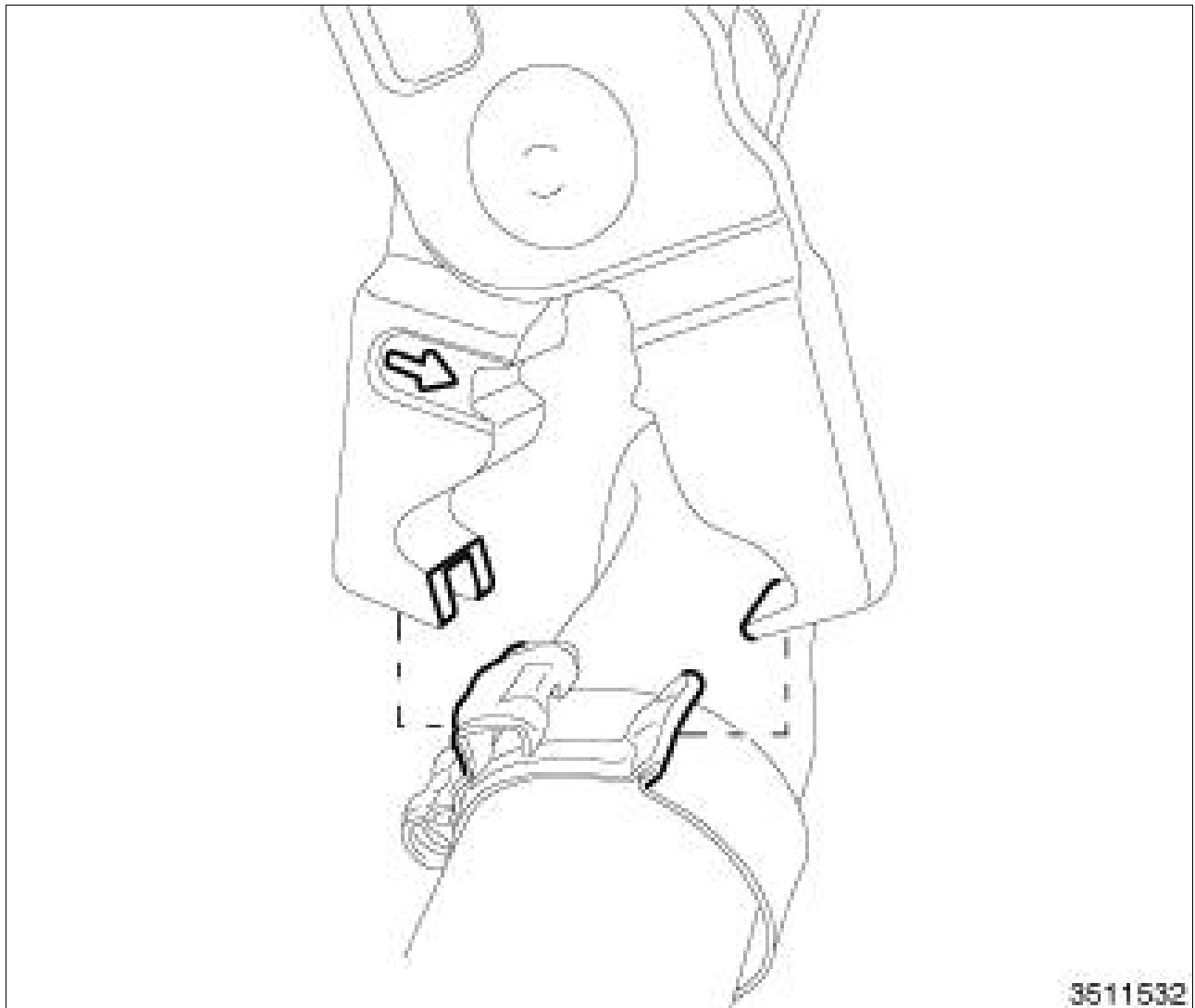
When additional coolant is needed, it should be added to the Pressurized Coolant Bottle. With the engine cold, add enough coolant to set the level between the add (MIN) and full (MAX) indicators on the bottle.

Only use the type of coolant specified for this vehicle. Refer to CAPACITIES AND RECOMMENDED FLUIDS, SPECIFICATIONS .

STANDARD PROCEDURE > CLIC® HOSE CLAMP PLIERS - USAGE

When CLIC® style clamps are used. It requires that miller tool (special tool #10288, Pliers, Hose Clamp) be used for proper installation and removal.

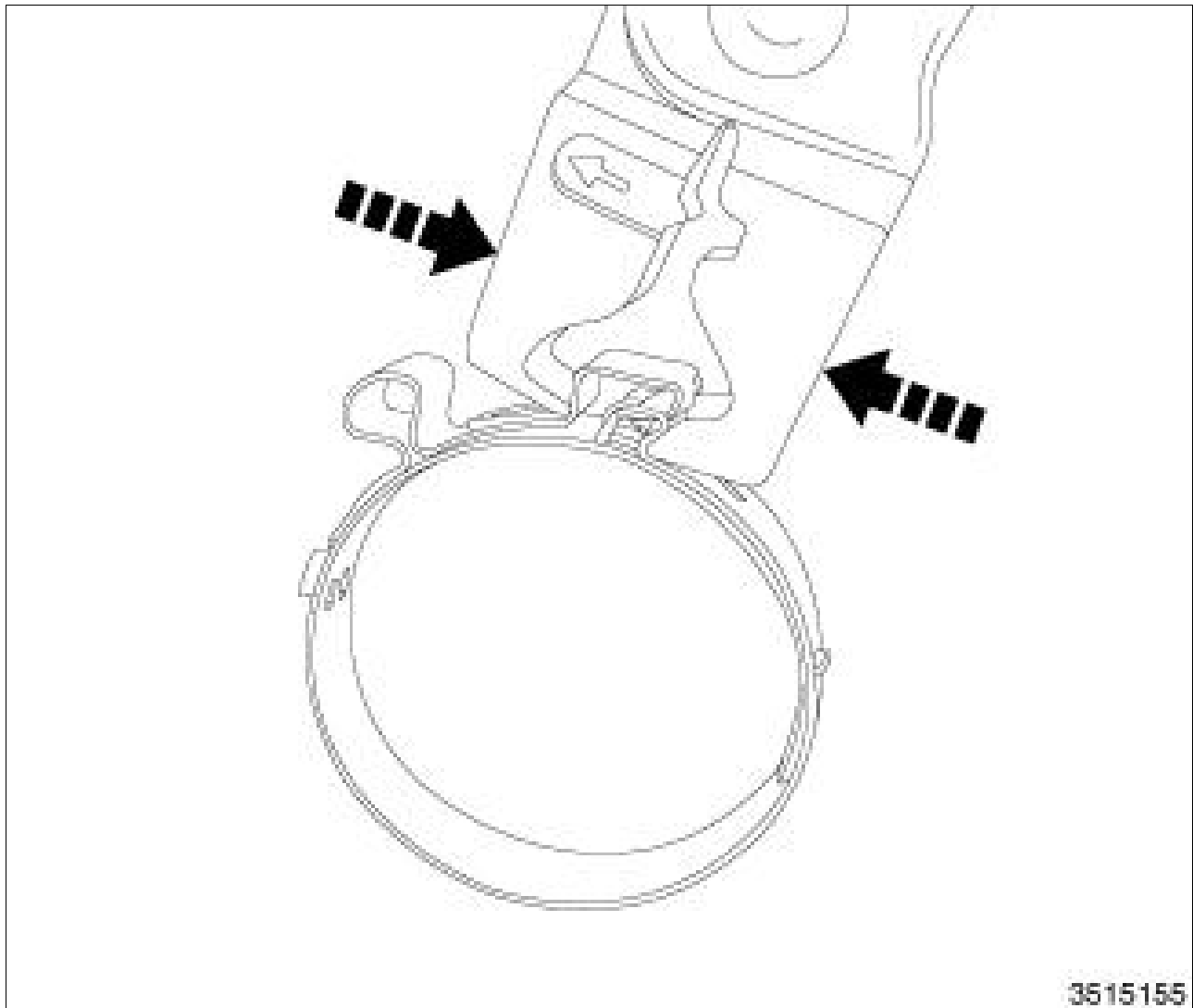
Fig 1: Flat Blade Of Pliers



Courtesy of CHRYSLER GROUP, LLC

Installation of the hose clamp requires the flat blade of the pliers to rest against the latch lock side of the clamp. The notched end of the pliers will be positioned on the protruded guide on the latch side. Squeeze the pliers until a **CLICK** sound is heard.

Fig 2: Notched End Of Pliers



Courtesy of CHRYSLER GROUP, LLC

Removal of the hose clamp requires the notched end of the pliers to rest against the latch side of the clamp. Squeezing the pliers will cause the hook of the latch lock to ride up the beveled edging of the notched side, releasing itself from the lock.

STANDARD PROCEDURE > REVERSE FLUSHING

CAUTION:

The cooling system normally operates at 97-124 kPa (14-18 psi) pressure. Exceeding this pressure may damage the radiator or hoses.

Reverse flushing of the cooling system is the forcing of water through the cooling system. This is done using air pressure in the opposite direction of normal coolant flow. It is usually only necessary with very

dirty systems with evidence of partial plugging.

STANDARD PROCEDURE > REVERSE FLUSHING > CHEMICAL CLEANING

If visual inspection indicates the formation of sludge or scaly deposits, use a radiator cleaner (Mopar Radiator Klean or equivalent) before flushing. This will soften scale and other deposits and aid the flushing operation.

CAUTION:

Be sure instructions on the container are followed.

STANDARD PROCEDURE > REVERSE FLUSHING > REVERSE FLUSHING RADIATOR

Disconnect the radiator hoses from the radiator fittings. Attach a section of radiator hose to the radiator bottom outlet fitting and insert the flushing gun. Connect a water supply hose and air supply hose to the flushing gun.

CAUTION:

The cooling system normally operates at 97-124 kPa (14-18 psi) pressure. Exceeding this pressure may damage the radiator or hoses.

Allow the radiator to fill with water. When radiator is filled, apply air in short blasts allowing radiator to refill between blasts. Continue this reverse flushing until clean water flows out through rear of radiator cooling tube passages. For more information, refer to operating instructions supplied with flushing equipment. Have radiator cleaned more extensively by a radiator repair shop.

STANDARD PROCEDURE > REVERSE FLUSHING > REVERSE FLUSHING ENGINE

Drain the cooling system. Refer to STANDARD PROCEDURE . Remove the thermostat housing. Refer to THERMOSTAT, REMOVAL AND INSTALLATION . Install a thermostat housing that has had the thermostat removed. Disconnect the radiator upper hose from the radiator and attach the flushing gun to the radiator upper hose. Disconnect the radiator lower hose from the radiator and attach the lead away hose to the lower radiator hose.

Connect the water supply hose and air supply hose to the flushing gun. Allow the engine to fill with water. When the engine is filled, apply air in short blasts, allowing the system to fill between air blasts. Continue until clean water flows through the lead away hose. For more information, refer to operating instructions supplied with flushing equipment.

Remove the lead away hose, flushing gun, water supply hose and air supply hose. Remove the thermostat housing that has had the thermostat removed and install a new thermostat and housing with a

replacement gasket. Refer to THERMOSTAT, REMOVAL AND INSTALLATION . Connect the radiator hoses. Refill the cooling system with the correct antifreeze/water mixture. Refer to STANDARD PROCEDURE .

SPECIFICATIONS > FILL VOLUME

DESCRIPTION	SPECIFICATION	
	US	METRIC
1.4L Multi Air	5.5 Quarts	5.2 Liters
1.6L Gas	5.9 Quarts	5.6 Liters
1.6L Diesel	6.4 Quarts	6.1 Liters
2.0L	6.8 Quarts	6.5 Liters
2.4L Multi Air	7.2 Quarts	6.8 Liters
Use only MOPAR OAT coolant.		
* 2.0 Diesel Engine uses Parafull coolant		

SPECIFICATIONS > TORQUE SPECIFICATIONS - DIESEL ENGINE

TORQUE SPECIFICATIONS - DIESEL ENGINE

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER *
EGR Tube Bolts	9	-	80	
Engine Cooling Temperature (ECT) Sensor	20	15	-	
Thermostat Housing Bolts (1.6L)	25	18	-	
Thermostat Housing Bolts (2.0L)	25	18	-	
Water Pump Bolts	25	18	-	
* NEW FASTENERS: Do not reuse these fasteners. If removed, a new fastener must be installed and tighten to specifications.				

SPECIFICATIONS > TORQUE SPECIFICATIONS - GAS ENGINE

TORQUE SPECIFICATIONS - GAS ENGINE

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW
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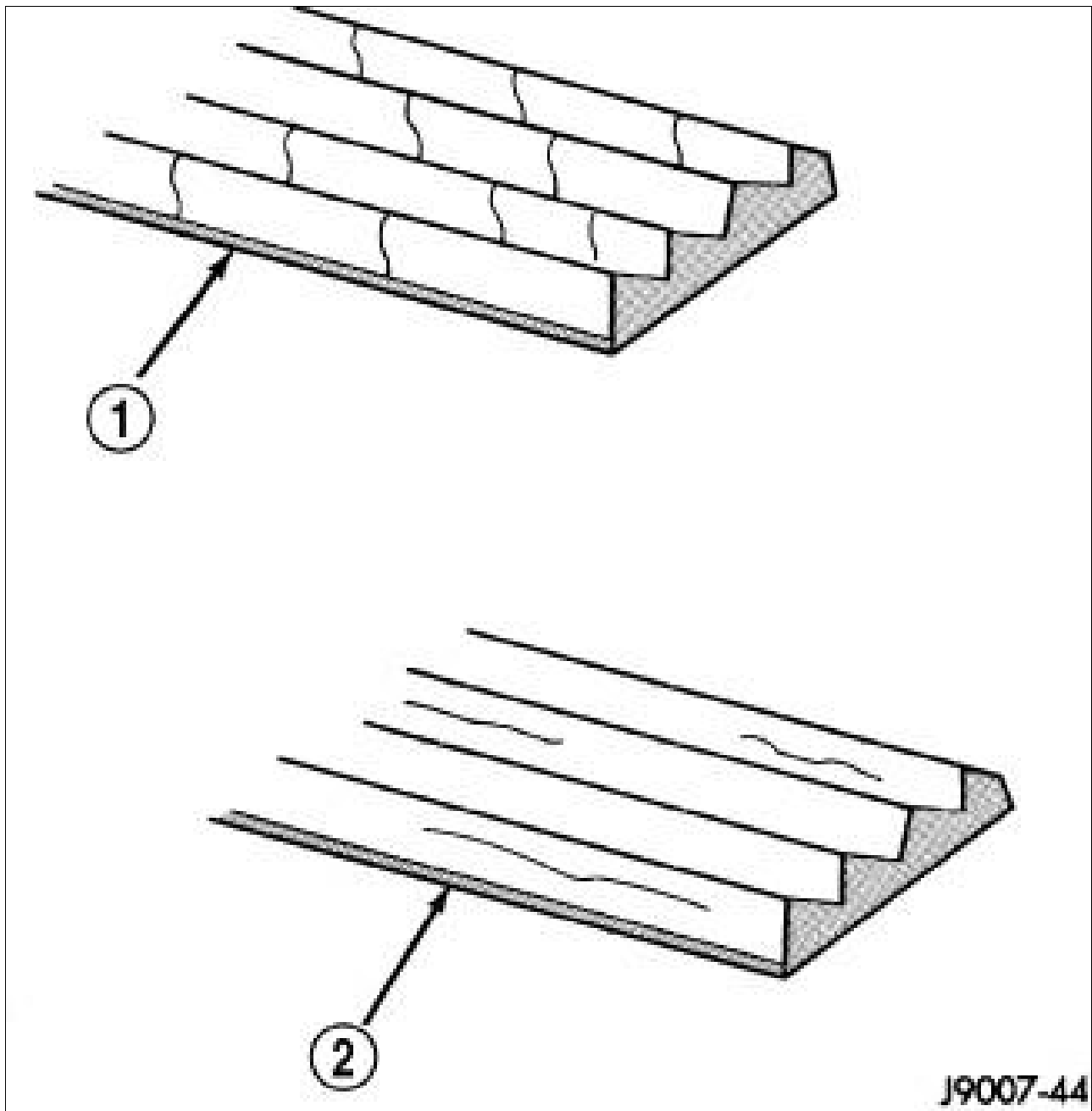
				FASTENER *
Engine Coolant Temperature Sensor (1.4L)	20	15	-	
Engine Coolant Temperature Sensor (2.4L)	18	13	-	
Idler Pulley Bolt (2.4L)	50	37	-	
Oil Cooler Pipe Bolts	8	-	71	
Thermostat Housing Bolts (1.4L)	10	-	89	
Thermostat Housing Bolts (2.4L)	18	13	-	
Water Pump (1.4L)				
M6 Nut	9	-	80	
M6 Bolts	9	-	80	
Water Pump Bolts (2.4L)	22	16	-	
Water Pump Inlet Tube-to-Block Bolts (2.4L)	24	18	-	
Water Pump Inlet Tube-to-Water Pump Housing Nuts (2.4L)	24	18	-	
Water Pump-to-Water Pump Adapter Bolts (2.4L)	22	16	-	
Water Pump Pulley Bolts (2.4L)	9	-	80	
* NEW FASTENERS: Do not reuse these fasteners. If removed, a new fastener must be installed and tighten to specifications.				

SPECIAL TOOLS > SPECIAL TOOLS

Tool (EMEA)	Tool (NAFTA)	Name	Function
1895377001	*	Engine cooling system leak test kit	Test sealing of the engine cooling system
2000030200	*	Fitting	Test capacity of the cooling system
* Tool not available for NAFTA. Use a commercially available tool or contact Mopar Essential Tools to order the custom EMEA tool.			

ACCESSORY DRIVE > BELT, SERPENTINE > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - SERPENTINE BELT

Fig 1: Serpentine Accessory Drive Belt Wear Patterns



Courtesy of CHRYSLER GROUP, LLC

1 - NORMAL CRACKS, BELT OK

2 - ABNORMAL CRACKS, REPLACE BELT

When diagnosing serpentine drive belts, small cracks (1) that run across ribbed surface of belt from rib to rib, are considered normal. These are not a reason to replace belt. However, cracks running along a rib (not across) are **not** normal. Any belt with cracks running along a rib must be replaced. Also replace belt if it has excessive wear, frayed cords or severe glazing.

SERPENTINE DRIVE BELT DIAGNOSIS CHART

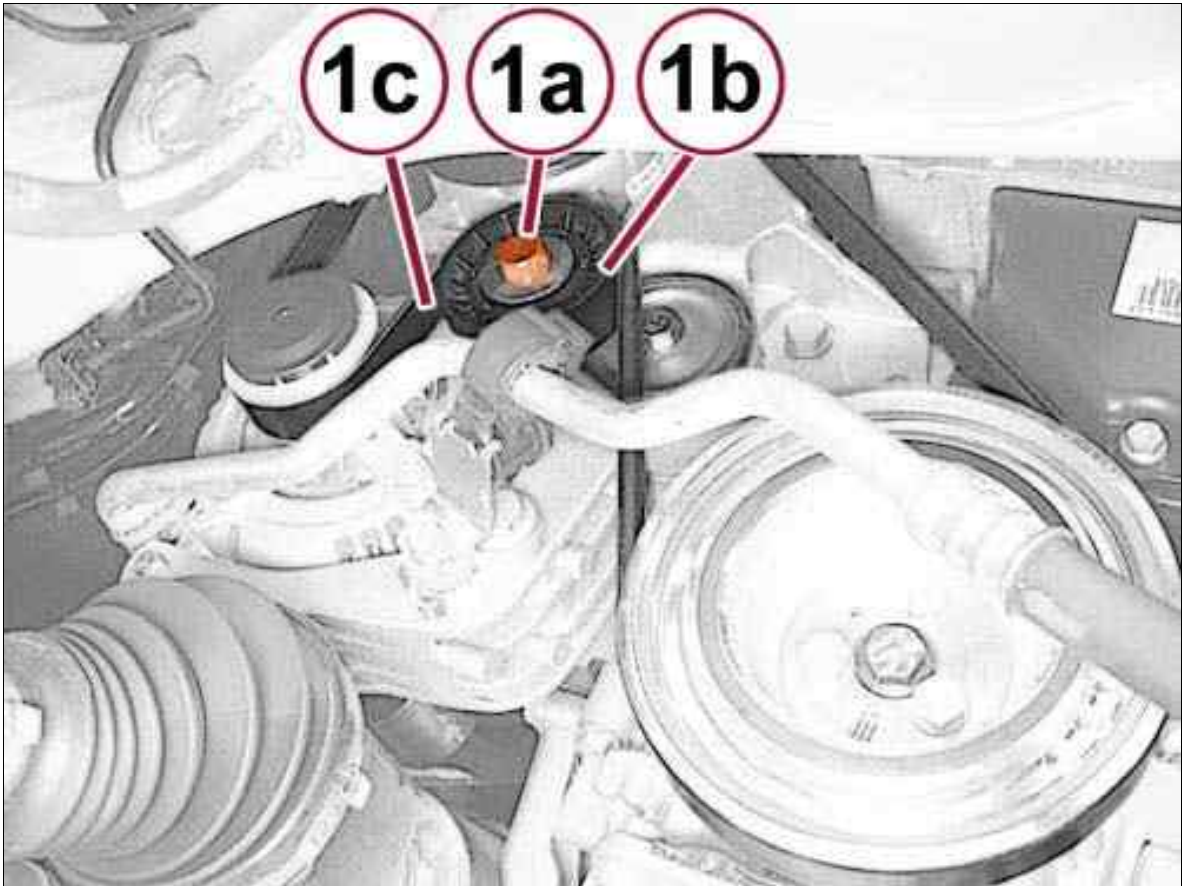
CONDITION	POSSIBLE CAUSES	CORRECTION
BELT SEPARATION (ONE OR MORE RIBS HAS SEPARATED FROM BELT BODY)	1. Foreign objects imbedded in pulley grooves.	1. Remove foreign objects from pulley grooves. Replace belt. Correct the root cause of the foreign objects in the belt/pulley system.
	2. Fluids contacting the belt.	2. Identify the source of the fluid and correct as necessary.
RIB OR BELT WEAR	1. Pulley(s) misaligned.	1. Align pulley(s).
	2. Fluid contamination.	2. Clean pulley(s). Replace belt if necessary.
	3. Rusted pulley(s).	3. Clean rust from pulley(s).
	4. Sharp or jagged pulley groove tips.	4. Replace pulley.
	5. Rubber deteriorated.	5. Replace belt.
LONGITUDINAL BELT CRACKING (CRACKS BETWEEN TWO RIBS)	1. Belt has clashed with the pulley grooves.	1. Replace belt. Align pulley(s), components as necessary.
	2. Pulley groove tip has worn away rubber to tensile member.	2. Replace belt.
BELT SLIPS	1. Belt slipping because of insufficient tension.	1. Replace automatic belt tensioner.
	2. Belt routed incorrectly.	2. Verify belt routing.
	3. Incorrect belt.	3. Replace belt.
	4. Belt or pulley subjected to substance (belt dressing, oil ethylene glycol) that has reduced friction.	4. Replace belt and clean pulleys.
	5. Driven component bearing failure.	5. Replace faulty component bearing.
	6. Belt glazed and hardened from heat and excessive slippage.	6. Replace belt.
"GROOVE JUMPING" (BELT DOES NOT MAINTAIN CORRECT POSITION ON PULLEY)	1. Belt tension either too high or too low.	1. Replace automatic belt tensioner.
	2. Belt routed incorrectly.	2. Verify belt routing.
	3. Incorrect belt.	3. Replace belt.
	4. Pulley(s) not within design tolerance.	4. Replace pulley(s).
	5. Foreign object(s) in grooves.	5. Remove foreign objects from grooves.

	6. Pulley misalignment.	6. Inspect pulleys and accessories. Inspect the mounting components. Apply chalk to the edges of the belt and rotate the engine 2-3 revolutions to transfer the chalk to the misaligned pulley. Adjust or replace as necessary.
	7. Belt cord line is broken.	7. Replace belt.
BELT BROKEN (NOTE: IDENTIFY AND CORRECT PROBLEM BEFORE NEW BELT IS INSTALLED)	1. Excessive tension.	1. Replace belt and automatic belt tensioner.
	2. Incorrect belt.	2. Replace belt.
	3. Tensile member damaged during belt installation.	3. Replace belt.
	4. Severe misalignment.	4. Check and replace.
	5. Bracket, pulley, or bearing failure.	5. Replace defective component and belt.
	6. Component failure/locked up pulley.	6. Inspect for smooth rotation of all component pulleys. Repair failed component.
NOISE (OBJECTIONABLE SQUEAL, SQUEAK, OR RUMBLE IS HEARD OR FELT WHILE DRIVE BELT IS IN OPERATION)	1. Belt slippage.	1. Replace belt or automatic belt tensioner.
	2. Bearing noise.	2. Locate and repair.
	3. Belt misalignment.	3. Replace belt.
	4. Belt-to-pulley mismatch.	4. Install correct belt.

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 1.4L MULTIAIR > REMOVAL

1. Remove the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
2. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .

Fig 1: Belt Tensioner, Serpentine Belt & Bolt

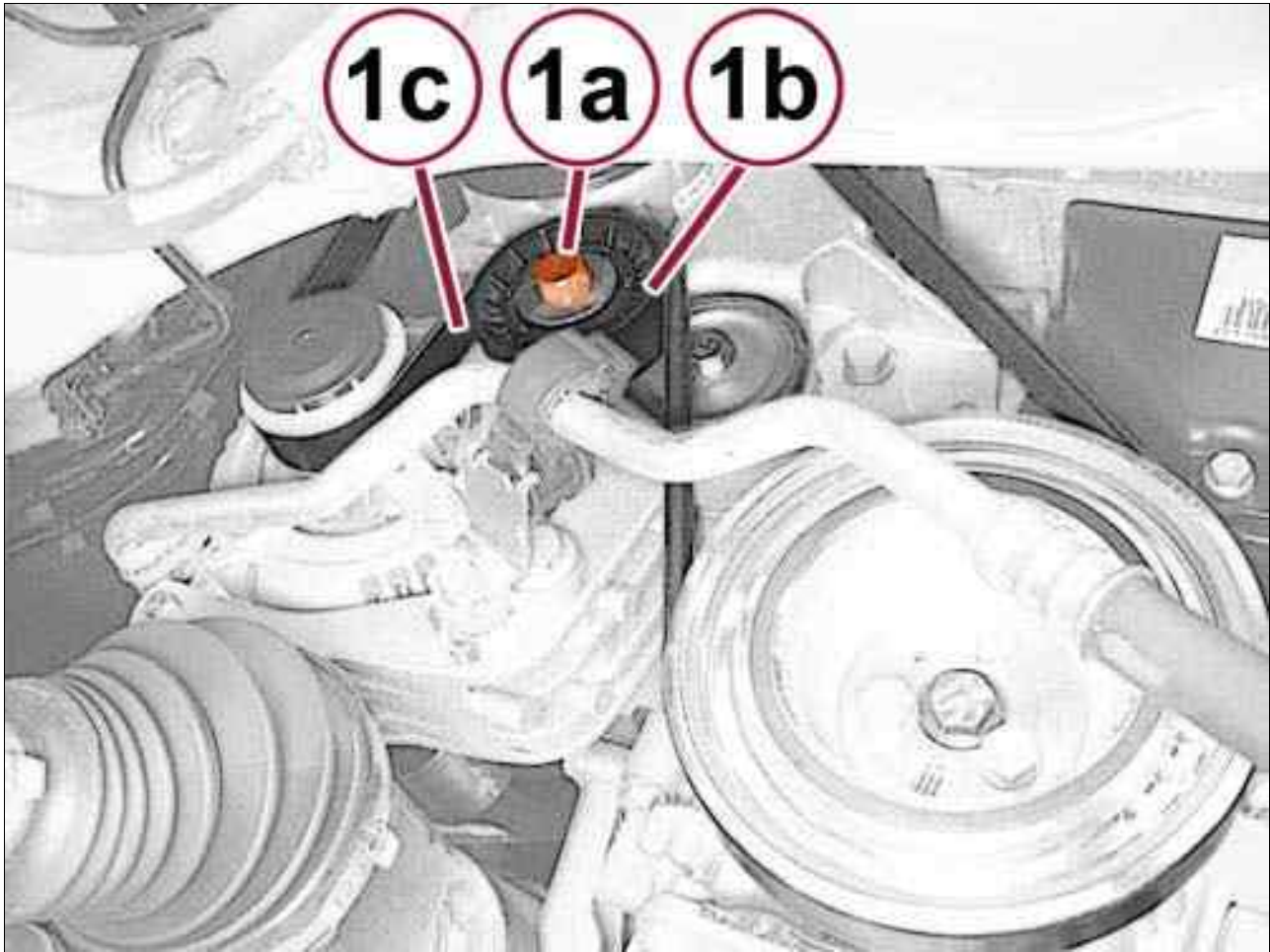


Courtesy of CHRYSLER GROUP, LLC

3. Using a suitable removal tool, rotate belt tensioner to release the tension and remove the serpentine belt (1c).

**ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 1.4L
MULTIAIR > INSTALLATION**

Fig 1: Belt Tensioner, Serpentine Belt & Bolt



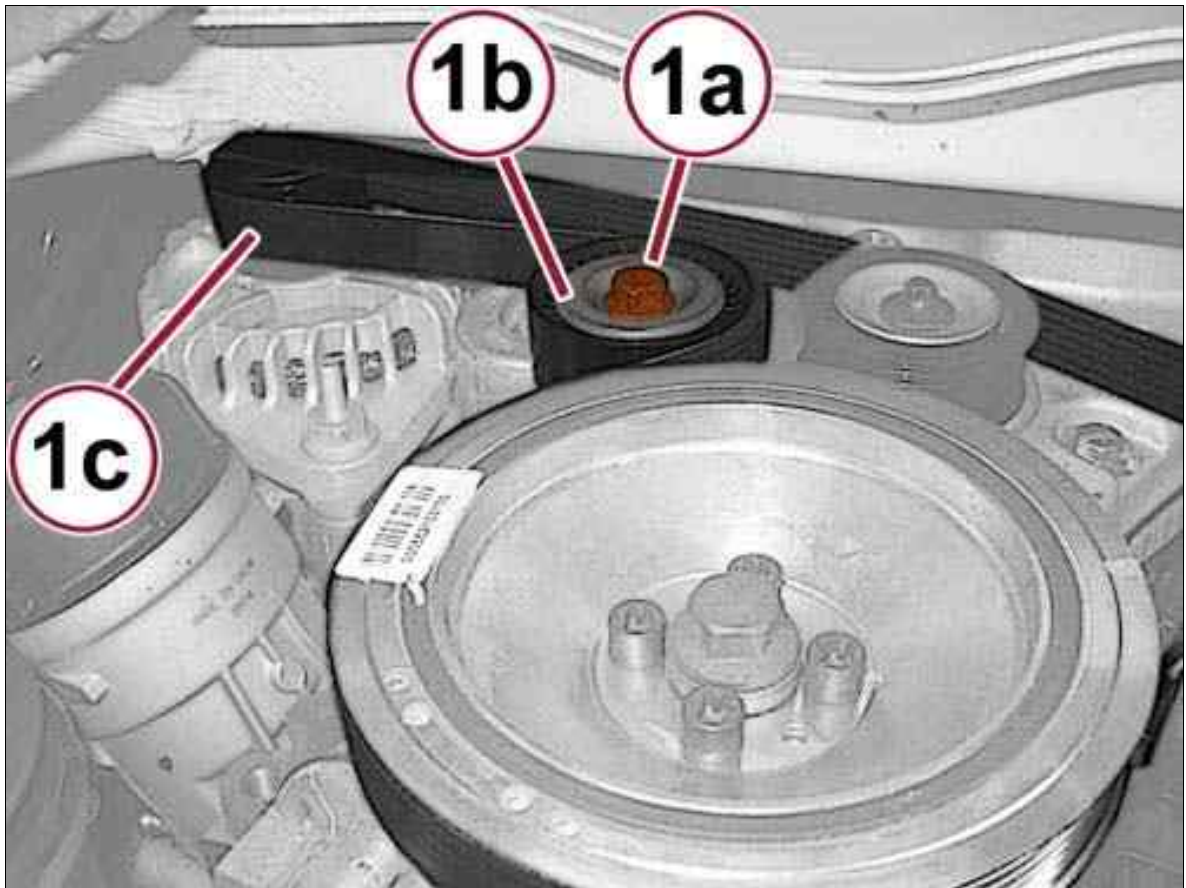
Courtesy of CHRYSLER GROUP, LLC

1. Inspect the serpentine belt and pulleys for damage.
2. Rotate the belt tensioner and install the serpentine belt (1c).
3. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
4. Install the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 1.6L/2.0L DIESEL > REMOVAL

1. Remove the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
2. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .

Fig 1: Belt Tensioner, Serpentine Belt & Bolt

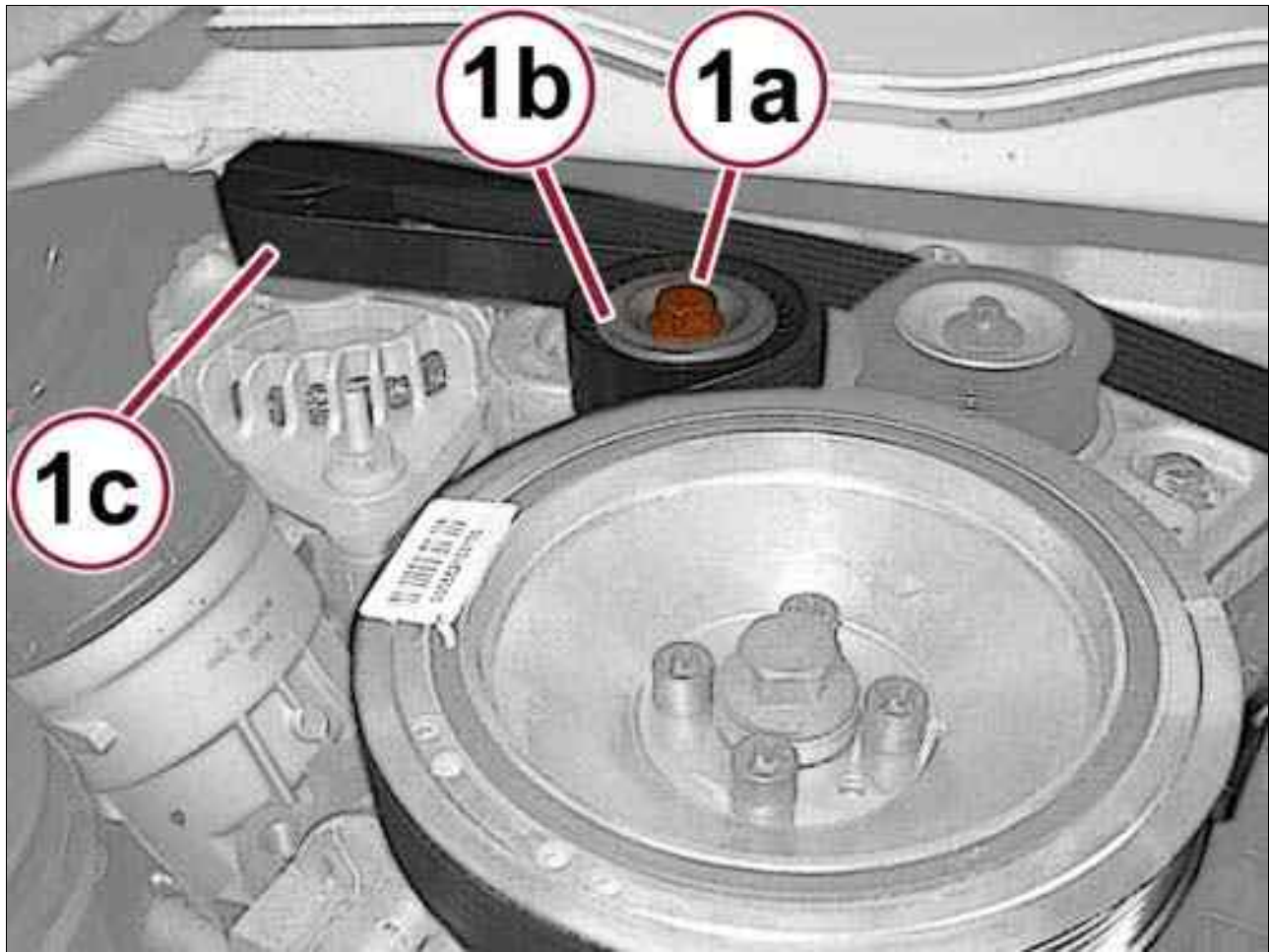


Courtesy of CHRYSLER GROUP, LLC

3. Using a suitable tool, rotate the belt tensioner (1b) and insert the locking pin.
4. Remove the serpentine belt (1c).

**ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION >
1.6L/2.0L DIESEL > INSTALLATION**

Fig 1: Belt Tensioner, Serpentine Belt & Bolt



Courtesy of CHRYSLER GROUP, LLC

1. Inspect the serpentine belt for damage or wear.
2. Inspect the pulleys for damage.
3. Install the serpentine belt (1c) over all pulleys.
4. Using a suitable tool, rotate the belt tensioner (1b) and remove the locking pin.
5. Check the serpentine belt (1c) for proper alignment.
6. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
7. Remove the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 2.0L 170 CV DIESEL > REMOVAL

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery

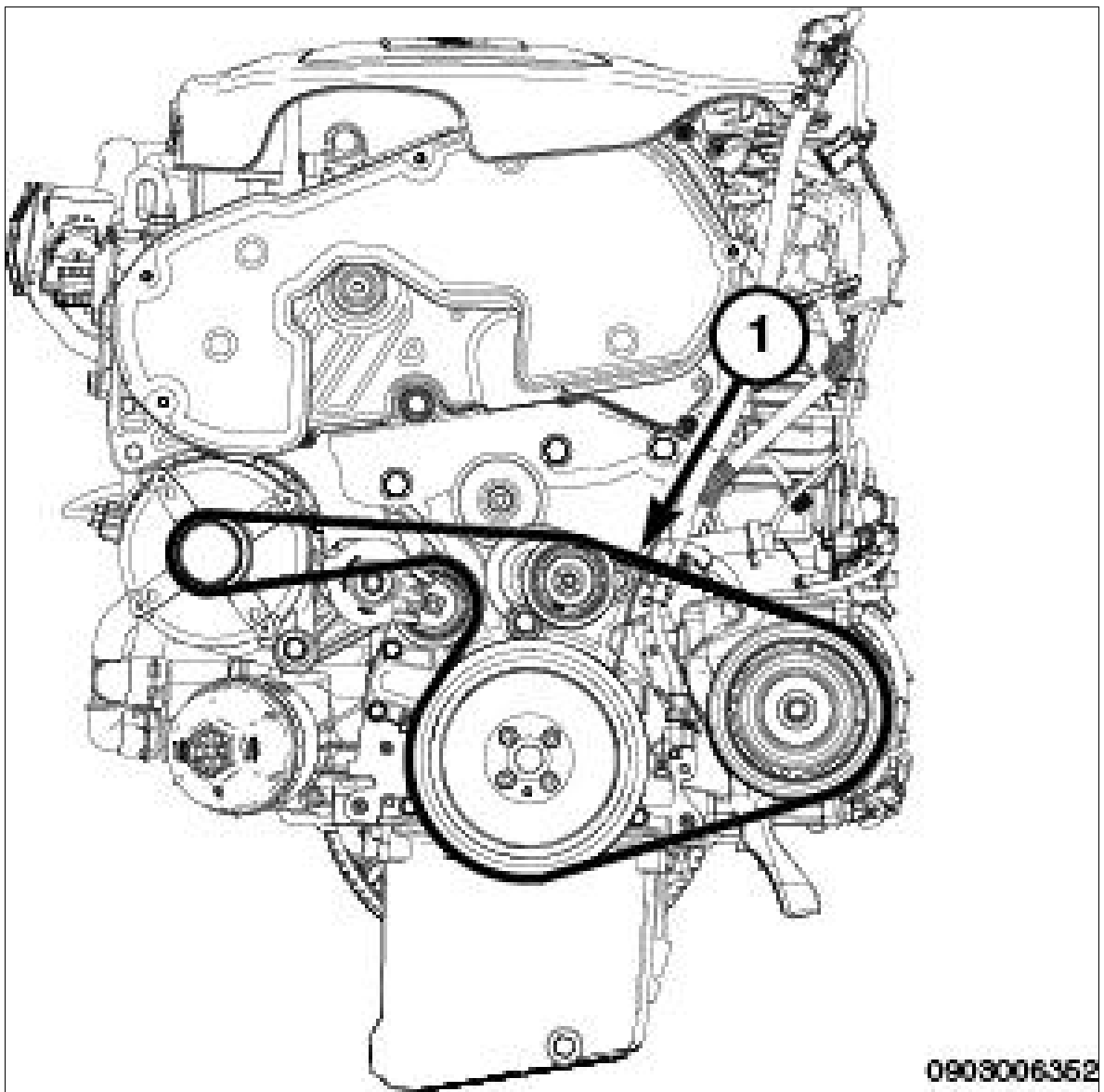
cable.

2. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
3. Remove the right side front wheel.
4. Remove fasteners and the inner fender splash shield (1).

 CAUTION:

Do not allow the tensioner to snap back to the unloaded position. Damage to the tensioner may occur.

Fig 1: Accessory Drive Belt Routing - 2.0L Diesel



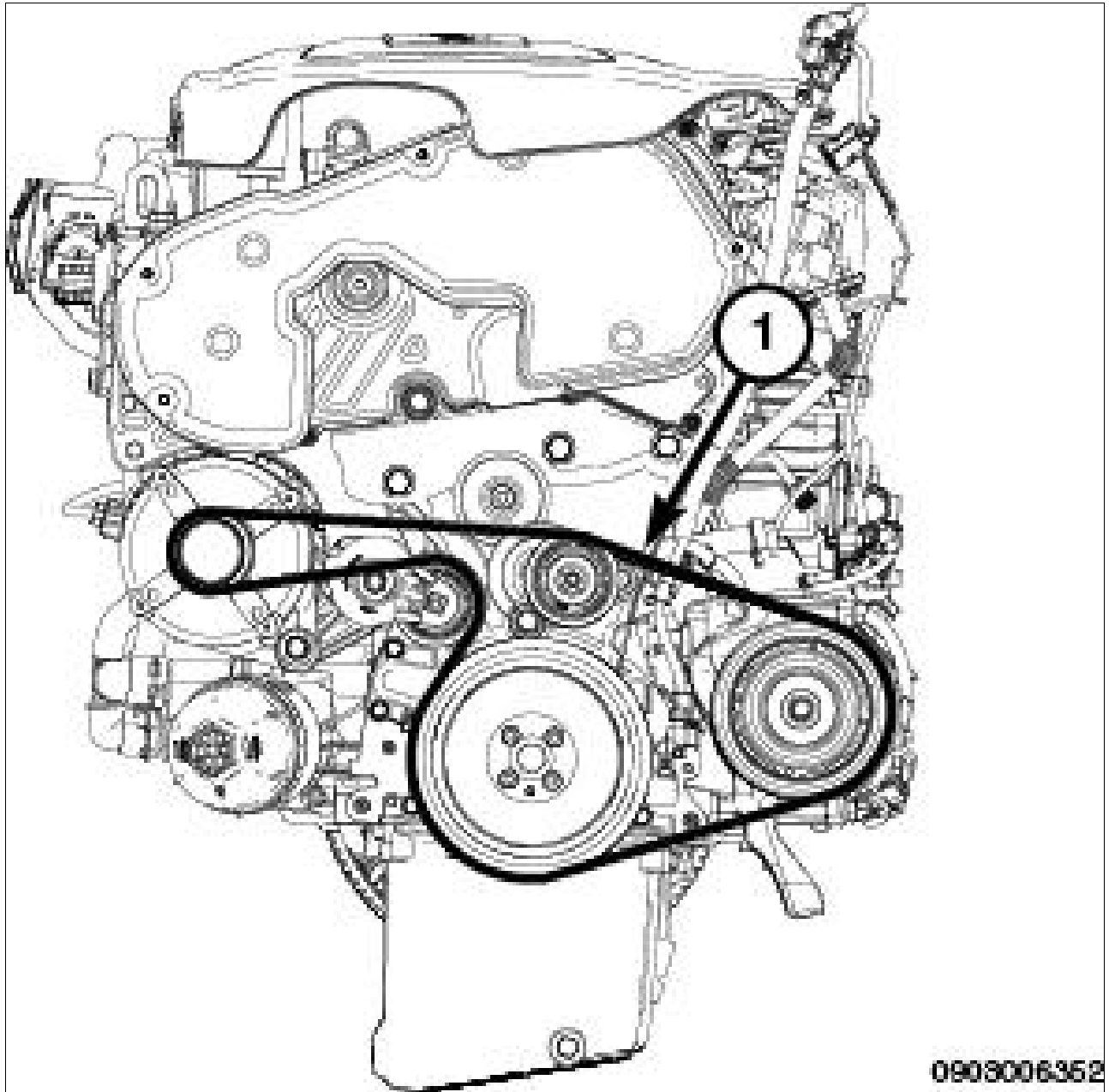
Courtesy of CHRYSLER GROUP, LLC

5. Using a wrench, rotate the belt tensioner until the locking pin can be installed.

6. Remove the accessory drive belt (1).

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 2.0L 170 CV DIESEL > INSTALLATION

Fig 1: Accessory Drive Belt Routing - 2.0L Diesel



Courtesy of CHRYSLER GROUP, LLC

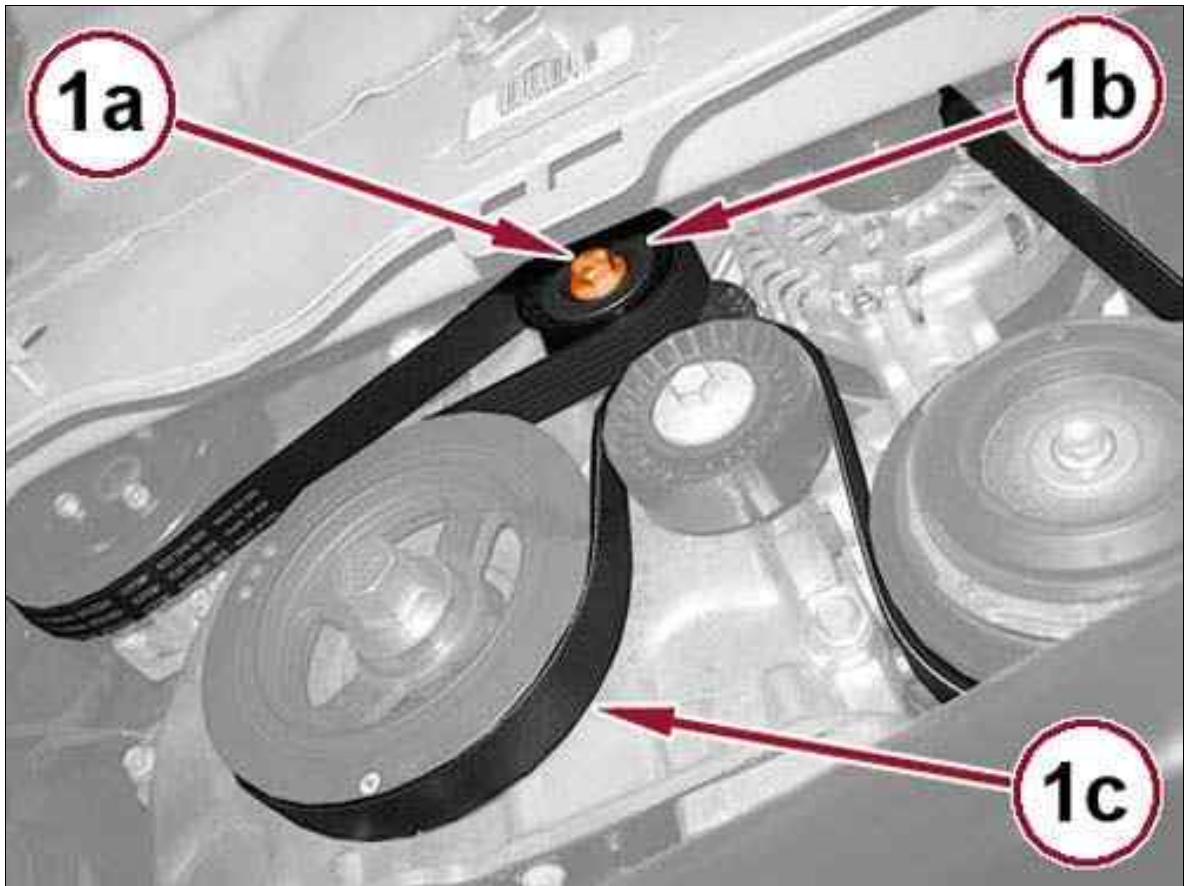
1. Install belt over all pulleys.
2. Using a wrench, rotate the cam tensioner (5) until the locking pin can be removed from the tensioner (8).
3. Check the belt for proper alignment.

4. Install the lower belt splash shield (2).
5. Install the right side front wheel.
6. Remove support and lower the vehicle.
7. Connect the negative battery cable.

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 2.4L MULTIAIR > REMOVAL

1. Remove the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
2. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .

Fig 1: Belt Tensioner, Bolt & Serpentine Belt



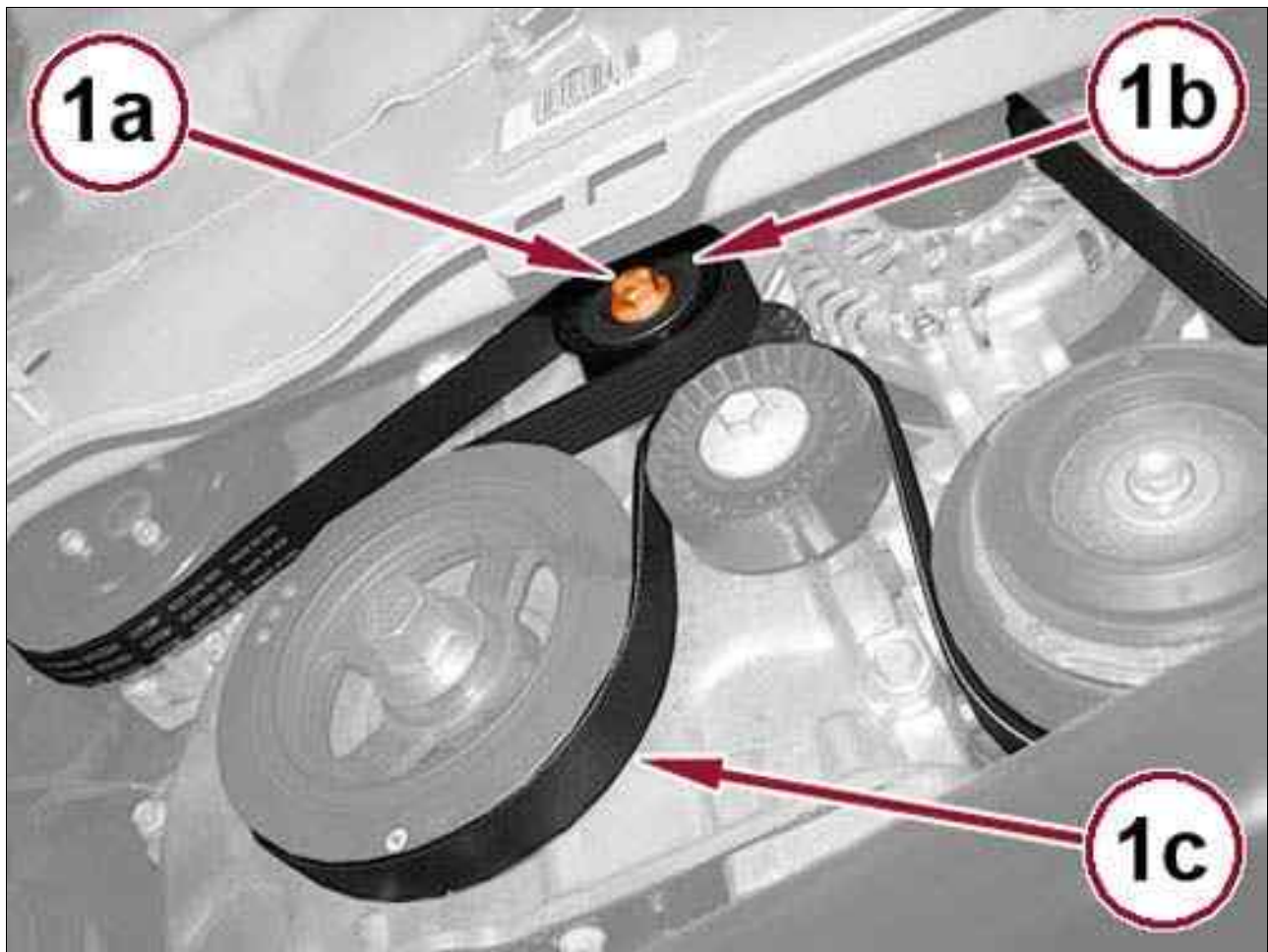
Courtesy of CHRYSLER GROUP, LLC

3. Using a suitable removal tool, rotate belt tensioner (1b) to release the tension and remove the serpentine belt (1c).

ACCESSORY DRIVE > BELT, SERPENTINE > REMOVAL AND INSTALLATION > 2.4L

MULTIAIR > INSTALLATION

Fig 1: Belt Tensioner, Bolt & Serpentine Belt

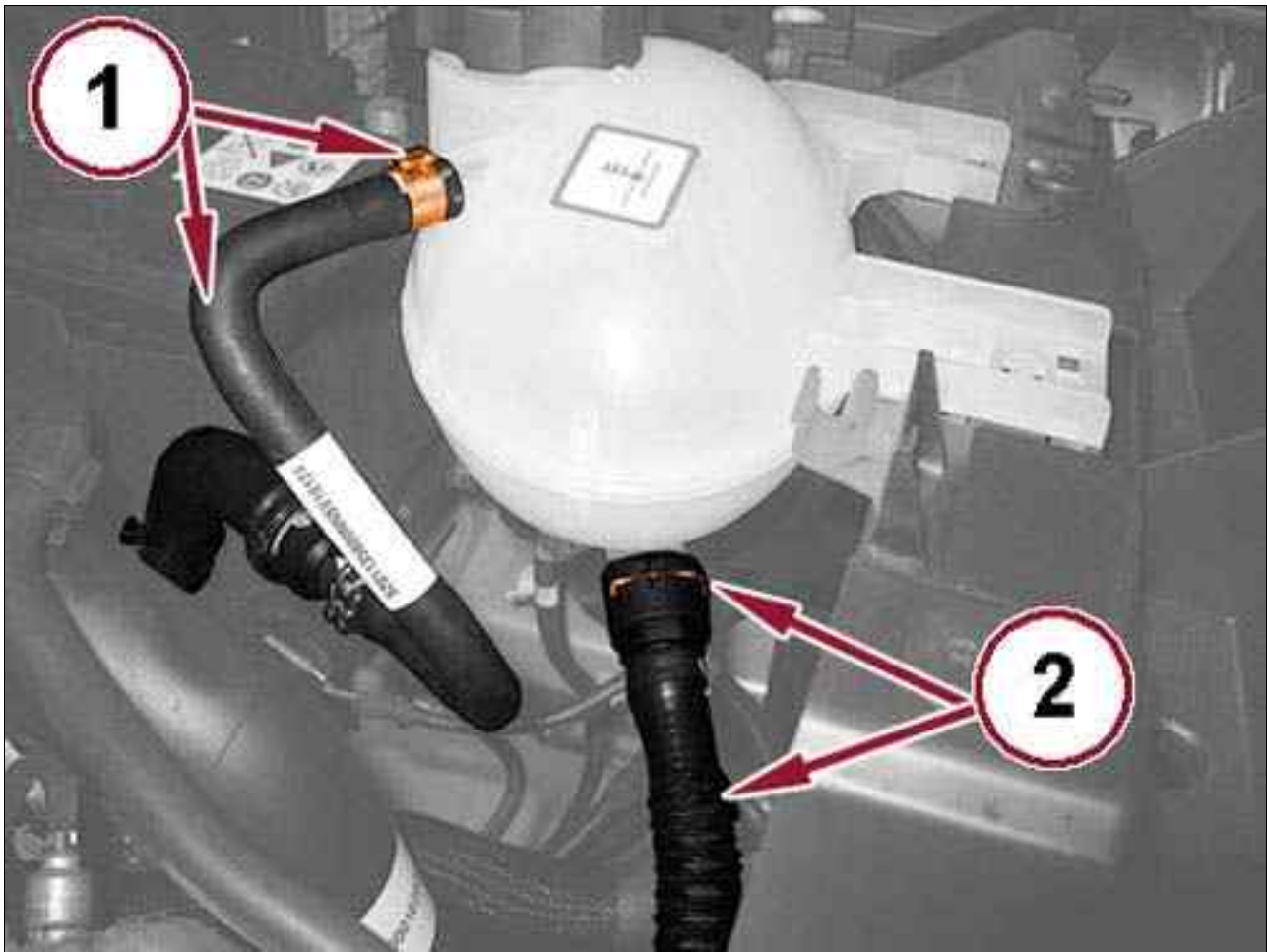


Courtesy of CHRYSLER GROUP, LLC

1. Inspect the serpentine belt and pulleys for damage.
2. Rotate the belt tensioner (1b) and install the serpentine belt (1c).
3. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
4. Install the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

ENGINE > BOTTLE, PRESSURIZED COOLANT > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 1.6L/2.0L DIESEL > REMOVAL

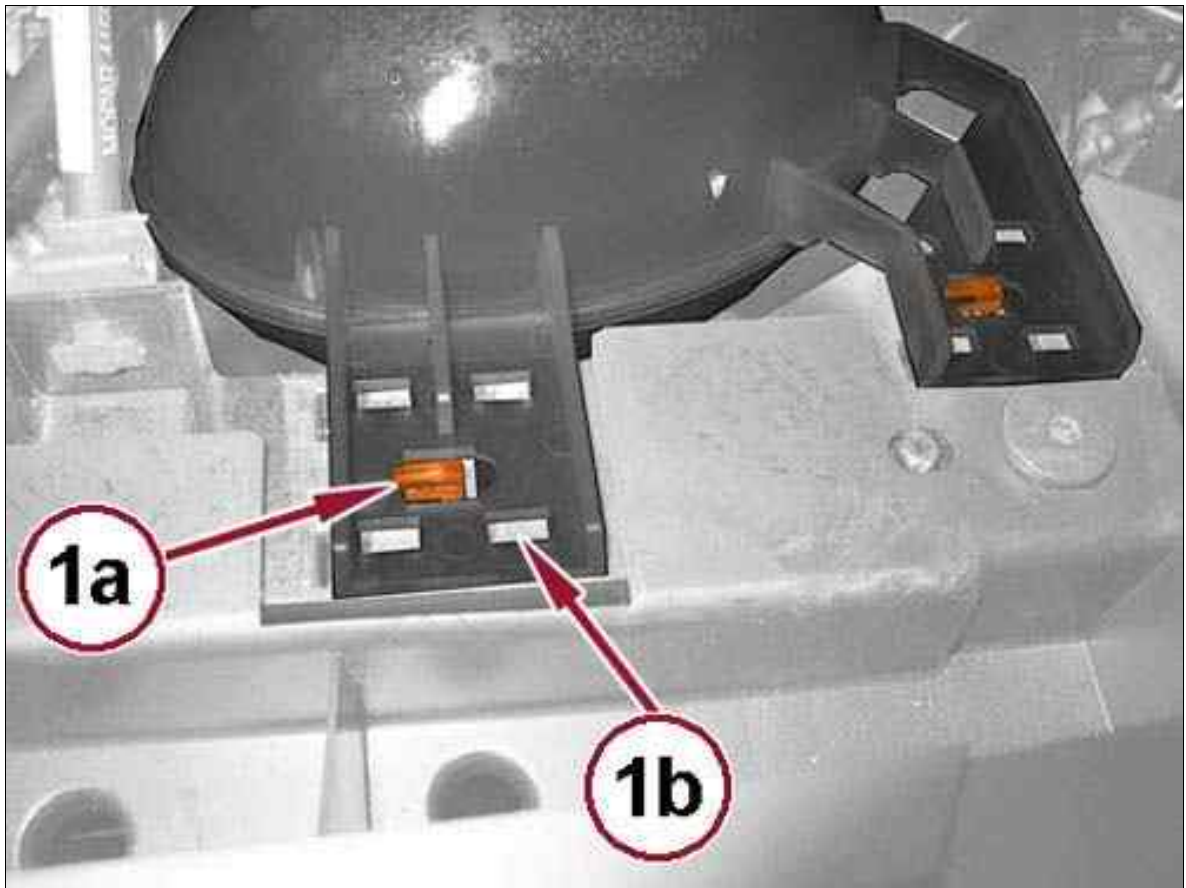
Fig 1: Degas Hose & Coolant Hose



Courtesy of CHRYSLER GROUP, LLC

1. Remove the engine cover. For 1.6/2.0L, refer to COVER, ENGINE, REMOVAL AND INSTALLATION . For 1.4L, refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Drain the cooling system. Refer to STANDARD PROCEDURE .
4. Loosen the clamp and remove the degas hose (1) from the pressurized coolant bottle.
5. Release the clip remove the coolant hose (2) from the pressurized coolant bottle.

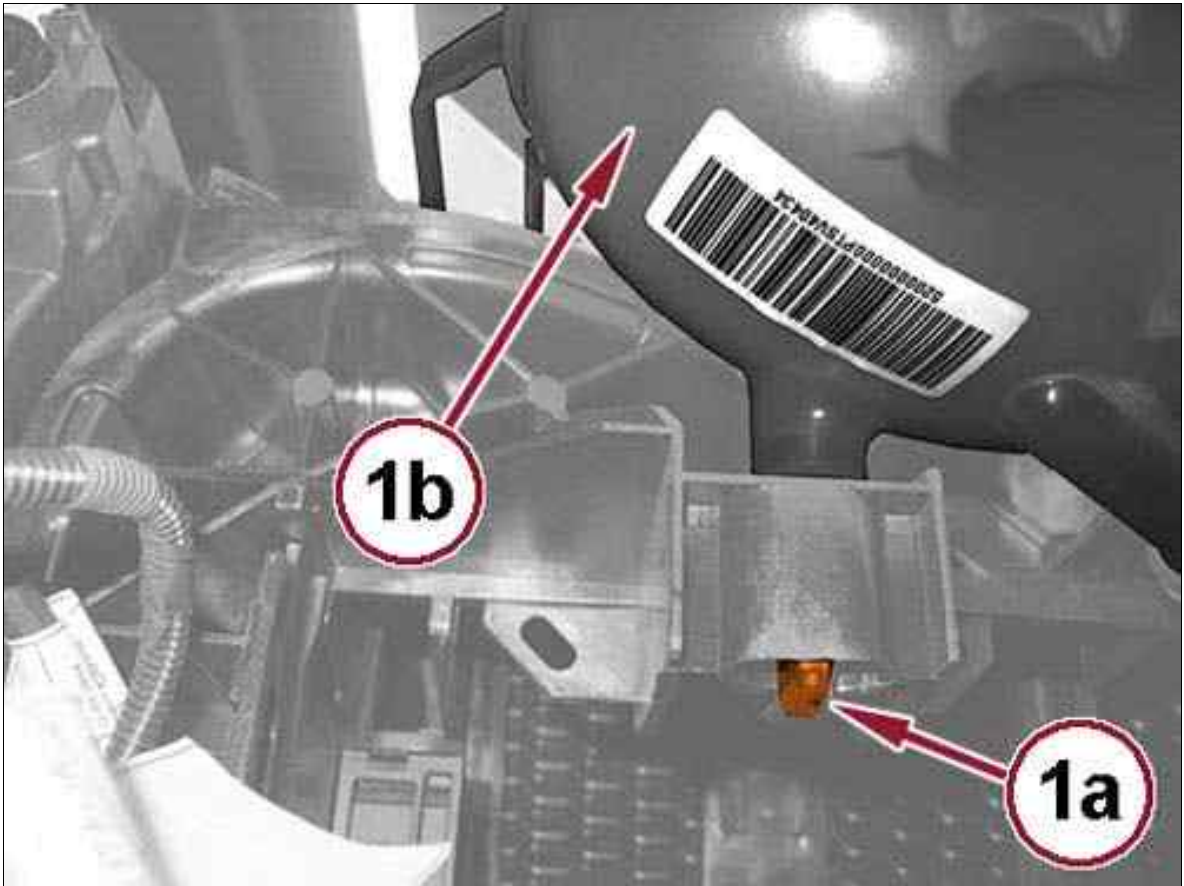
Fig 2: Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

6. Lift the clips (1a) and slide the pressurized coolant bottle to the left and disengage the retaining clips (1b).

Fig 3: Pressurized Coolant Bottle & Clips

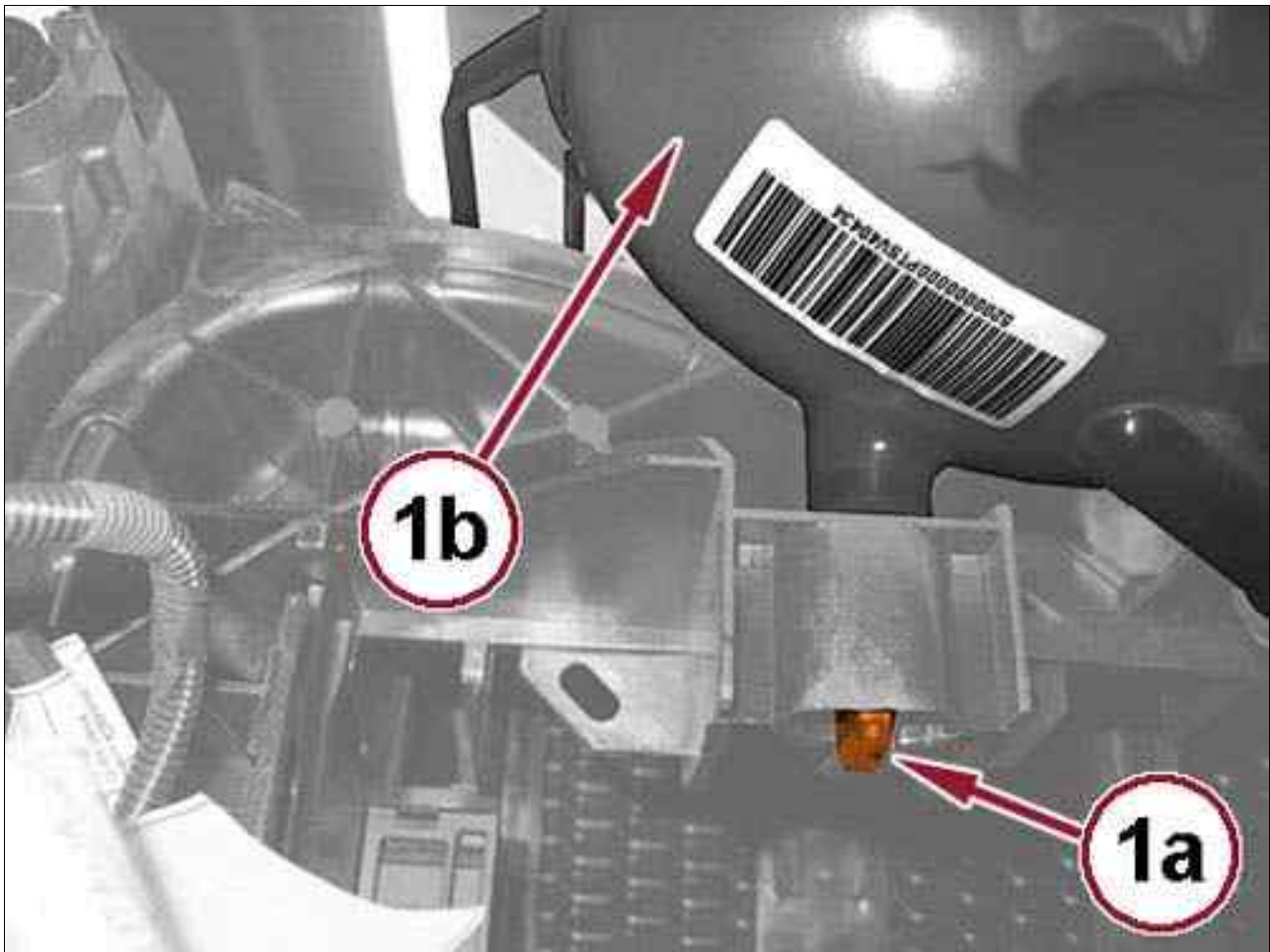


Courtesy of CHRYSLER GROUP, LLC

7. Squeeze the clips (1a) and remove pressurized coolant bottle (1b).

**ENGINE > BOTTLE, PRESSURIZED COOLANT > REMOVAL AND INSTALLATION >
1.4L MULTI AIR 1.6L/2.0L DIESEL > INSTALLATION**

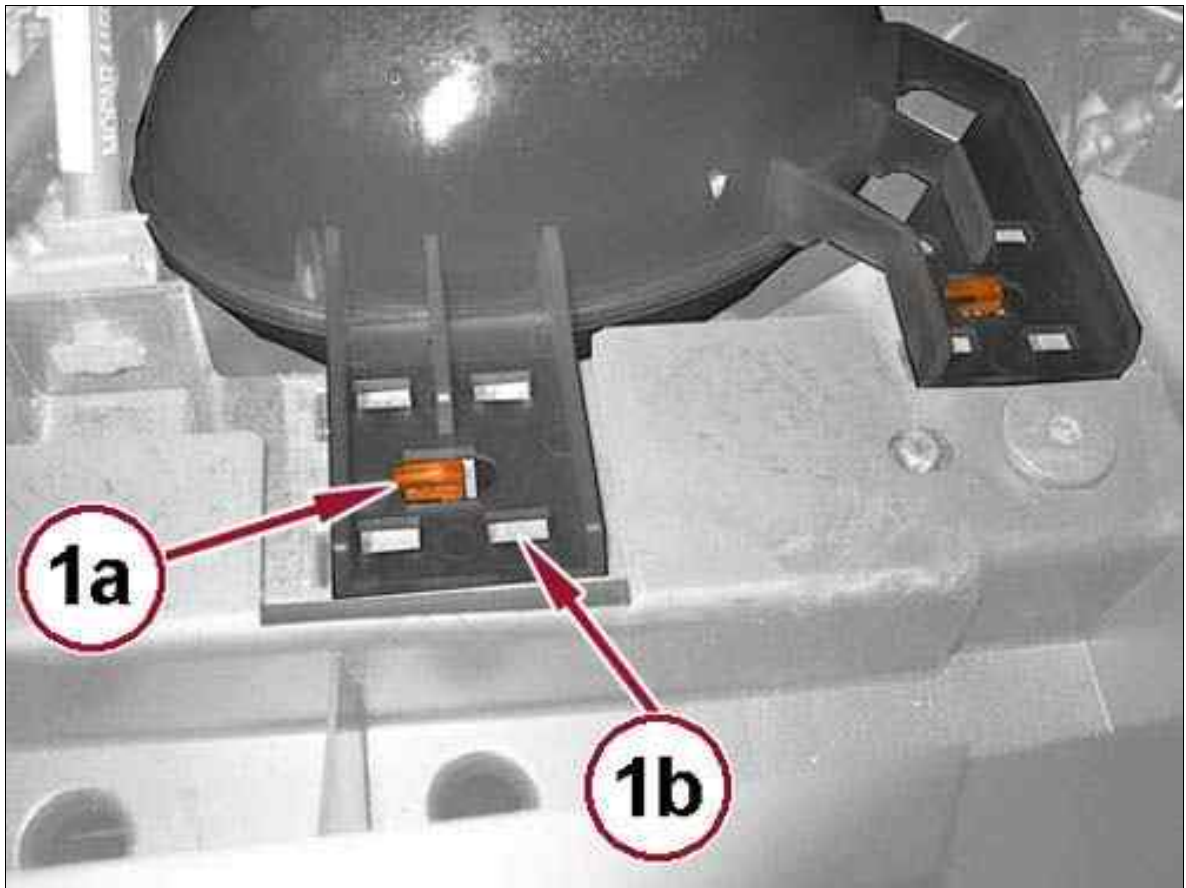
Fig 1: Pressurized Coolant Bottle & Clips



Courtesy of CHRYSLER GROUP, LLC

1. Install the pressurized coolant bottle (1b) and engage the retaining clips (1a).

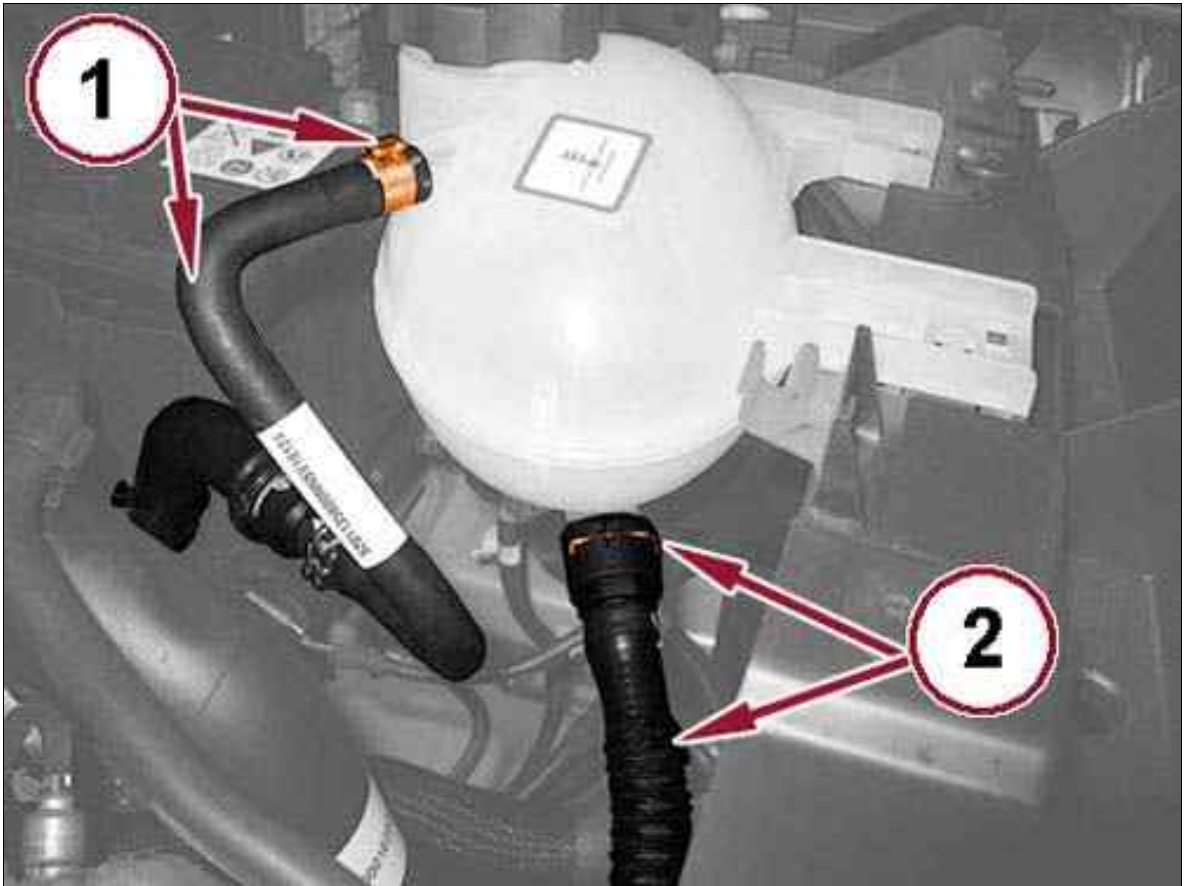
Fig 2: Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

2. Slide the pressurized coolant bottle to the right and engage the retaining clips (1b). Push the clip (1a) to lock.

Fig 3: Degas Hose & Coolant Hose

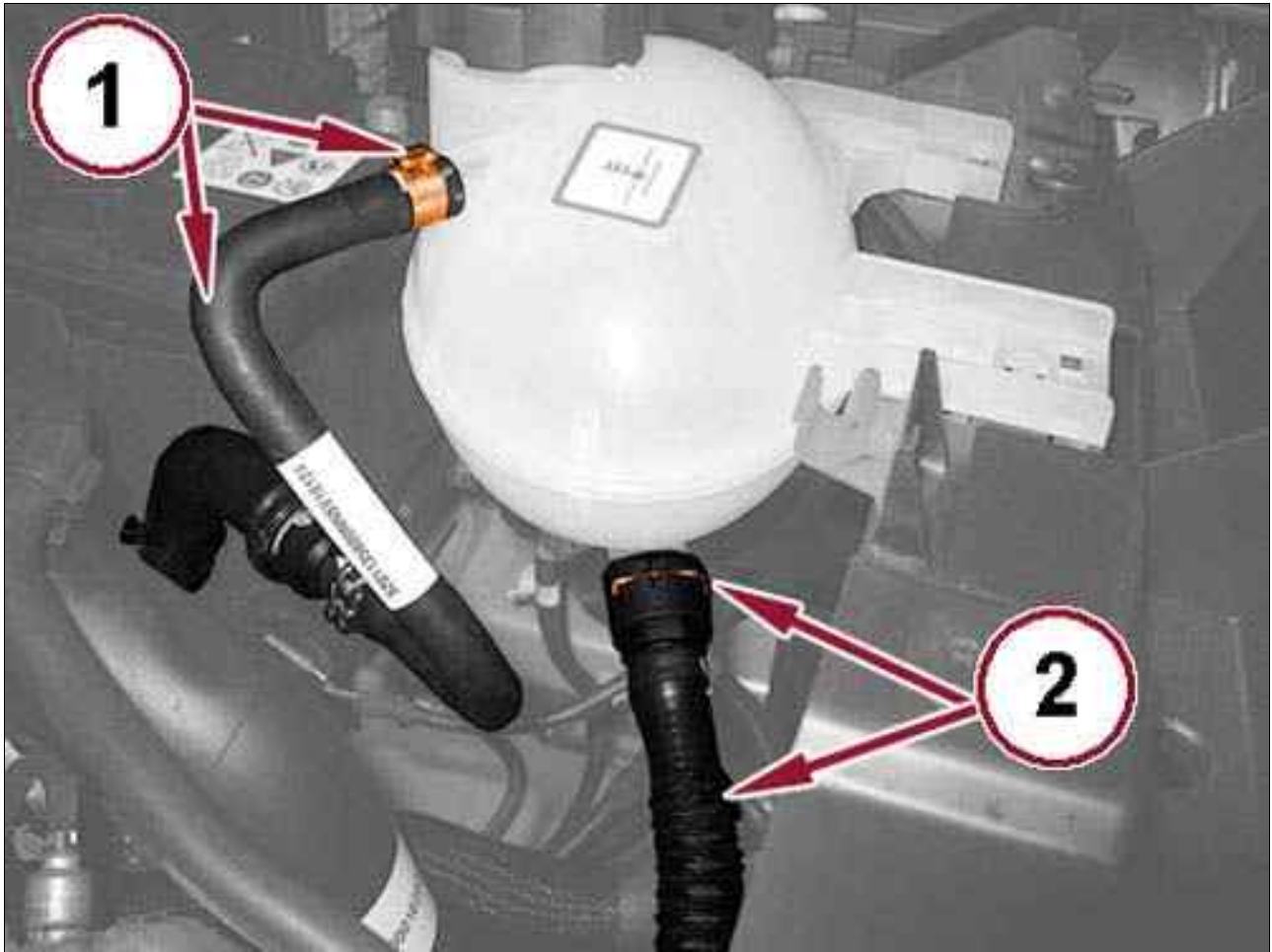


Courtesy of CHRYSLER GROUP, LLC

3. Install the coolant hose (2) onto the pressurized coolant bottle and engage the clip.
4. Install the degas hose (1) onto the pressurized coolant bottle and tighten the clamp.
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Install the engine cover. For 1.6/2.0L, refer to COVER, ENGINE, REMOVAL AND INSTALLATION . For 1.4L, refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
7. Fill the cooling system. Refer to STANDARD PROCEDURE .
8. Run the engine until it reaches normal operating temperature. Check cooling system for leaks and correct fluid level. Refer to STANDARD PROCEDURE .

**ENGINE > BOTTLE, PRESSURIZED COOLANT > REMOVAL AND INSTALLATION >
2.4L MULTI AIR > REMOVAL**

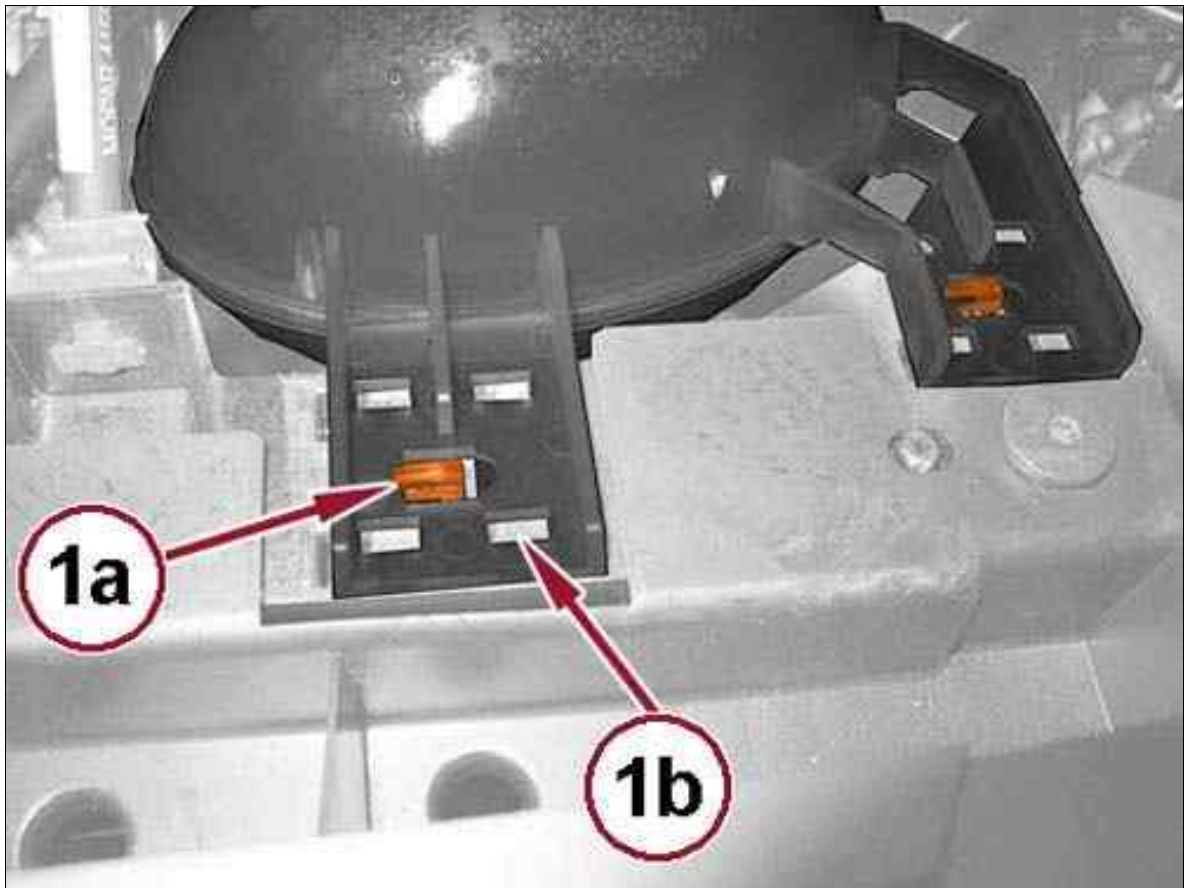
Fig 1: Degas Hose & Coolant Hose



Courtesy of CHRYSLER GROUP, LLC

1. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
2. Drain the cooling system. Refer to STANDARD PROCEDURE .
3. Loosen the clamp and remove the degas hose (1) from the pressurized coolant bottle.
4. Release the clip remove the coolant hose (2) from the pressurized coolant bottle.

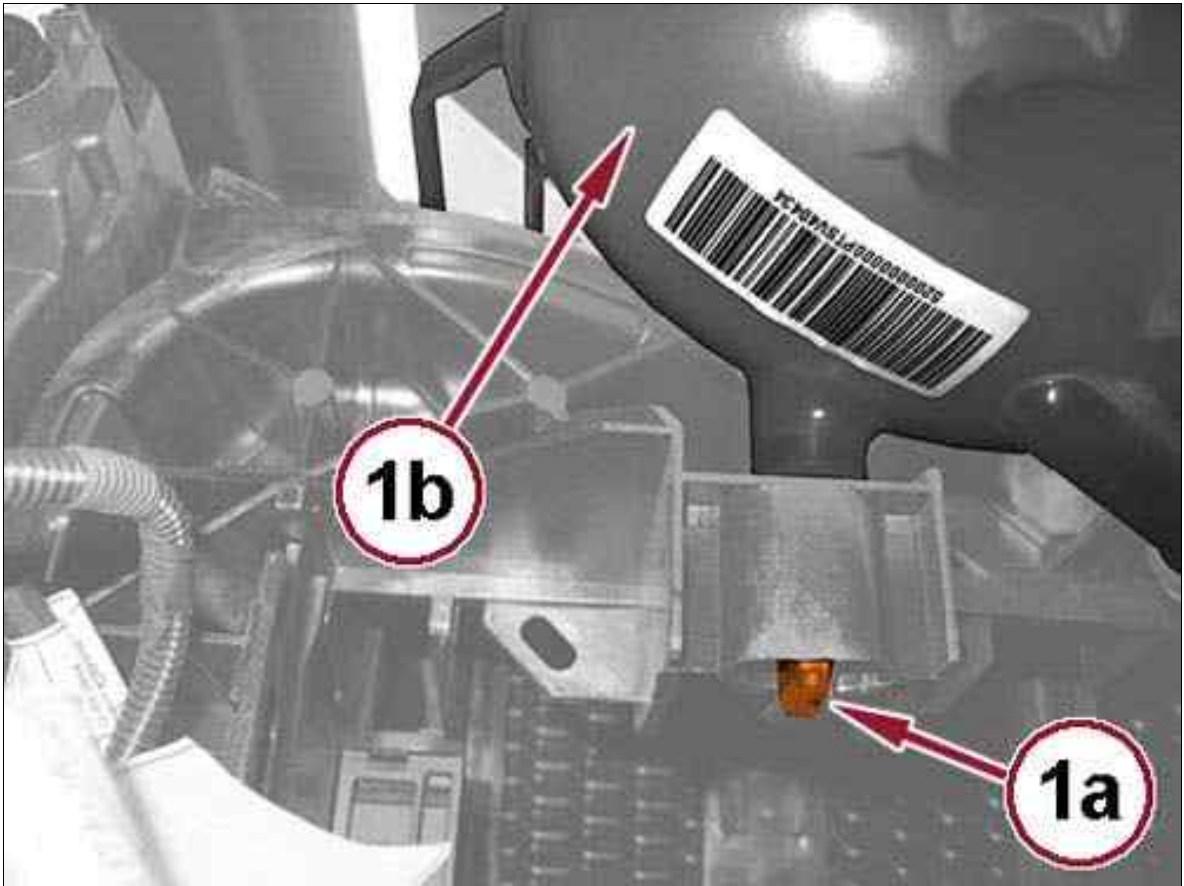
Fig 2: Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

5. Lift the clips (1a) and slide the pressurized coolant bottle to the left and disengage the retaining clips (1b).

Fig 3: Pressurized Coolant Bottle & Clips

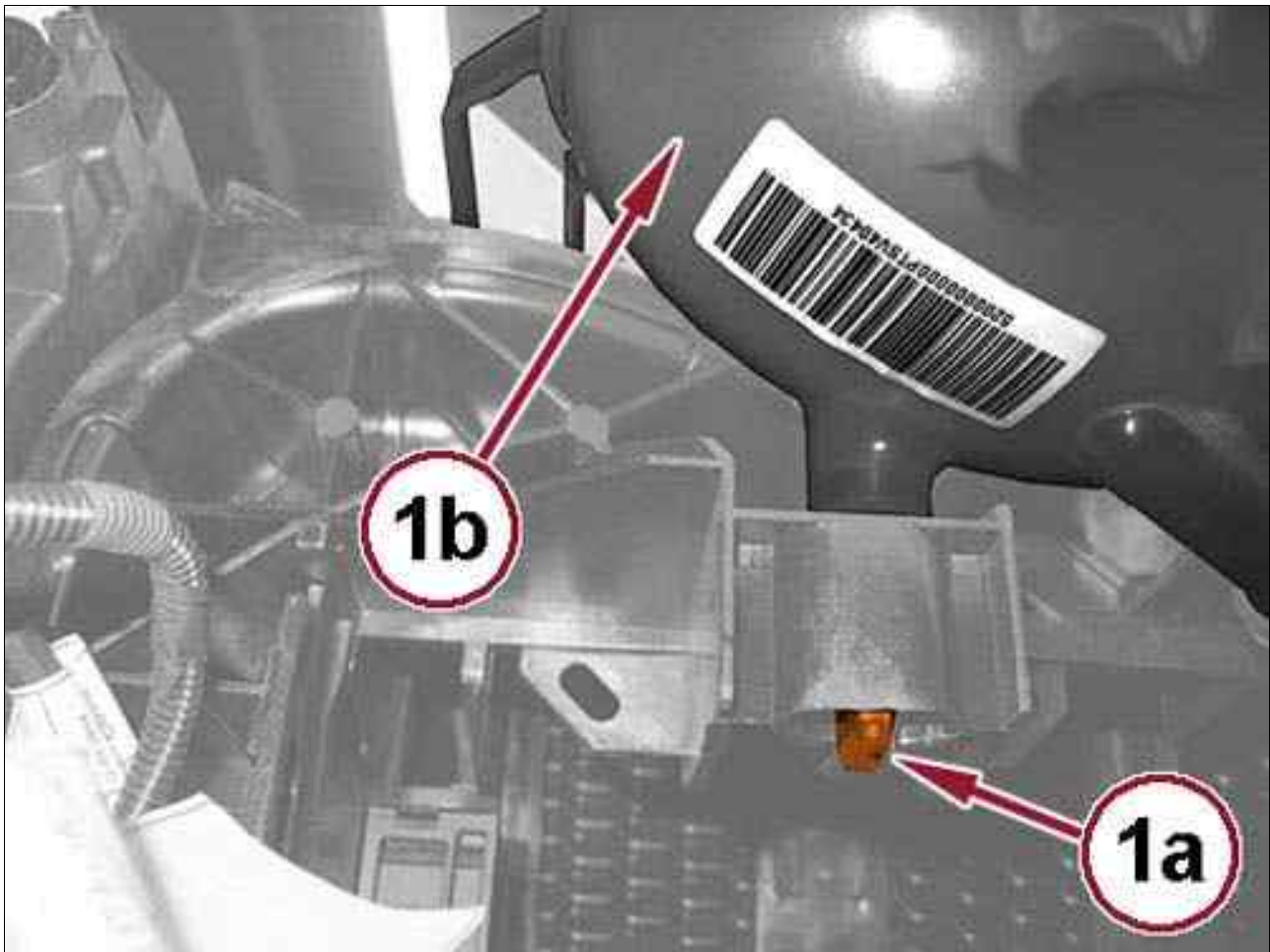


Courtesy of CHRYSLER GROUP, LLC

6. Squeeze the clips (1a) and remove pressurized coolant bottle (1b).

**ENGINE > BOTTLE, PRESSURIZED COOLANT > REMOVAL AND INSTALLATION >
2.4L MULTI AIR > INSTALLATION**

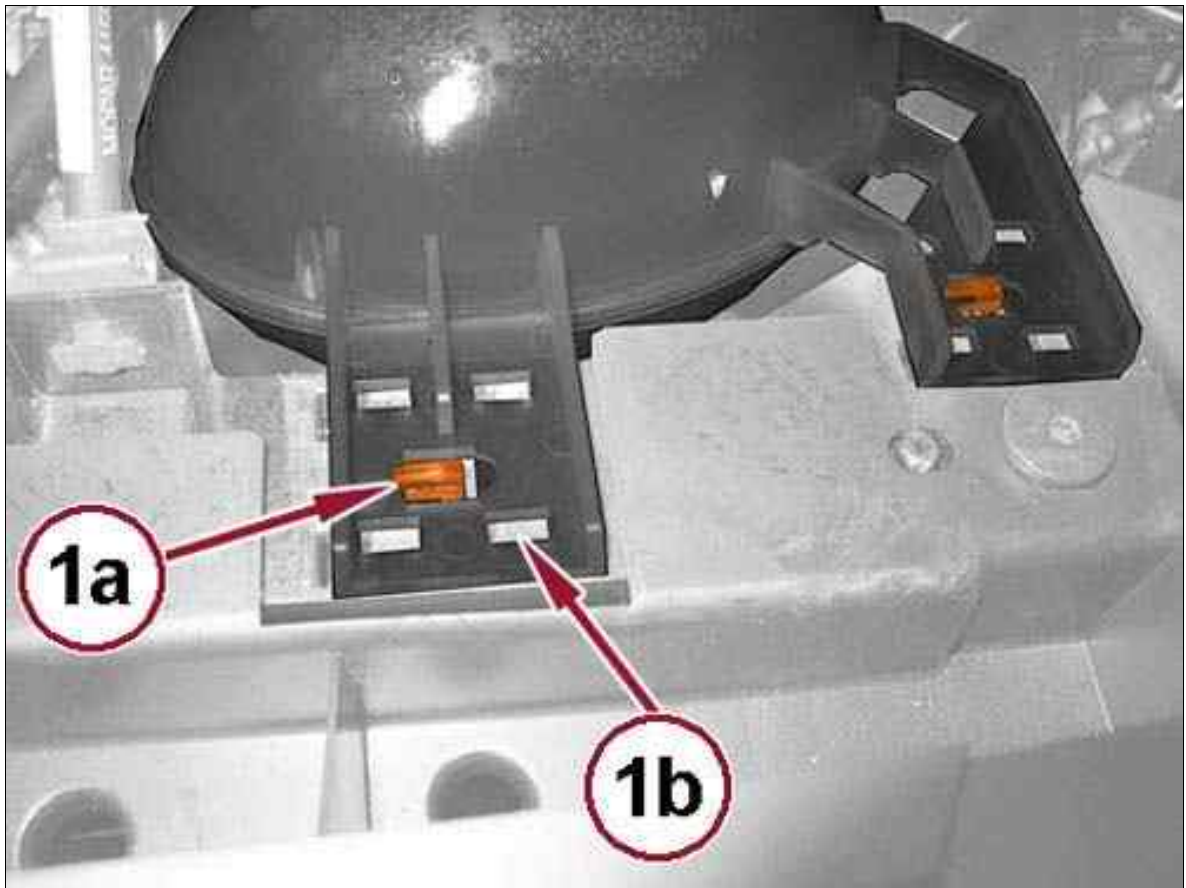
Fig 1: Pressurized Coolant Bottle & Clips



Courtesy of CHRYSLER GROUP, LLC

1. Install the pressurized coolant bottle (1b) and engage the retaining clips (1a).

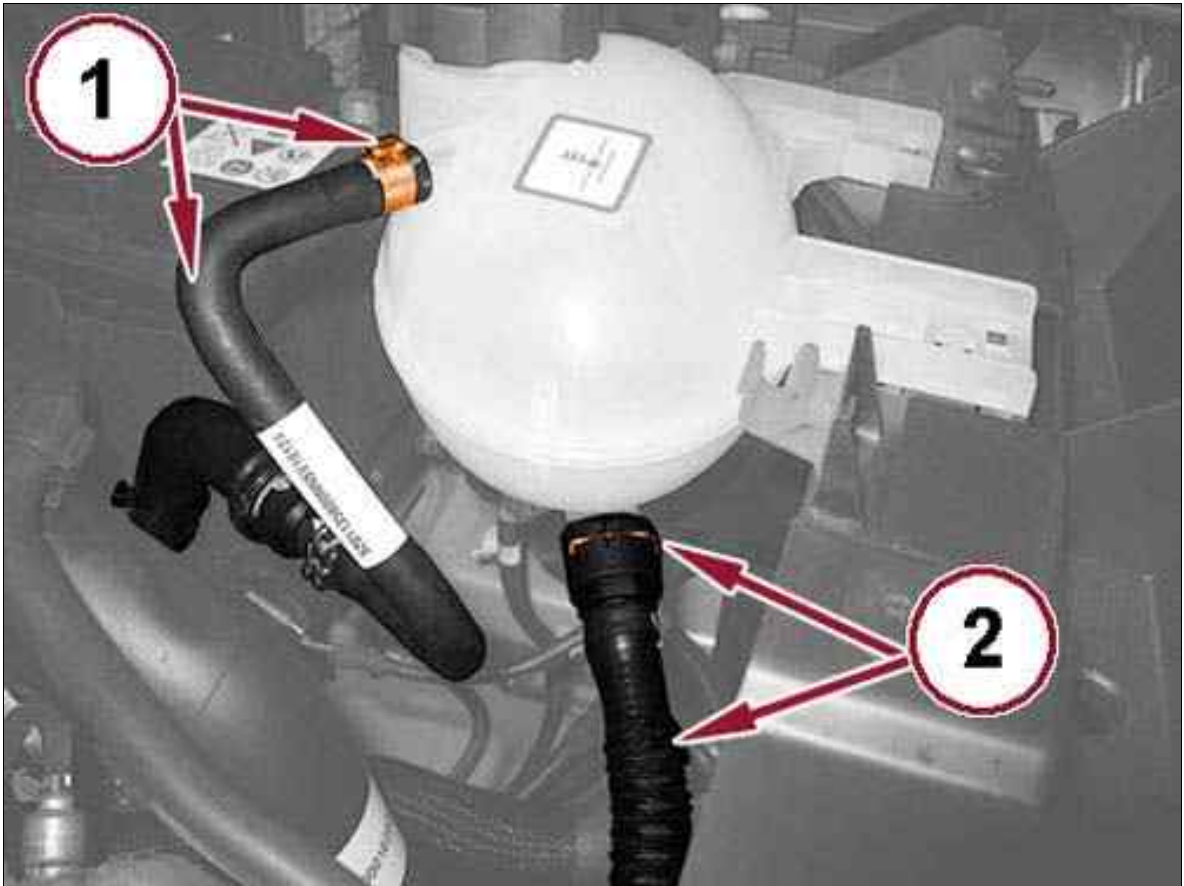
Fig 2: Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

2. Slide the pressurized coolant bottle to the right and engage the retaining clips (1b). Push the clip (1a) to lock.

Fig 3: Degas Hose & Coolant Hose



Courtesy of CHRYSLER GROUP, LLC

3. Install the coolant hose (2) onto the pressurized coolant bottle and engage the clip.
4. Install the degas hose (1) onto the pressurized coolant bottle and tighten the clamp.
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Fill the cooling system. Refer to STANDARD PROCEDURE .
7. Run the engine until it reaches normal operating temperature. Check cooling system for leaks and correct fluid level. Refer to STANDARD PROCEDURE .

ENGINE > CAP, RADIATOR > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION

Fig 1: Radiator Cap



Courtesy of CHRYSLER GROUP, LLC

The pressure cap is located on top of the pressurized coolant bottle. The cap releases pressure at 1.4 bar (20.3 psi). The pressure relief point (in bar) is noted on top of the cap (1).

The cooling system will operate at pressures slightly above atmospheric pressure. This results in a higher coolant boiling point allowing increased radiator cooling capacity. The cap contains a spring-loaded pressure relief valve. This valve opens when system pressure reaches 1.4 bar (20.3 psi).

An O-ring gasket seals the pressurized coolant bottle. This is done to maintain vacuum during coolant cool-down and to prevent leakage when system is under pressure.

ENGINE > CAP, RADIATOR > DIAGNOSIS AND TESTING > RADIATOR CAP

Remove the cap. Be sure that the sealing surfaces are clean. Moisten the rubber gasket with water and install the cap on a commercially available pressure tester.

Using the cooling system tester, bring the pressure up to the pressure prescribed on cap. If the pressure

cap fails to hold up to 20 psi, replace the cap.



NOTE:

The cap is designed to hold up to 20 psi. If during the test, the pressure rapidly bleeds off prior to 20 psi, the cap has failed.

The pressure cap may test properly while positioned on the pressure test tool. It may not hold pressure or vacuum when installed on the pressurized coolant bottle. If the test passes on the tool but there is sufficient evidence that the cap fails on the bottle, inspect the coolant bottle neck for damage or debris that may prevent the cap from sealing properly.



CAUTION:

Radiator pressure testing tools are very sensitive to small air leaks which will not cause cooling system problems. A pressure cap that does not have a history of coolant loss should not be replaced just because it leaks slowly when tested with this tool. Add water to tool. Turn tool upside down and recheck pressure cap to confirm that cap needs replacement.

ENGINE > CAP, RADIATOR > INSPECTION > INSPECTION

Fig 1: Radiator Cap O-Ring



Courtesy of CHRYSLER GROUP, LLC

The vent valve in the cap is normally closed.

If the O-ring seal (1) is damaged, replace the cap.

A replacement cap must be the type designed for use on a pressurized coolant bottle.

ENGINE > COOLANT > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION

WARNING:

Antifreeze is an ethylene-glycol base coolant and is harmful if swallowed or inhaled. If swallowed, drink two glasses of water and induce vomiting. If inhaled, move to fresh air area. Seek medical attention immediately. Do not store in open or unmarked containers. Wash skin and clothing thoroughly after coming in contact with ethylene-glycol. Keep out of

reach of children. Dispose of glycol base coolant properly, contact your dealer or government agency for location of collection center in your area. Do not open a cooling system when the engine is at operating temperature or hot under pressure, personal injury can result. Avoid radiator cooling fan when engine compartment related service is performed, personal injury can result.

 CAUTION:

Mopar® Antifreeze/Coolant, is a Lifetime of Engine Formula. **IT MAY NOT BE MIXED WITH ANY OTHER TYPES OF ANTIFREEZE.** Mixing of coolants other than specified (non-OAT or other OAT), may result in engine damage that may not be covered under the new vehicle warranty, and decreased corrosion protection.

 CAUTION:

Mixing of engine coolant (antifreeze) other than specified Organic Additive Technology (OAT) engine coolant (antifreeze), may result in engine damage and may decrease corrosion protection. Organic Additive Technology (OAT) engine coolant is different and should not be mixed with Hybrid Organic Additive Technology (HOAT) engine coolant (antifreeze). If a non-OAT engine coolant (antifreeze) is introduced into the cooling system in an emergency, it should be replaced with the specified engine coolant (antifreeze) as soon as possible.

Only use the coolant specified for this vehicle. Refer to CAPACITIES AND RECOMMENDED FLUIDS, SPECIFICATIONS .

The cooling system is designed around the coolant. The coolant must accept heat from engine metal, in the cylinder head area near the exhaust valves and engine block. Then coolant carries the heat to the radiator where the tube/fin radiator can transfer the heat to the air.

The use of aluminum cylinder blocks, cylinder heads, and water pumps requires special corrosion protection. Mopar® Antifreeze/Coolant, or the equivalent ethylene-glycol base coolant with organic corrosion inhibitors (called OAT, for Organic Additive Technology) is recommended. This coolant offers the best engine cooling without corrosion when mixed with 50% ethylene-glycol and 50% distilled water to obtain a freeze point of -37°C (-35°F). If it loses color or becomes contaminated, drain, flush, and replace with fresh properly mixed coolant solution.

OAT coolant is a **Life of the Engine** coolant. Maintenance of the cooling system is not required unless a repair has been made with loss of coolant or the coolant has been contaminated.

 CAUTION:

Richer antifreeze mixtures cannot be measured with normal field equipment and can cause problems associated with 100 percent ethylene-glycol.

The required ethylene-glycol (antifreeze) and water mixture depends upon climate and vehicle operating conditions. The coolant performance of various mixtures follows:

Pure Water- Water can absorb more heat than a mixture of water and ethylene-glycol, but this is not suitable for use in a cooling system. Water also freezes at a lower temperature, boils at a higher temperature and allows corrosion.

100 percent Ethylene-Glycol - The corrosion inhibiting additives in ethylene-glycol need the presence of water to dissolve. Without water, additives form deposits in the system. These deposits act as insulation causing the temperature to rise as high as 149°C (300°F). This temperature is hot enough to melt plastic and soften solder. The increased temperature can result in engine detonation. In addition, 100 percent ethylene-glycol freezes at -22°C (-8°F).

50/50 Ethylene-Glycol and Water - Is the recommended mixture, it provides protection against freezing to -37°C (-34°F). The antifreeze concentration **must always** be a minimum of 44 percent, year-round in all climates. If the percentage is lower, engine parts may be eroded by cavitation. Maximum protection against freezing is provided with a 68 percent antifreeze concentration, which prevents freezing down to -67.7°C (-90°F). A higher percentage will freeze at a warmer temperature. Also, a higher percentage of antifreeze can cause the engine to overheat because specific heat of antifreeze is lower than that of water.



CAUTION:

Do not use coolant additives that are claimed to improve engine cooling.

ENGINE > COOLANT > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - COOLANT CONCENTRATION TESTING

Check coolant concentration when any additional coolant is added to the system, or after a coolant drain, flush and refill. Use of a hydrometer or the (special tool #8286, Refractometer) can be used to test coolant concentration.

A hydrometer tests the amount of glycol in a mixture by measuring the specific gravity of the mixture. The higher the concentration of ethylene glycol, the larger the number of balls that will float, and the higher the freeze protection (up to a maximum of 60% by volume glycol).

The (special tool #8286, Refractometer) tests the amount of glycol in a coolant mixture by measuring the amount a beam of light bends as it passes through the fluid.

Some coolant manufacturers use other types of glycols in their coolant formulations. Propylene glycol is the most common new coolant. However, propylene glycol based coolants do not provide the same freezing protection and corrosion protection and are not recommended.



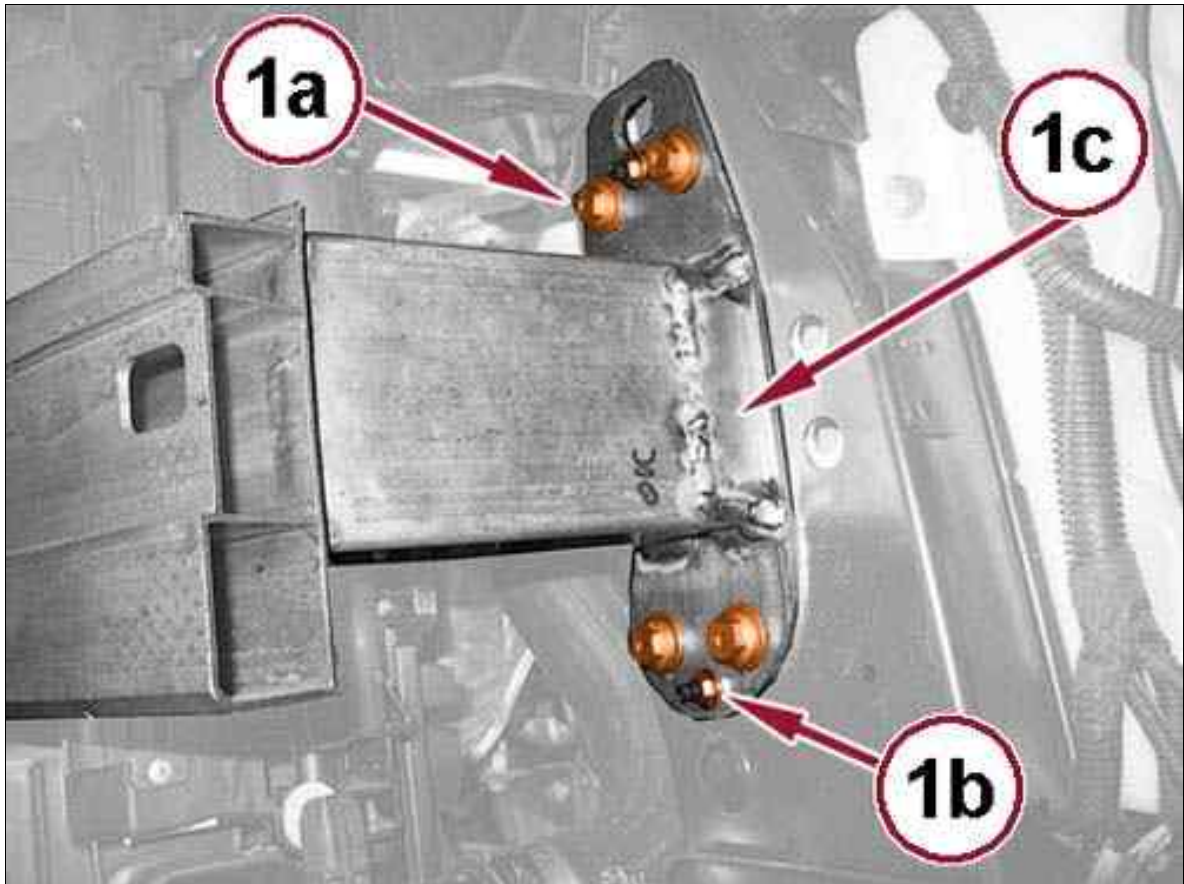
CAUTION:

Do not mix types of coolant - corrosion protection will be severely reduced.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 1.4 MULTIAIR TURBO > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

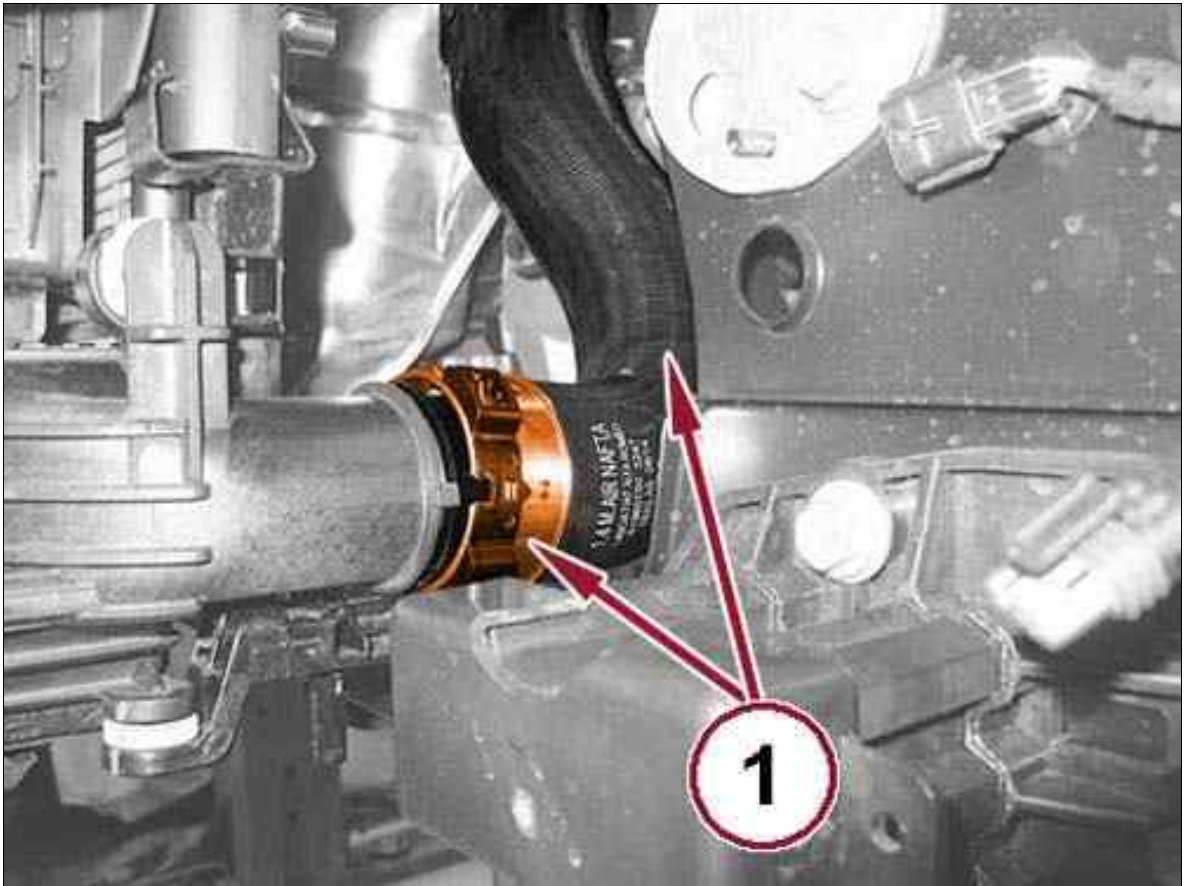
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

4. Remove the bolts (1a), nuts (1b) and the front bumper beam (1c).

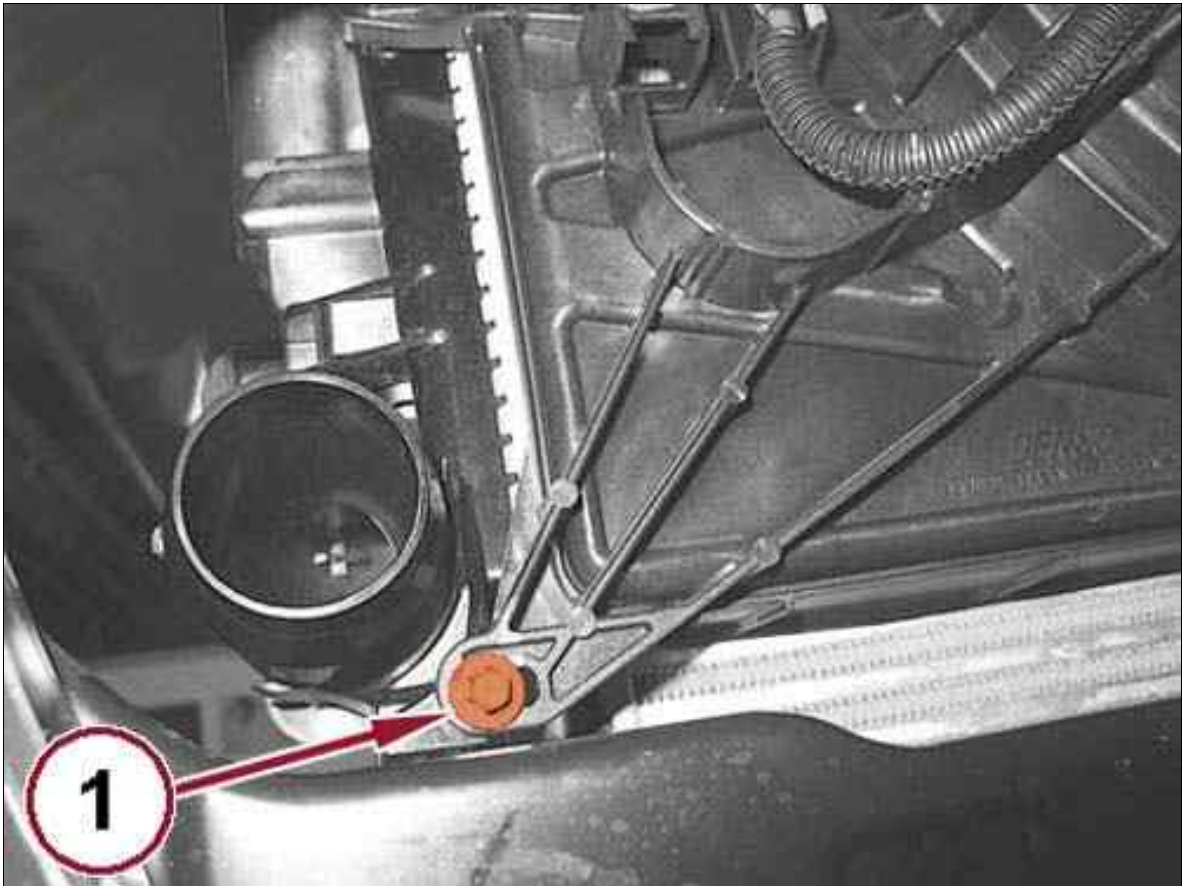
Fig 2: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the quick coupling sleeve (1) from the Charge Air Cooler (CAC).

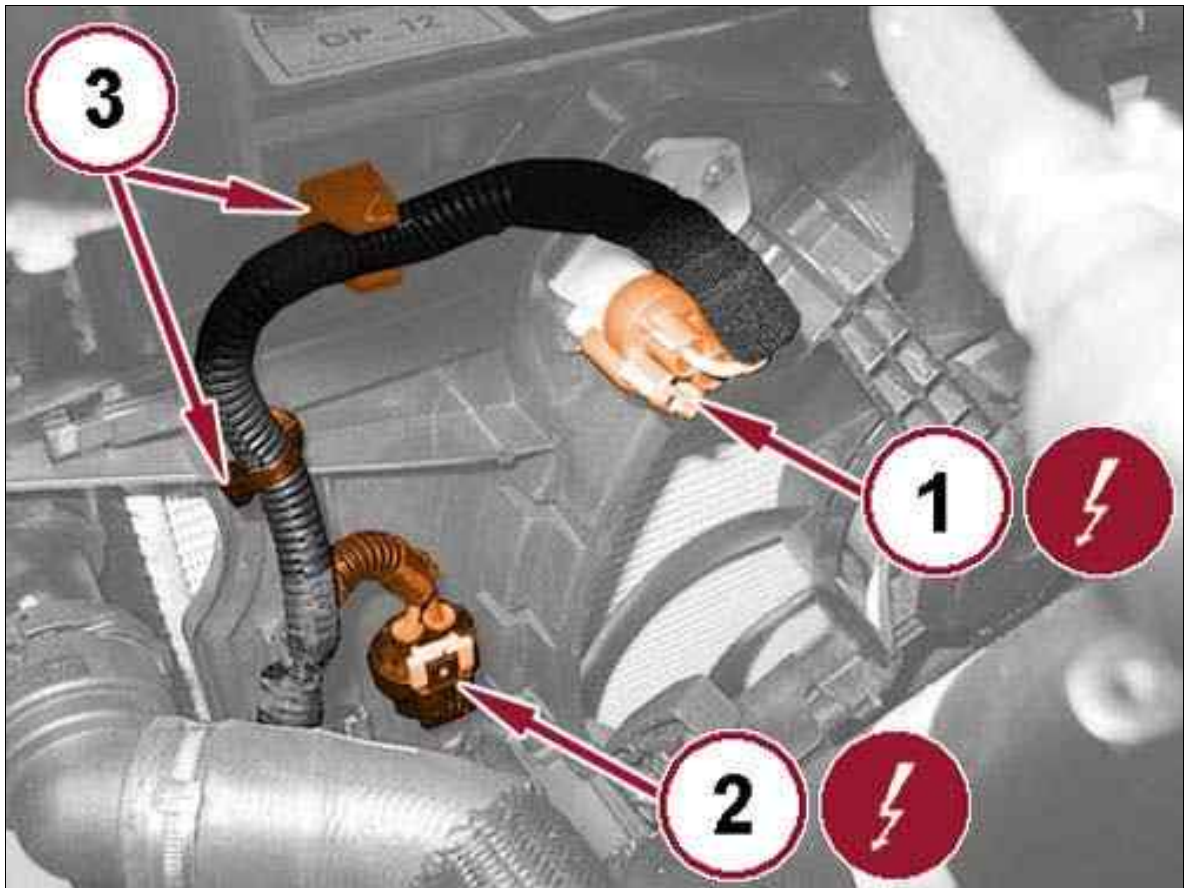
Fig 3: Cooling Fan Bolts



Courtesy of CHRYSLER GROUP, LLC

6. Remove the cooling fan bolts (1).

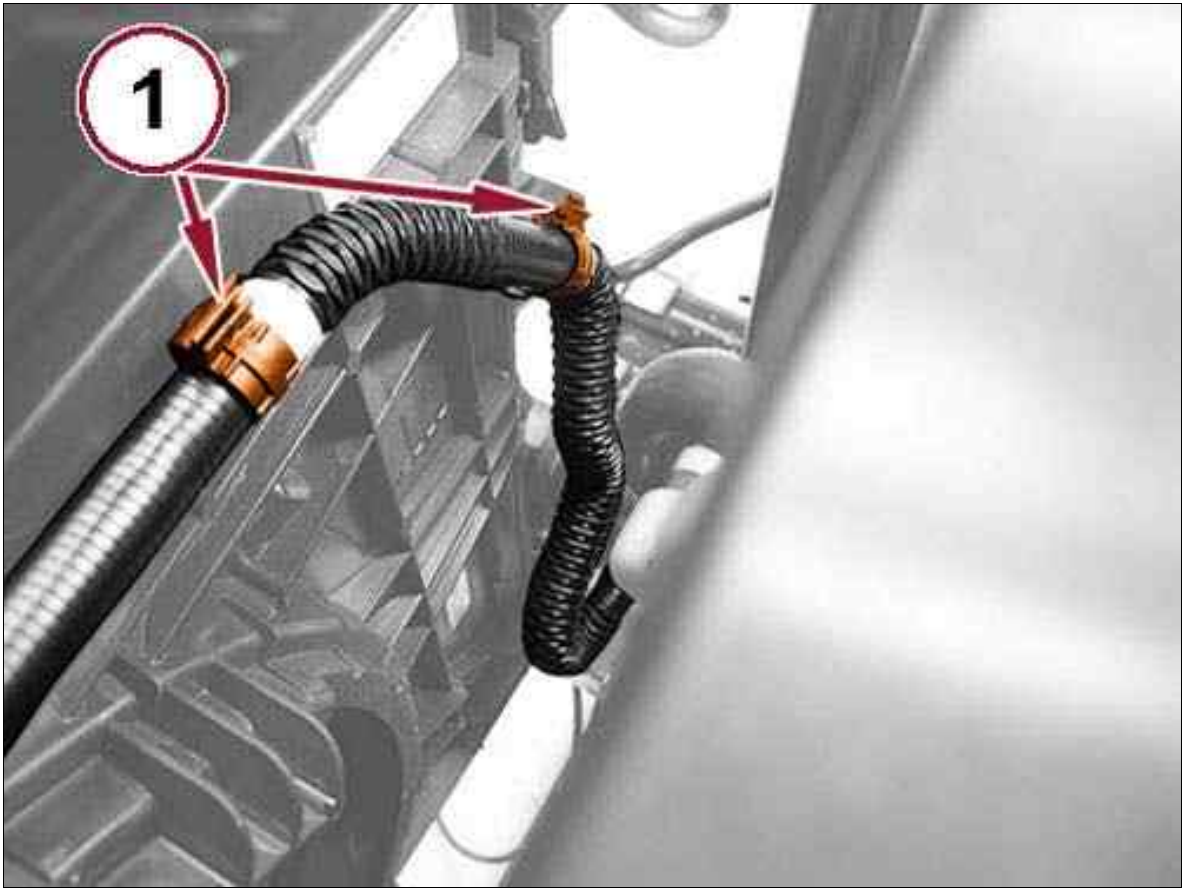
Fig 4: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Disconnect the resistor wire harness connector (1).
8. Disconnect the cooling fan wire harness connector (1).
9. Open the retaining clips (3) and detach the wire harness.

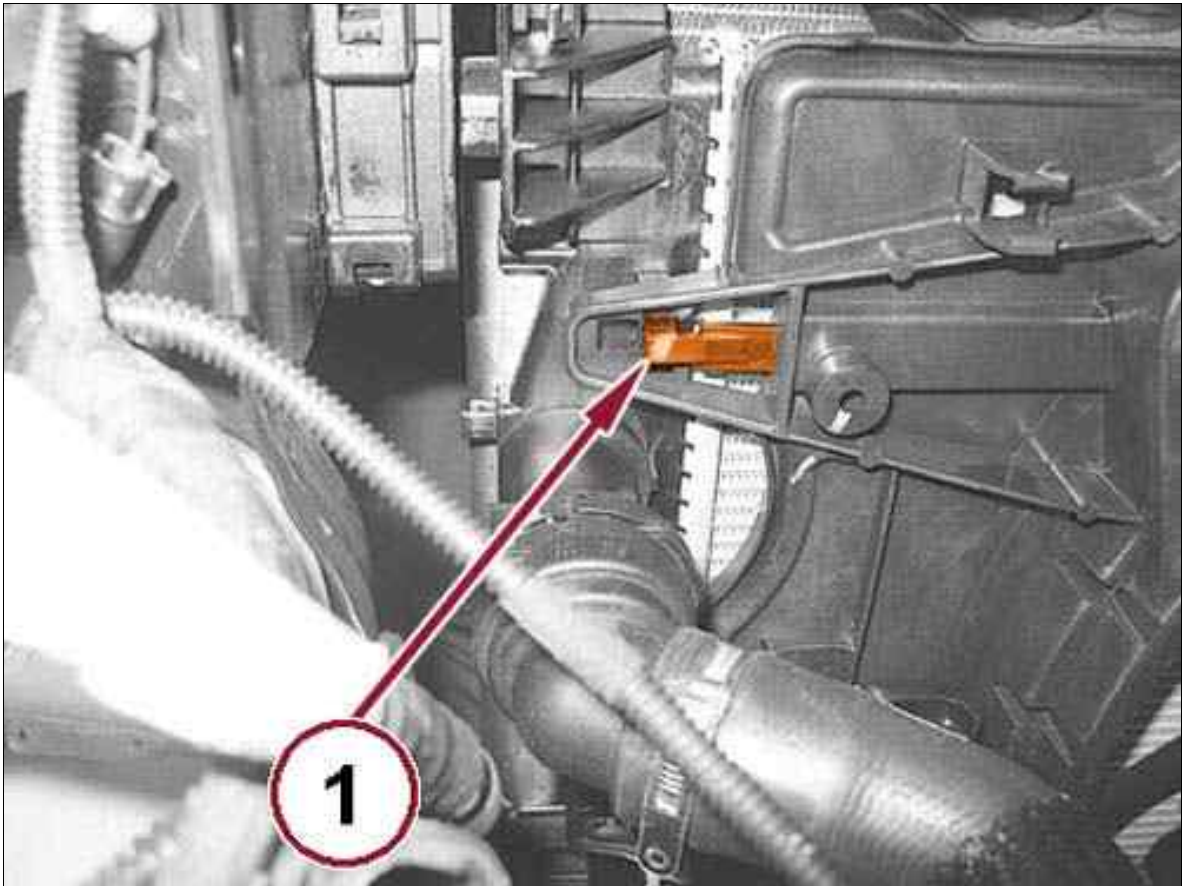
Fig 5: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

10. Open the retaining clips (1) and remove the coolant pipe.

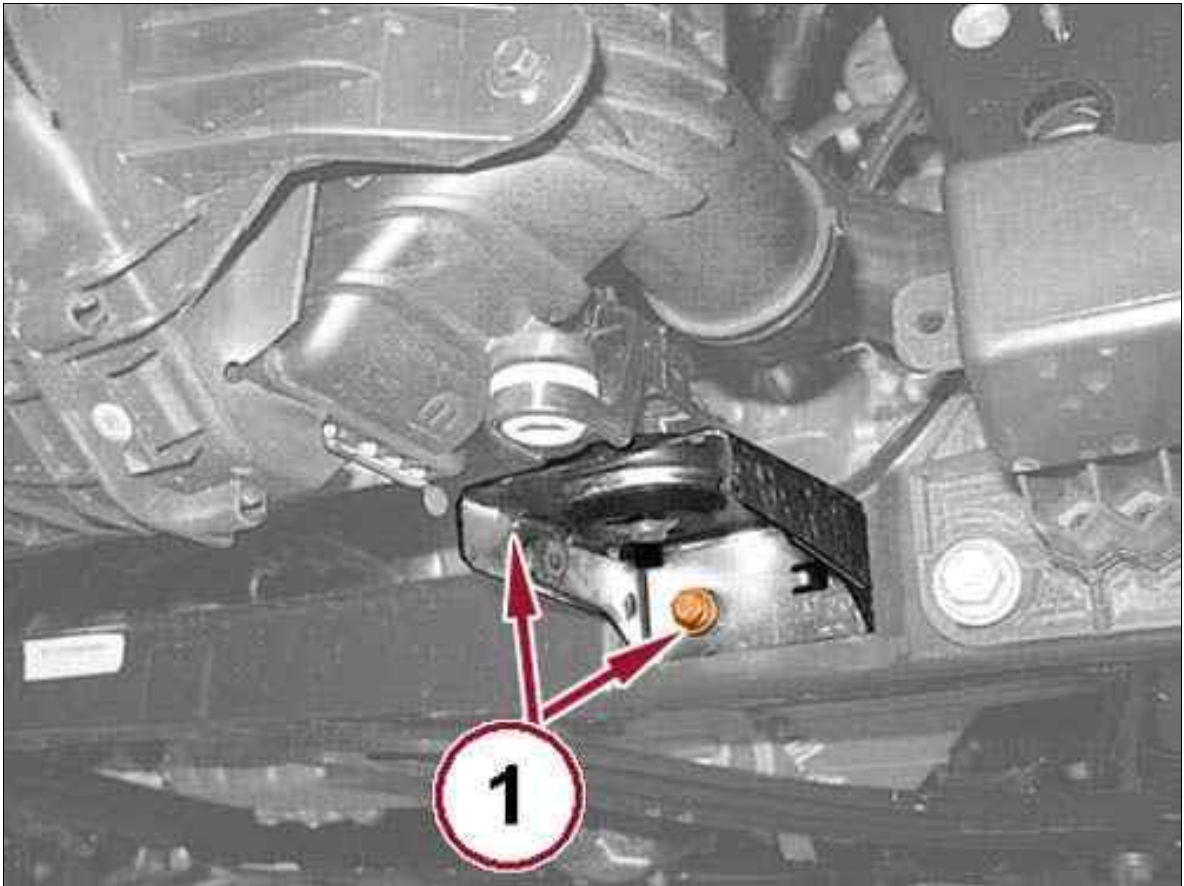
Fig 6: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

11. Detach the cooling fan upper retaining clips.

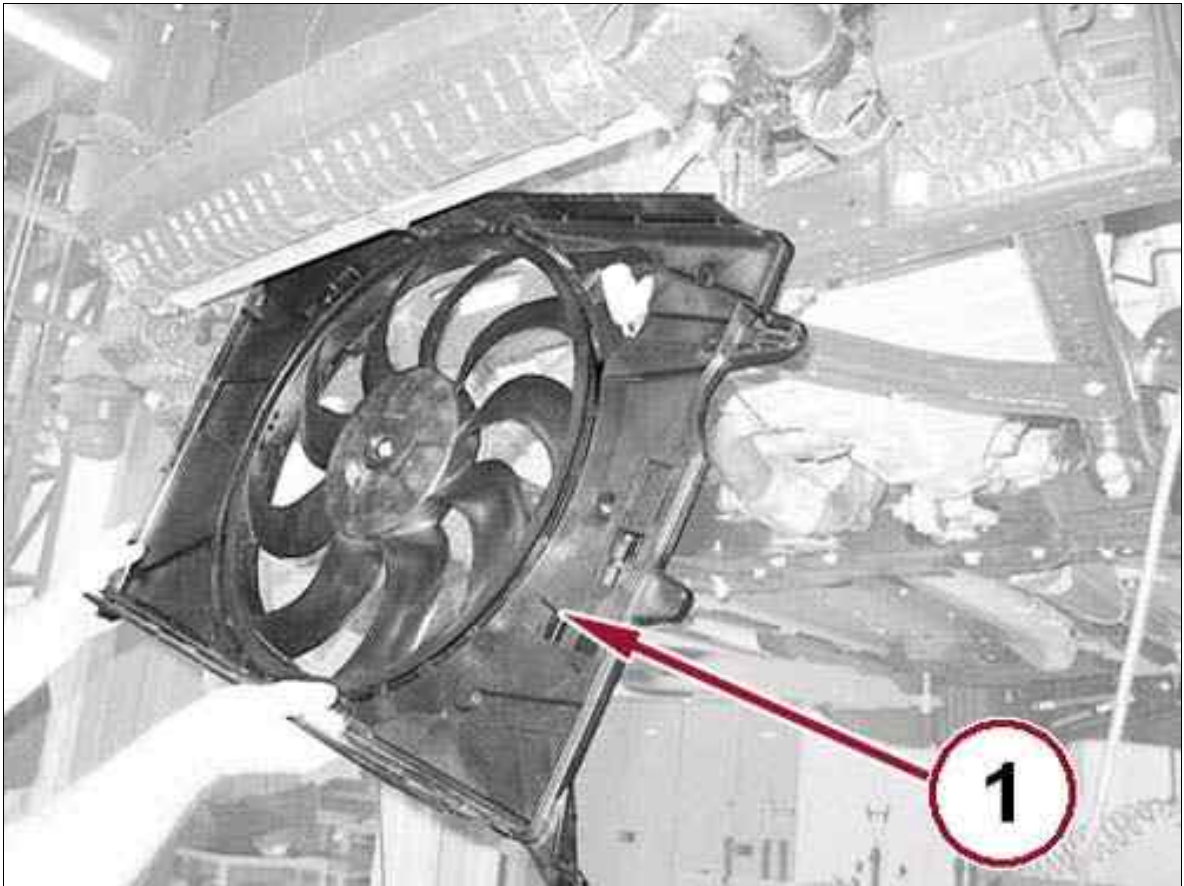
Fig 7: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

12. Support the radiator to the vehicle.
13. Remove the bolts (1) and the lower brackets that supports the radiator.

Fig 8: Cooling Fan

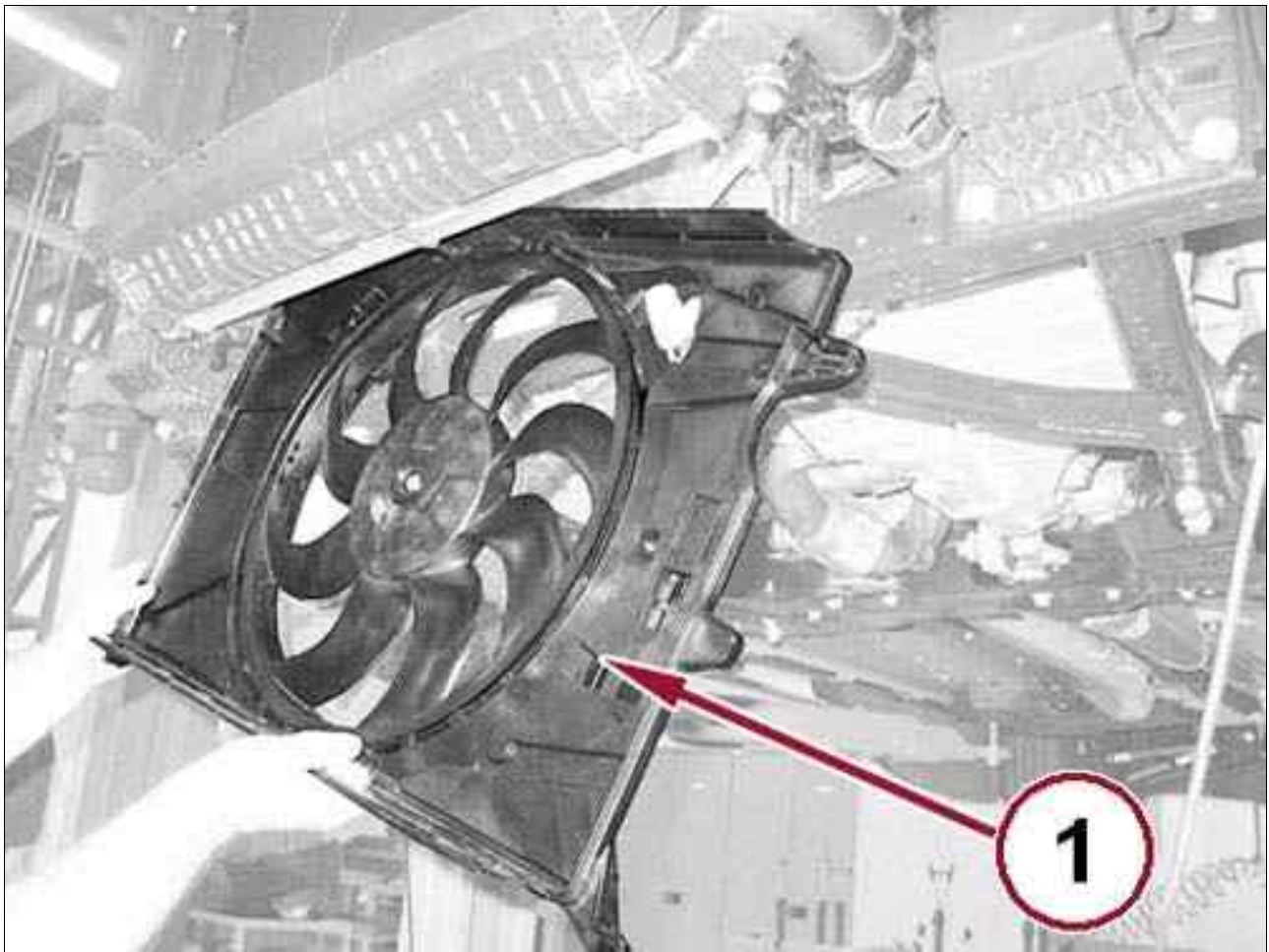


Courtesy of CHRYSLER GROUP, LLC

14. Unhook and remove the cooling fan (1).

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 1.4 MULTIAIR TURBO > INSTALLATION

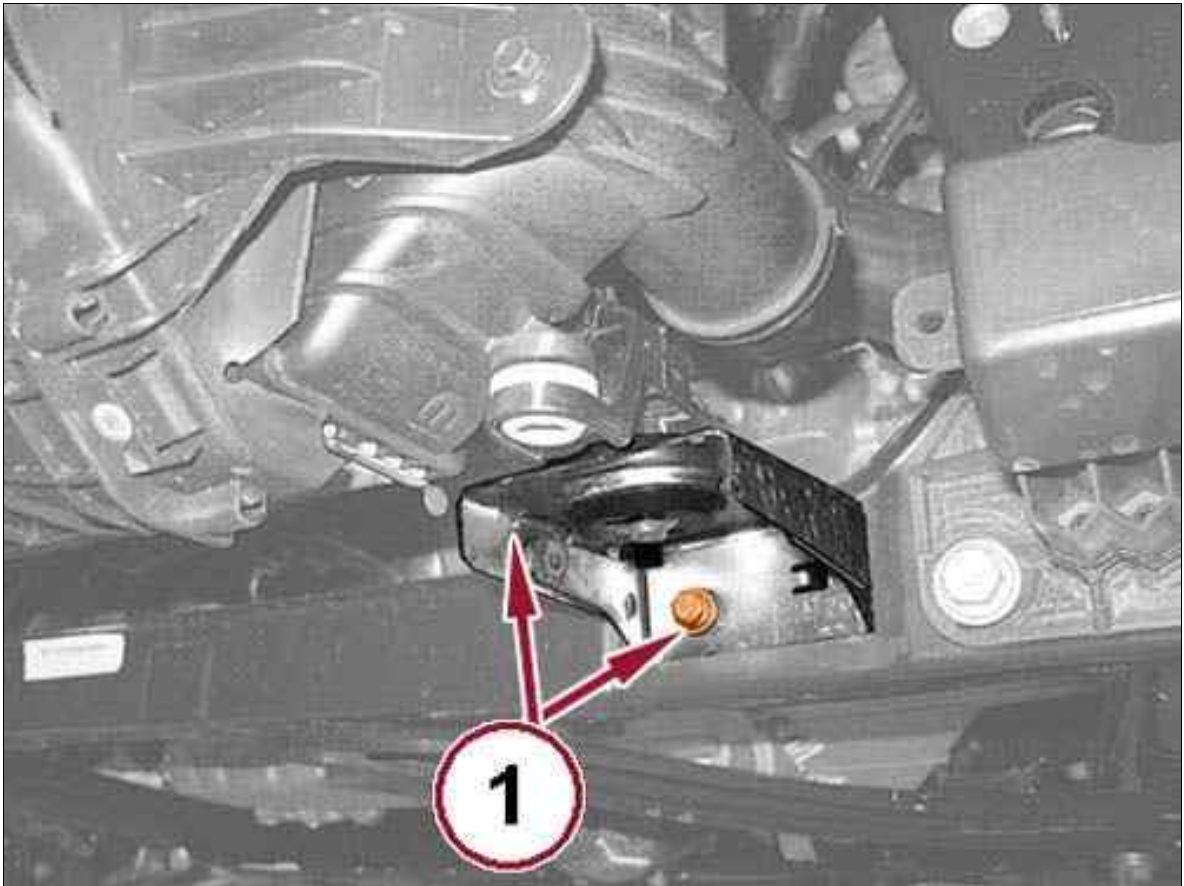
Fig 1: Cooling Fan



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan, and engage the retaining clips.

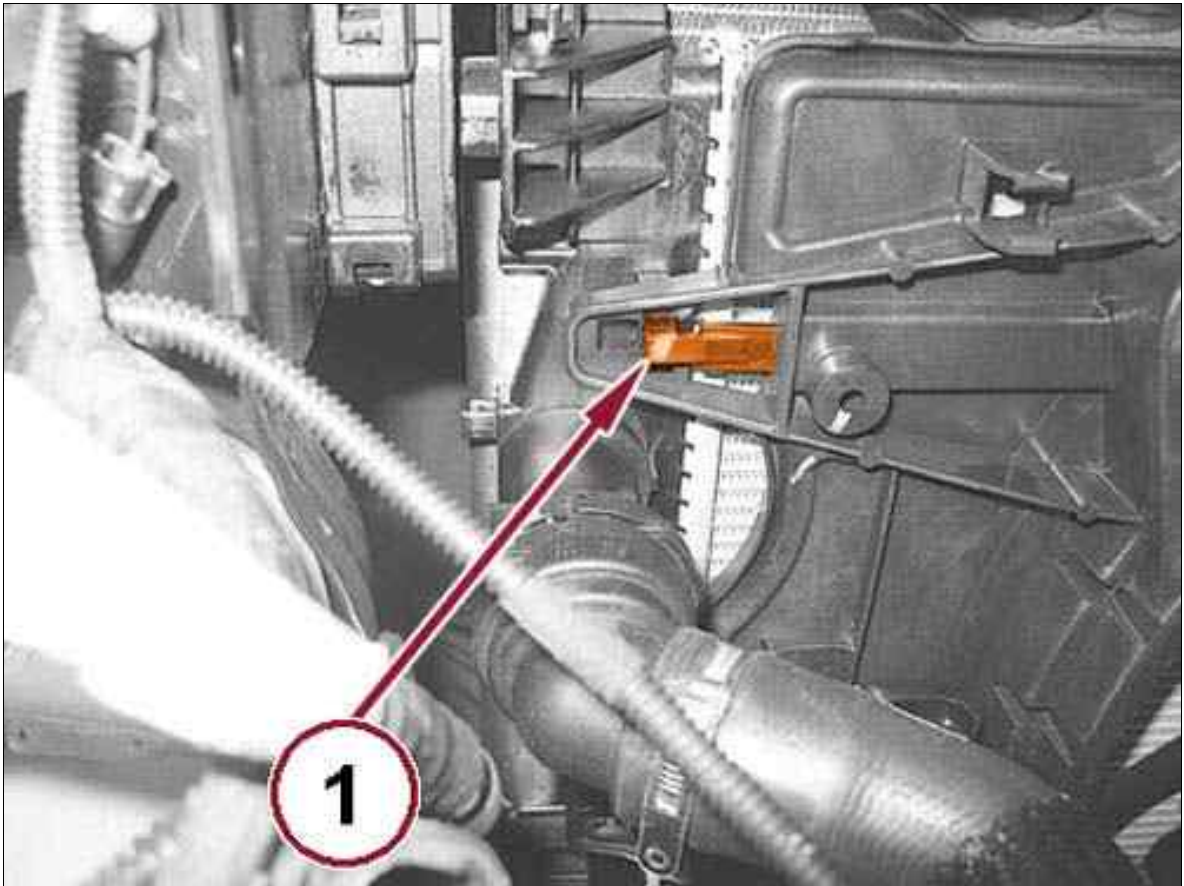
Fig 2: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

2. Install the lower radiator support brackets and securely tighten the bracket bolts (1).
3. Remove the support for the radiator.

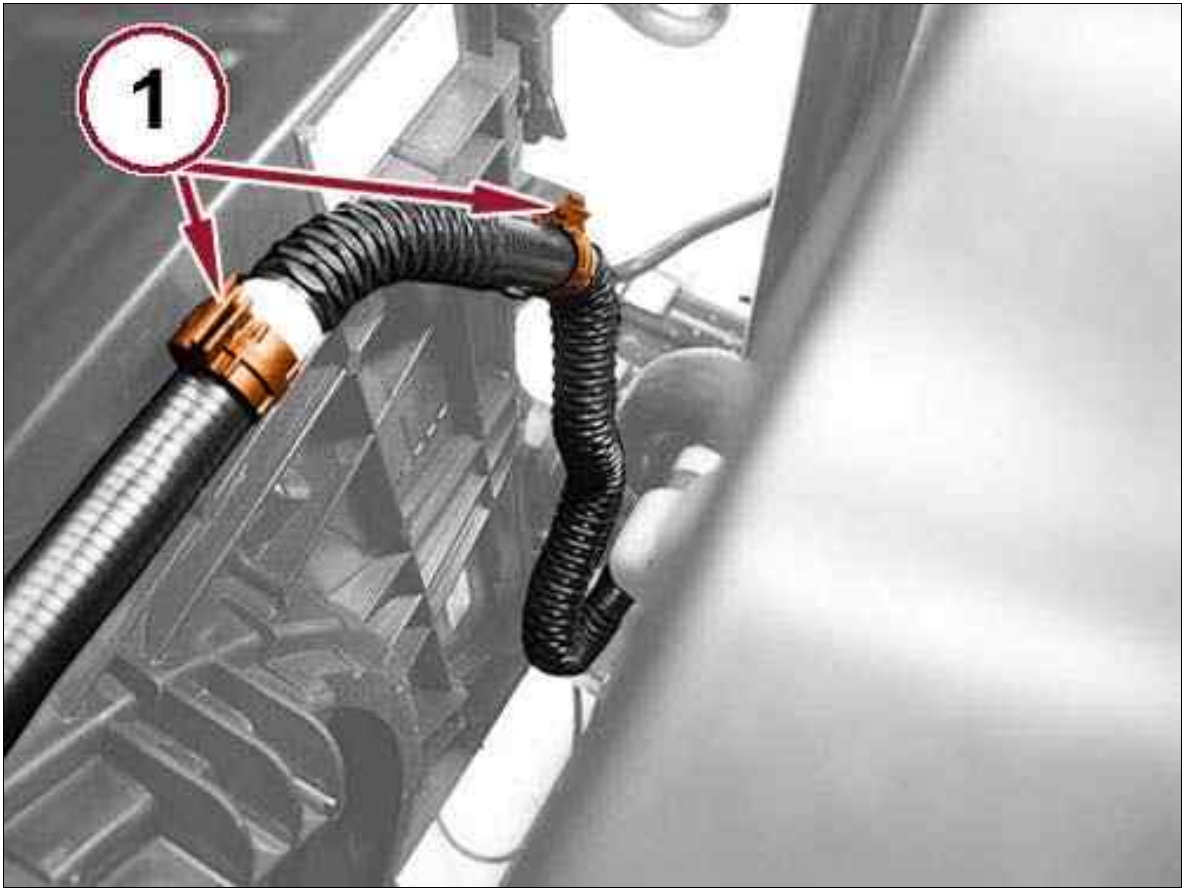
Fig 3: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

4. Attach the cooling fan upper retaining clips.

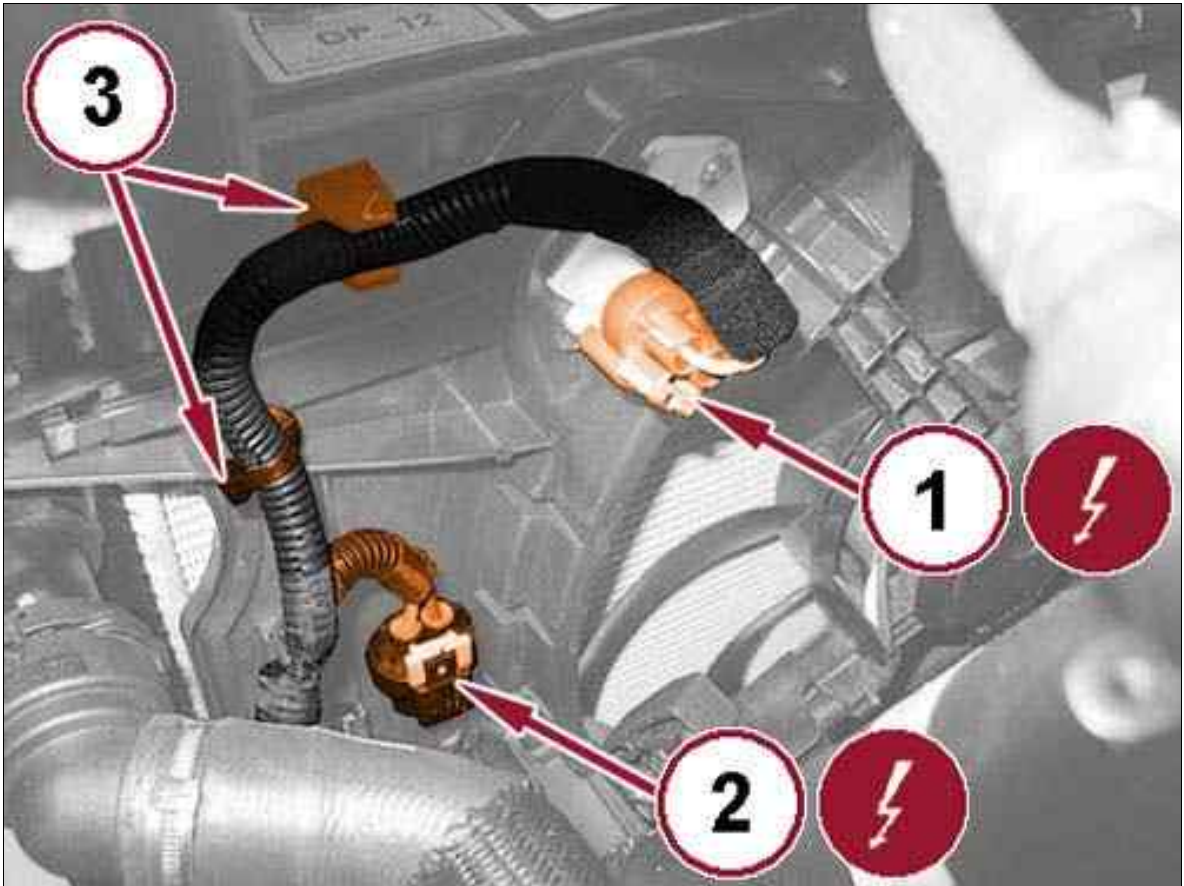
Fig 4: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

5. Install the coolant pipe and close the retaining clips (1).

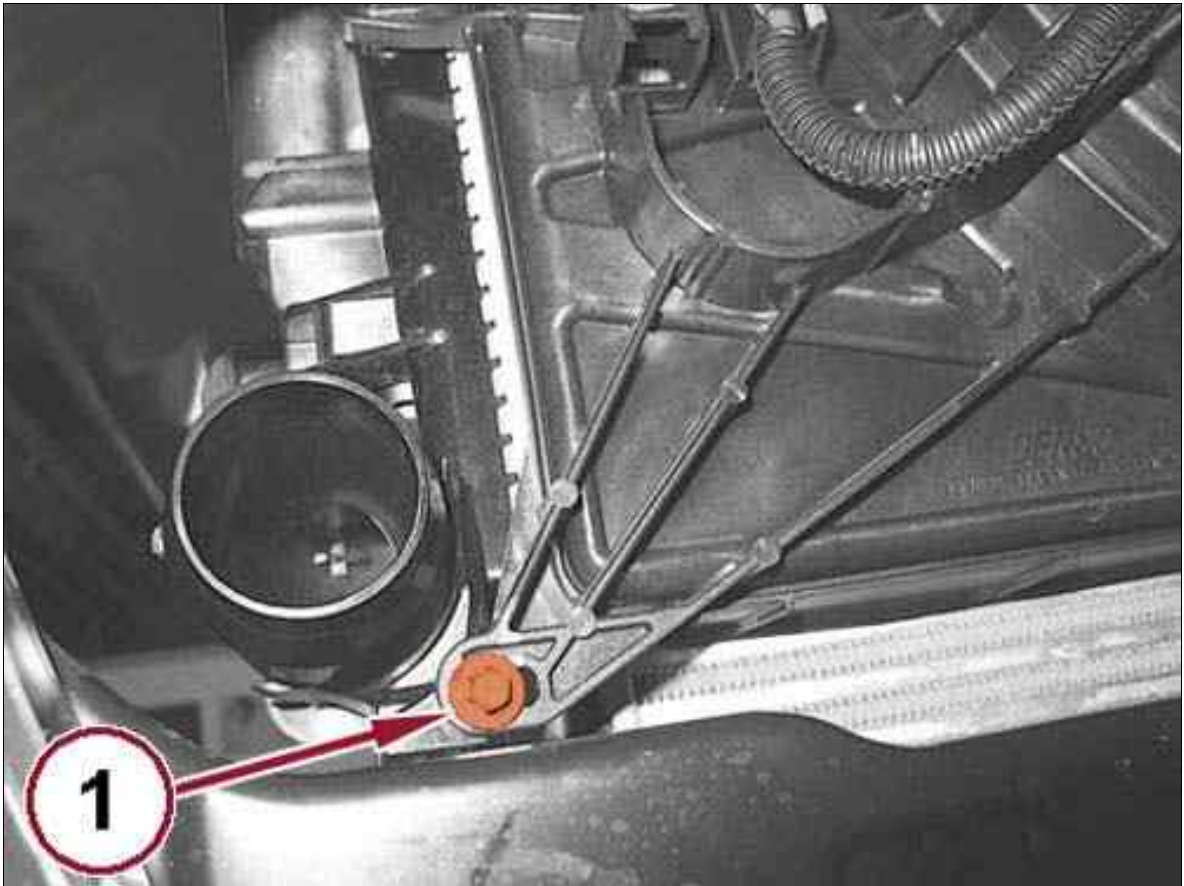
Fig 5: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

6. Attach the wire harness and close the retainer clips (3).
7. Connect the cooling fan wire harness connector (1).
8. Connect the resistor wire harness connector (1).

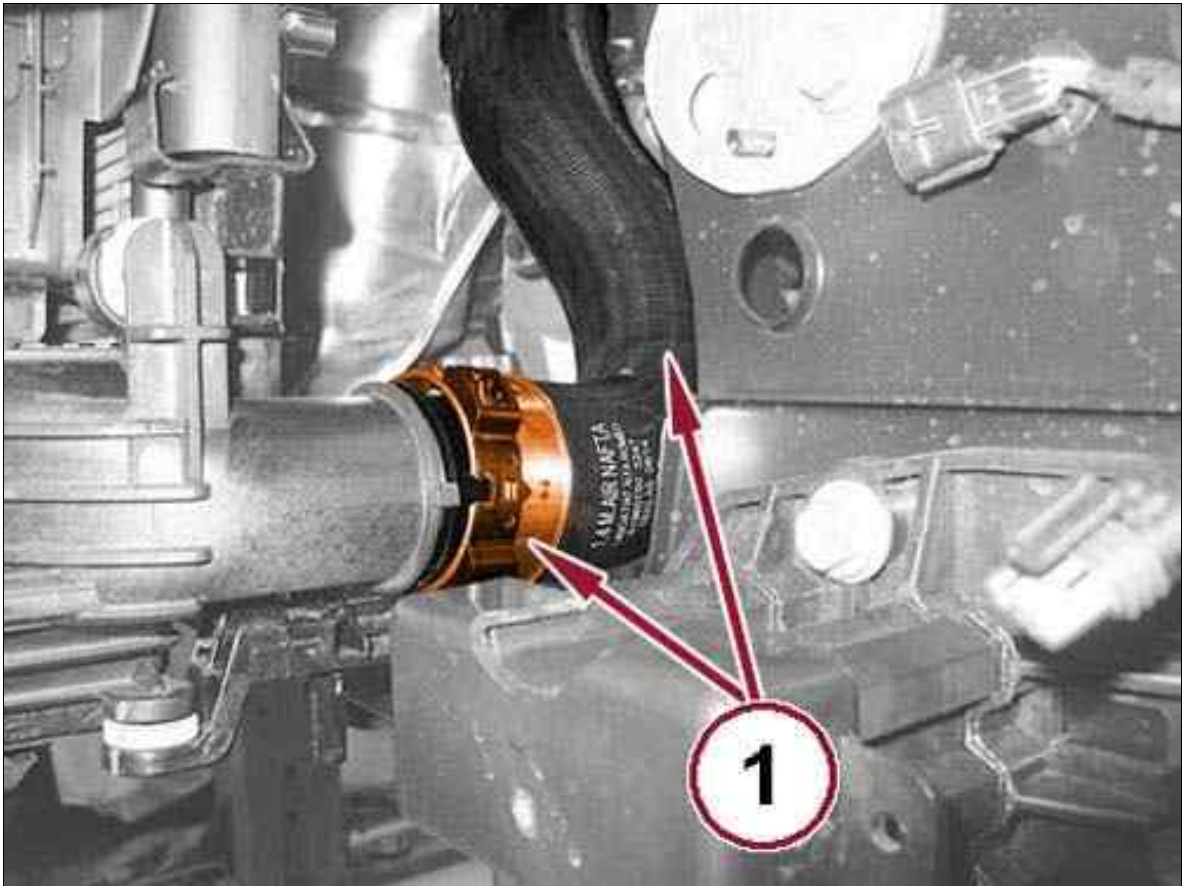
Fig 6: Cooling Fan Bolts



Courtesy of CHRYSLER GROUP, LLC

9. Install the cooling fan bolts (1) and securely tighten.

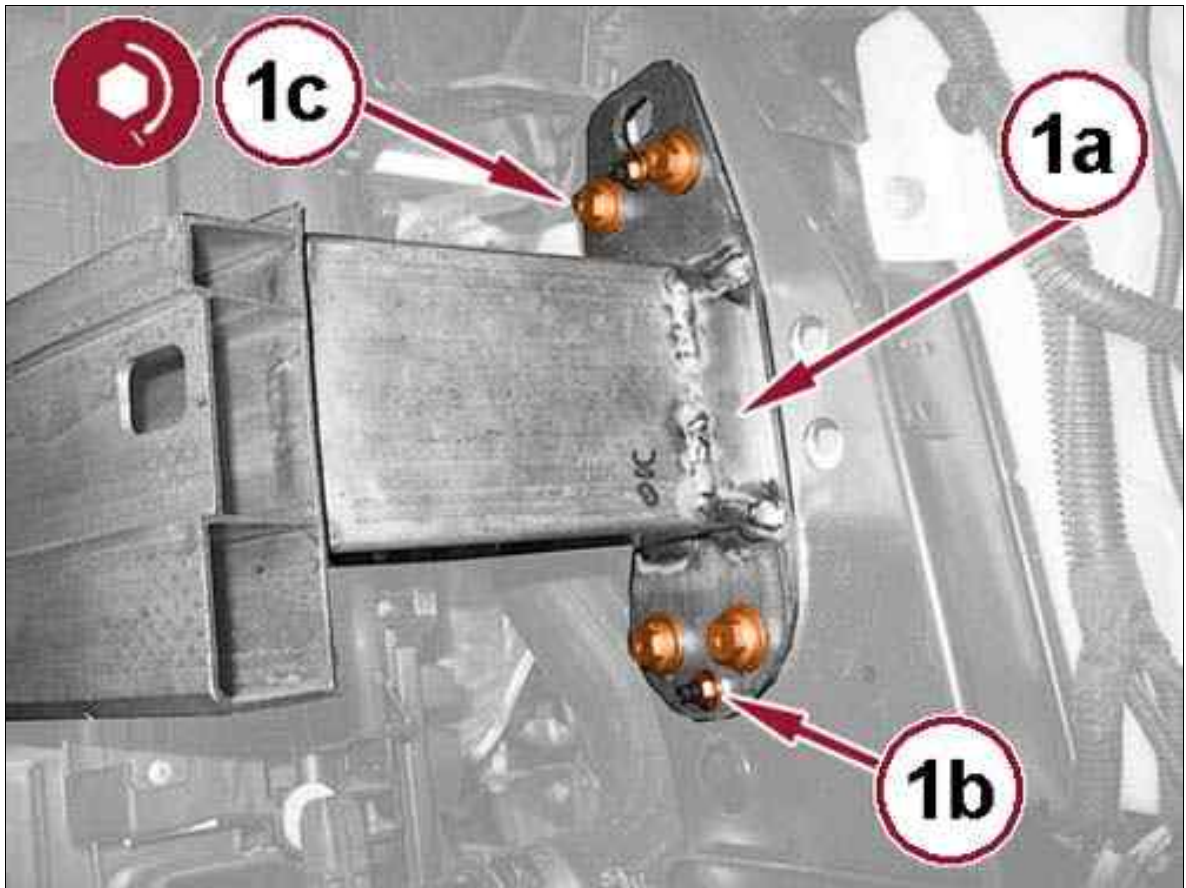
Fig 7: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

10. Connect the quick coupling sleeve (1) to the Charge Air Cooler (CAC).

Fig 8: Front Bumper Beam, Bolts & Nuts



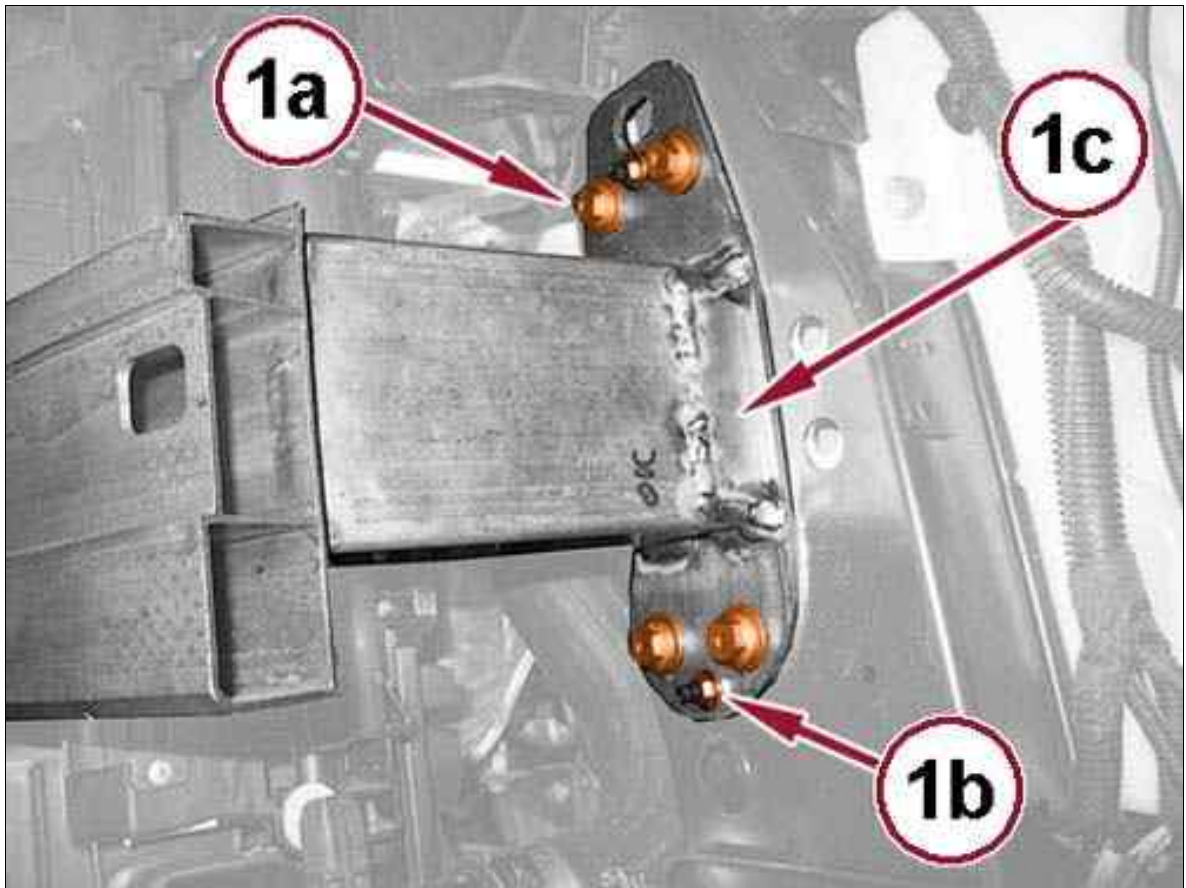
Courtesy of CHRYSLER GROUP, LLC

11. Install the front bumper beam (1a) and tighten the nuts (1b) and bolts (1c) to the proper specification. Refer to SPECIFICATIONS .
12. Install the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
13. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
14. Connect the negative battery cable.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 1.6L DIESEL > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

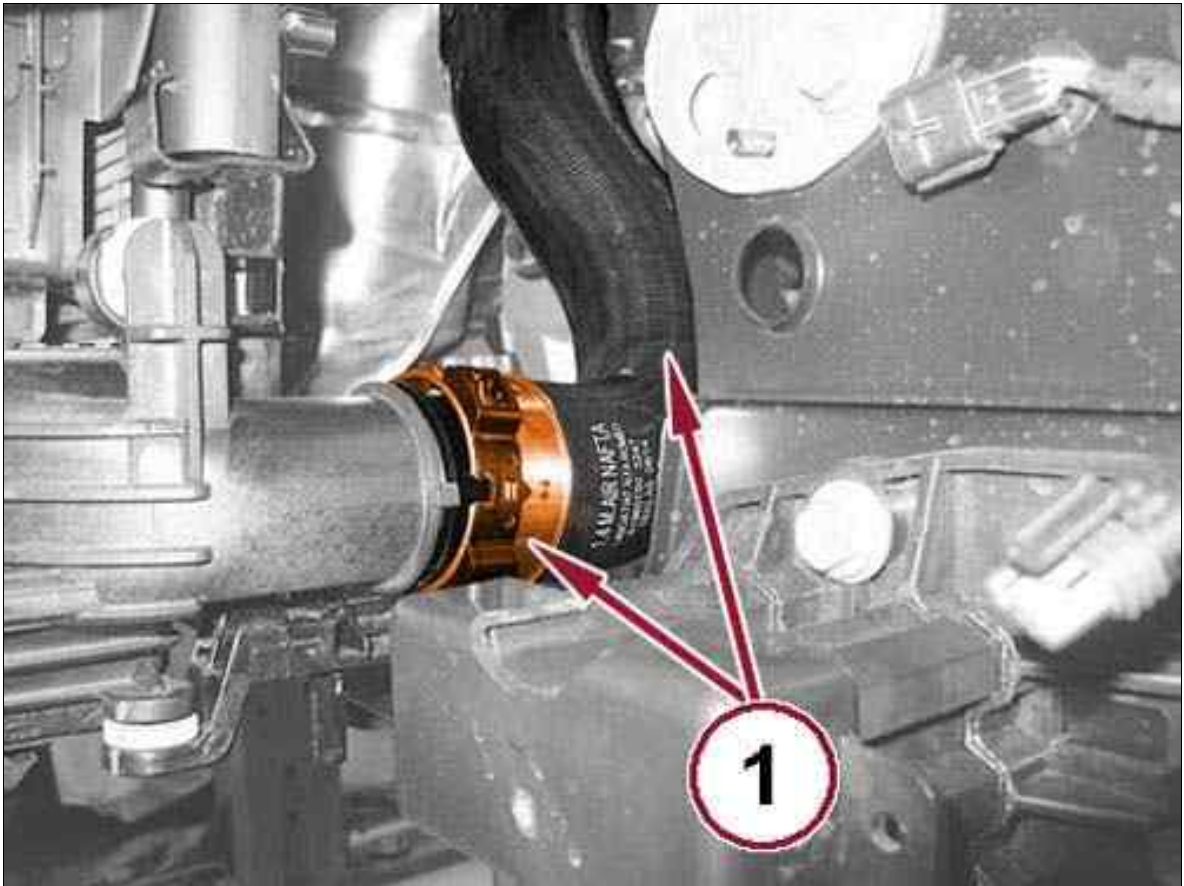
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

4. Remove the screws (1a), nuts (1b) and remove the bumper (1c).

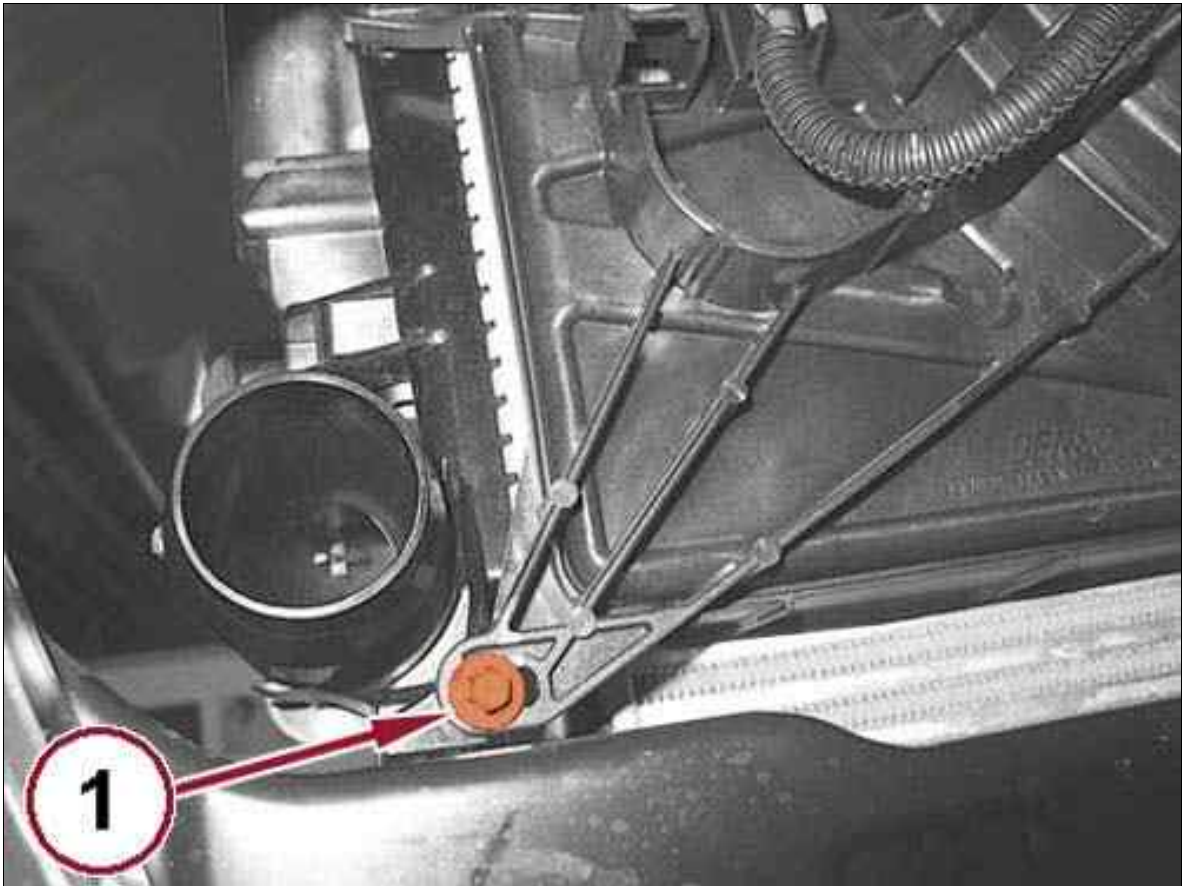
Fig 2: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

5. Remove the left side Charge Air Cooler (CAC) hose (1) from the CAC.

Fig 3: Cooling Fan Bolts



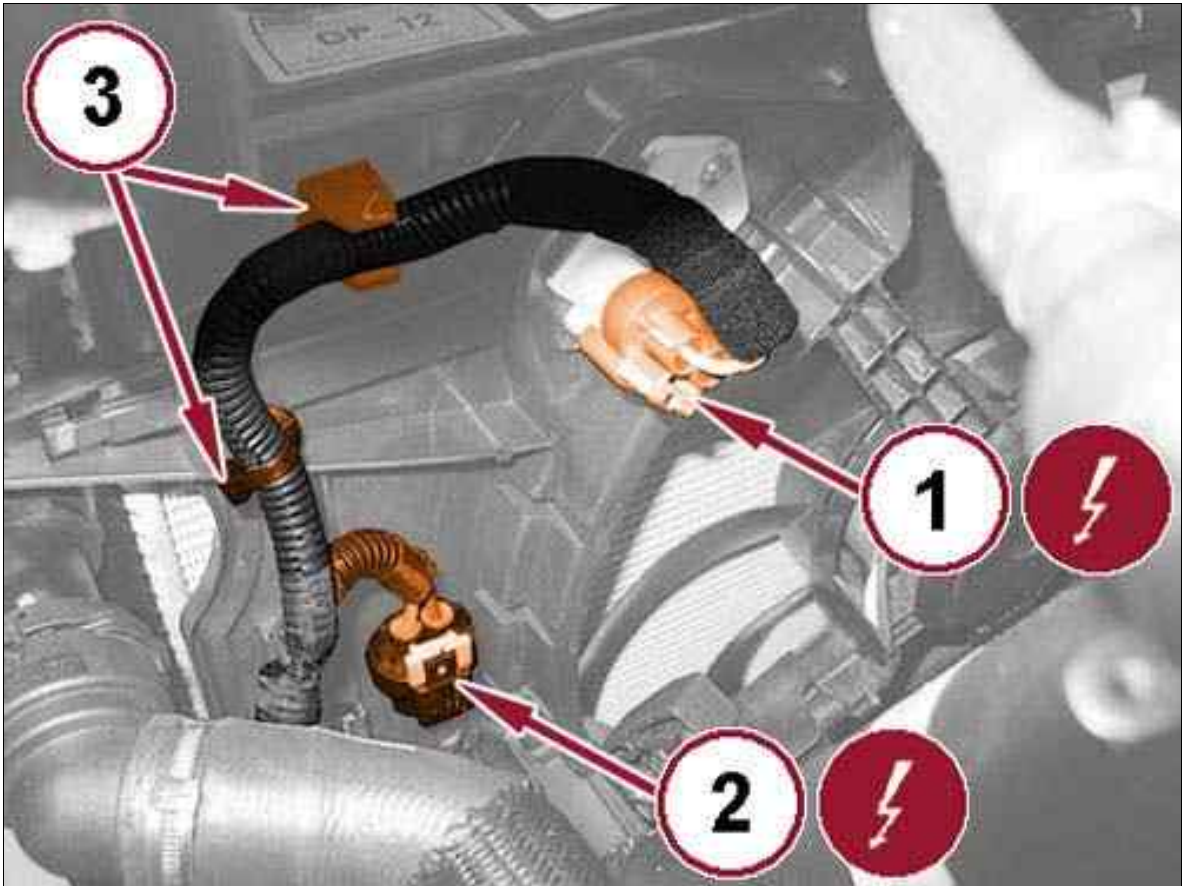
Courtesy of CHRYSLER GROUP, LLC

 **NOTE:**

Left side shown in illustration, right side similar.

6. Remove the lower cooling fan mounting bolts (1)

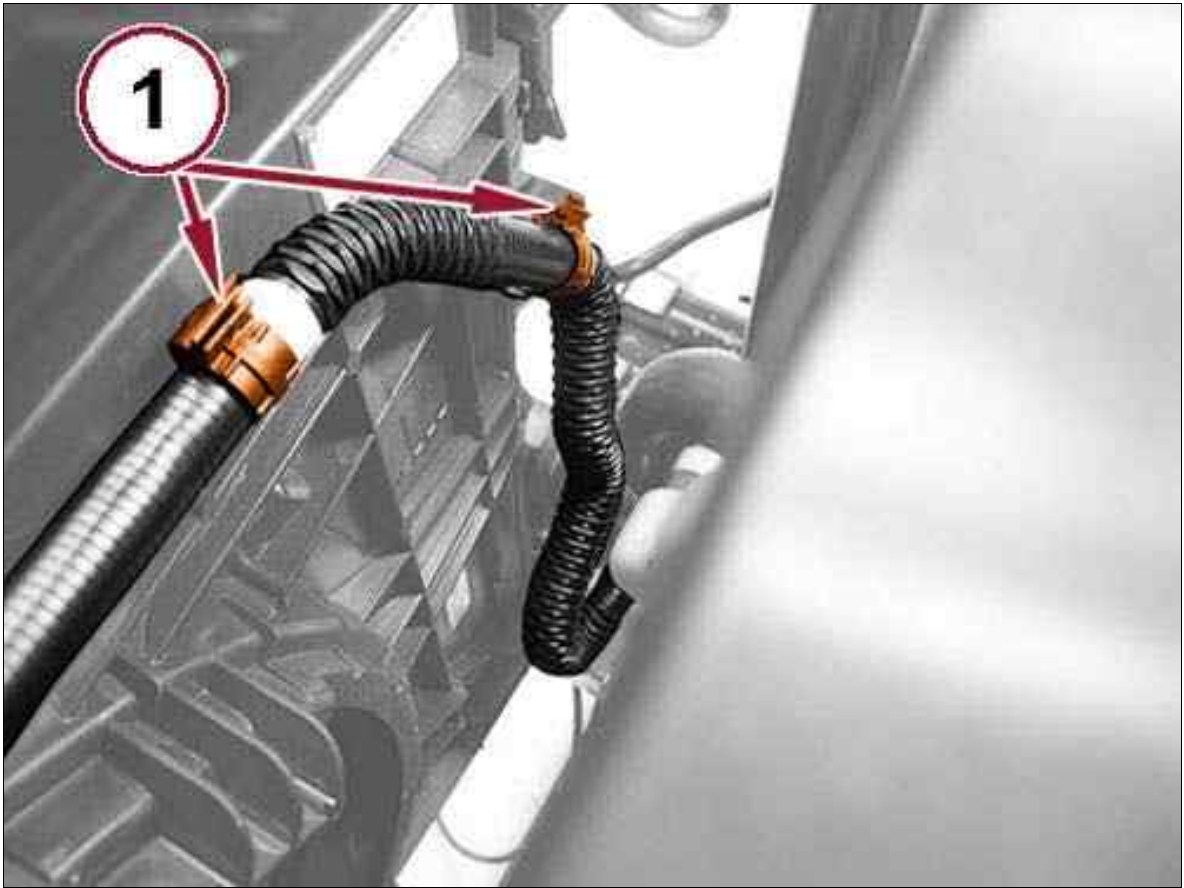
Fig 4: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Remove support and lower the vehicle.
8. Disconnect the cooling fan wire harness connectors (1 and 2).
9. Remove the wiring harness retaining clip and detach the wire harness (3).

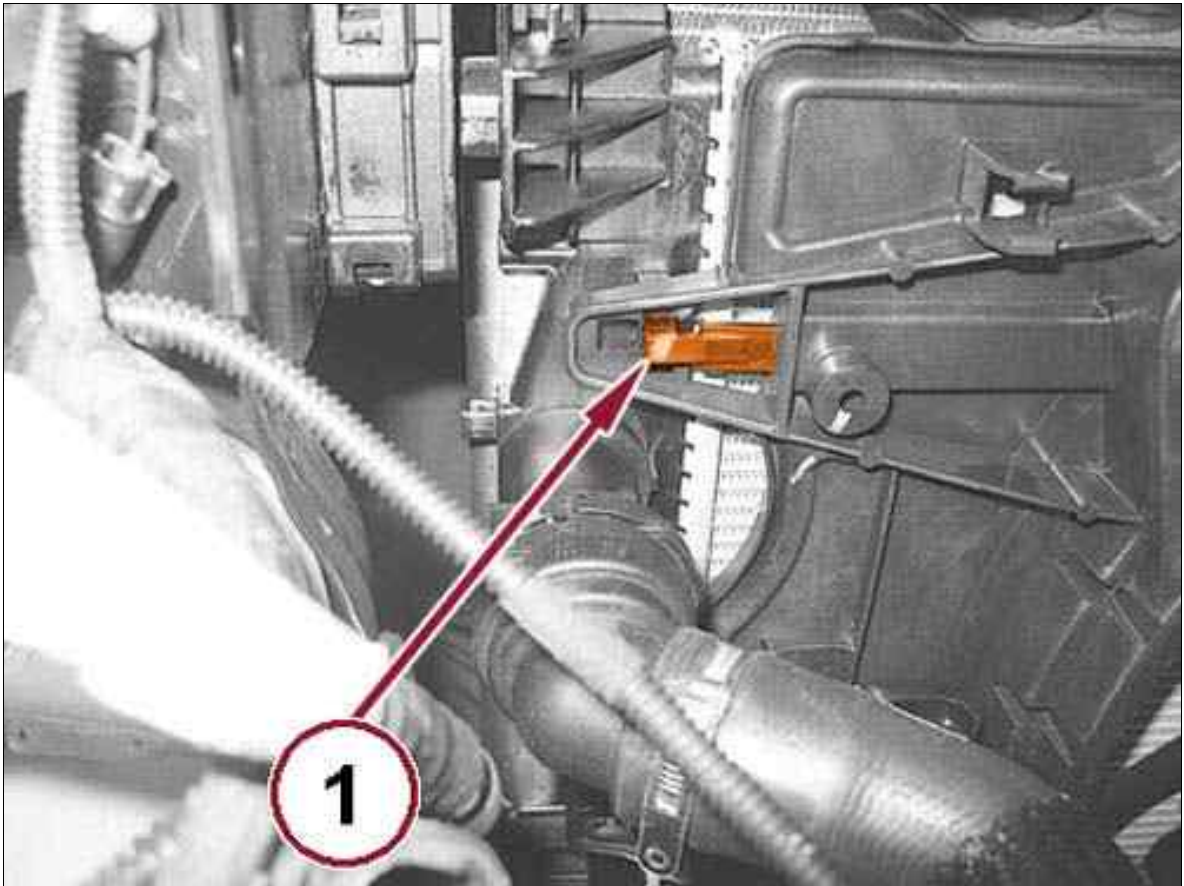
Fig 5: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

10. Unlock retainer clips (1) and remove the coolant hose from fan shroud.

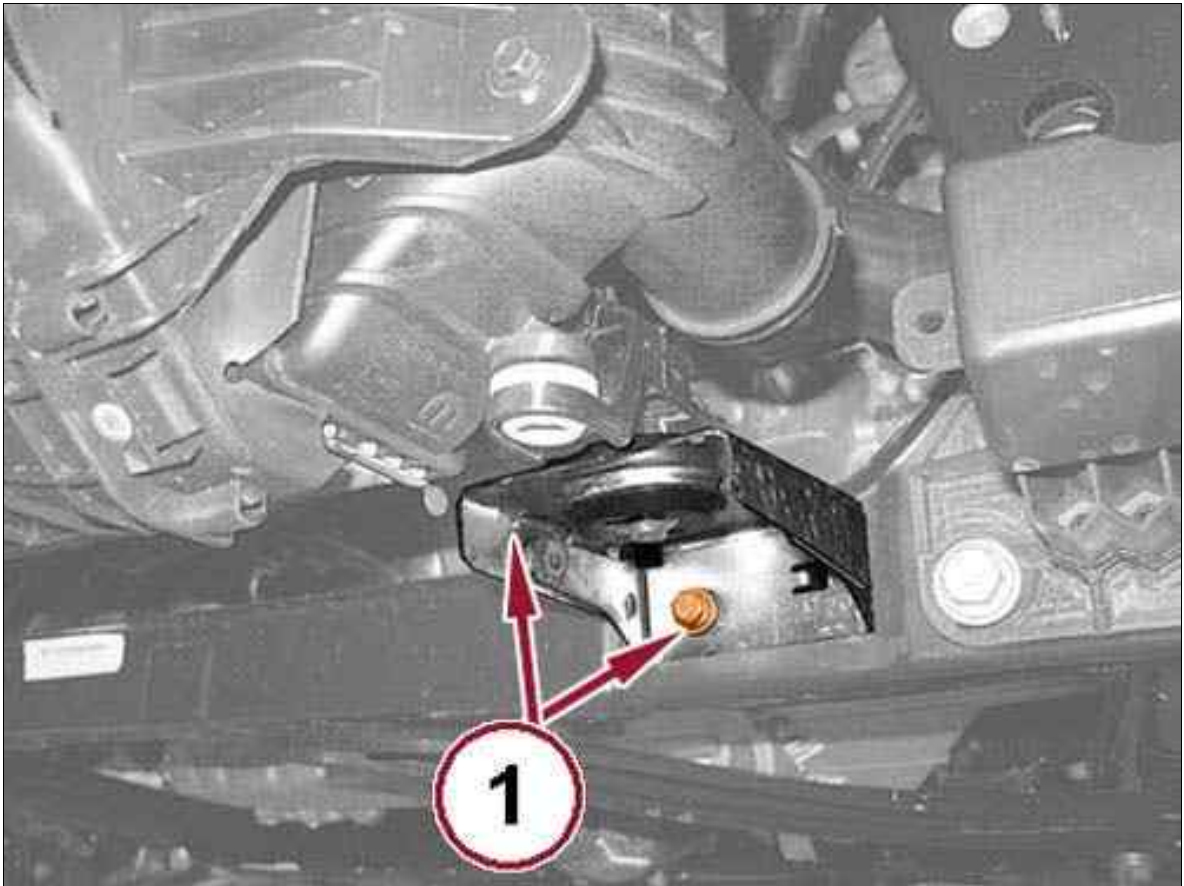
Fig 6: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

11. Disengage the upper cooling fan retaining clips.

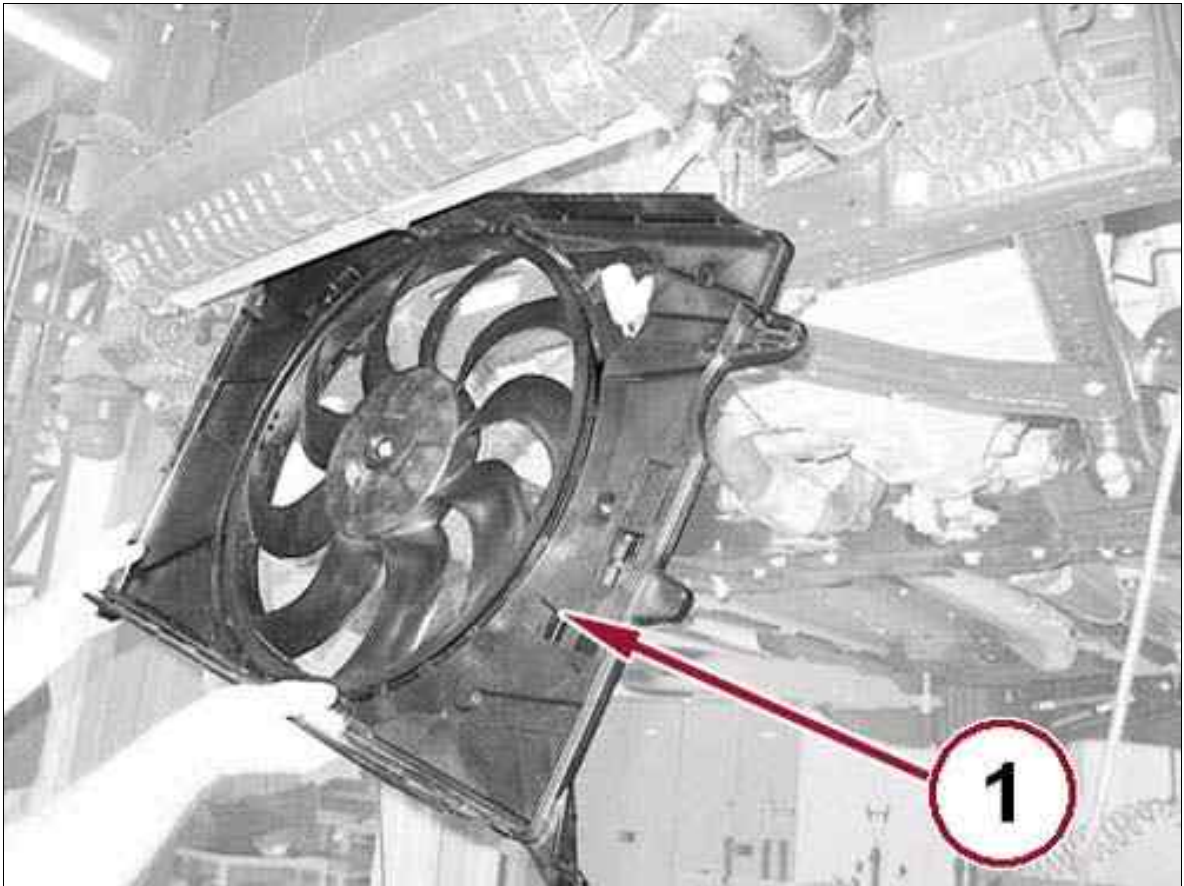
Fig 7: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

12. Raise and support the vehicle.
13. Support the radiator to hold in place.
14. Remove the bolt and the lower radiator support bracket (1).

Fig 8: Cooling Fan

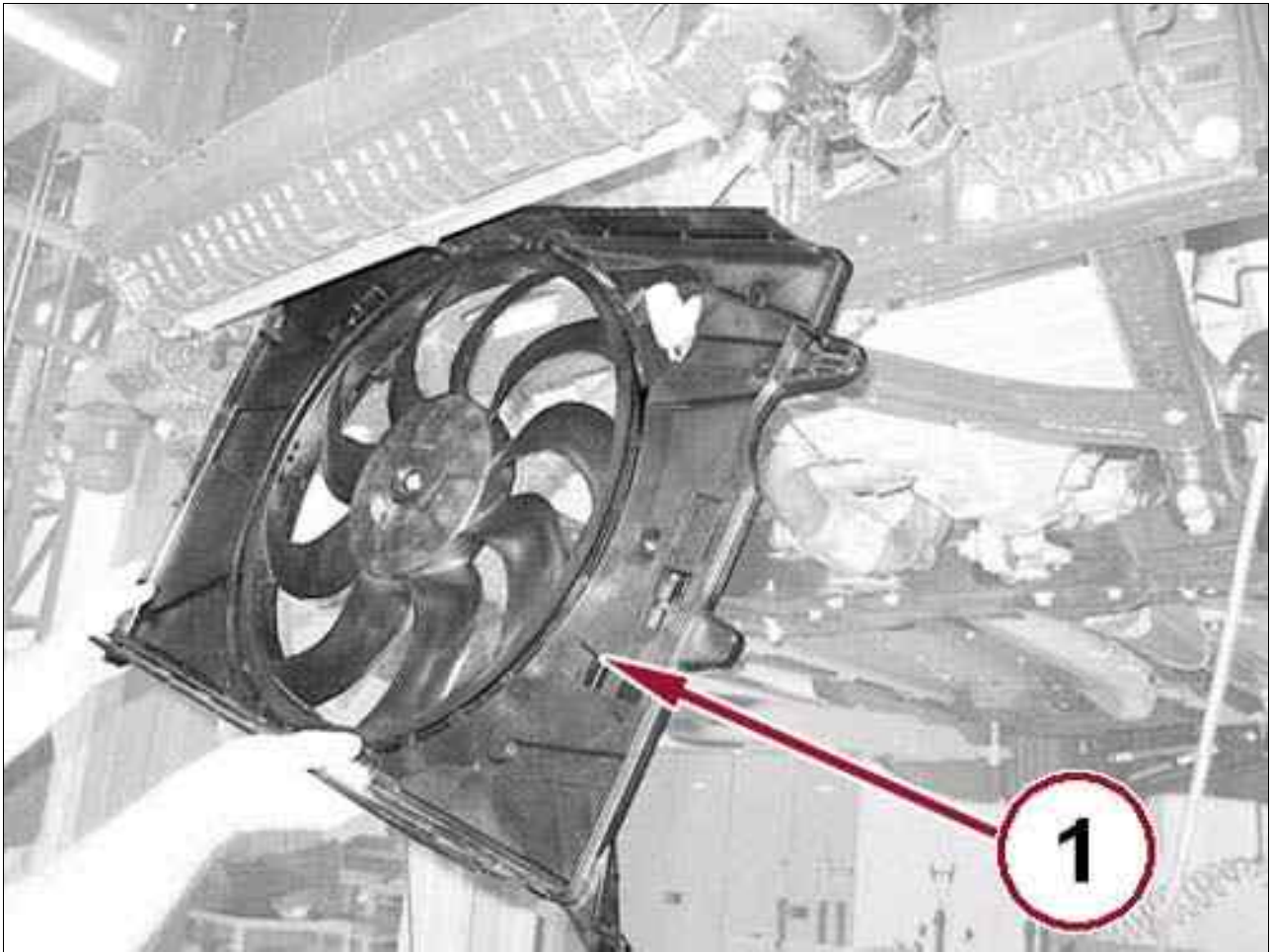


Courtesy of CHRYSLER GROUP, LLC

15. Unhook and remove the cooling fan (1) from the vehicle.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 1.6L DIESEL > INSTALLATION

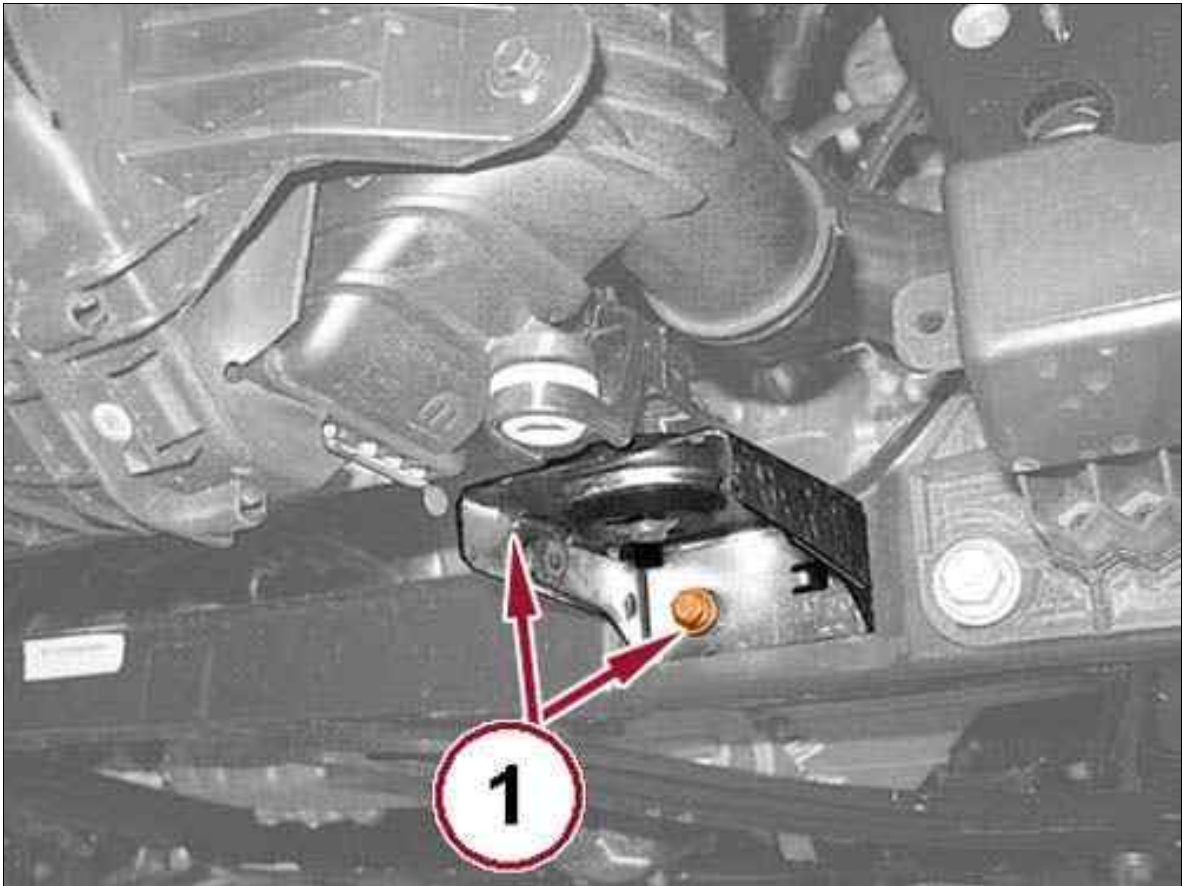
Fig 1: Cooling Fan



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan (1) onto the radiator.

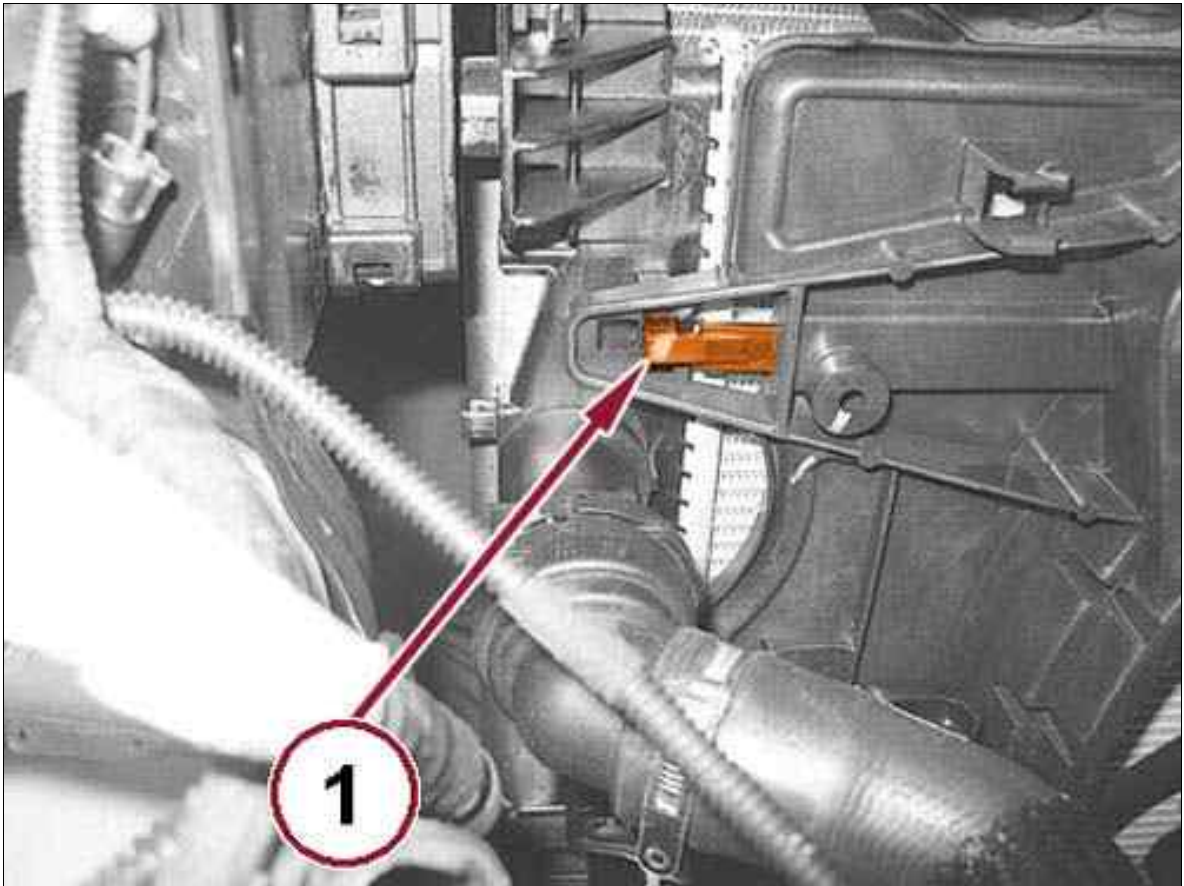
Fig 2: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

2. Install the lower radiator support bracket and securely tighten the bolts (1).
3. Remove the support holding the radiator in place.
4. Remove support and lower the vehicle.

Fig 3: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

5. Engage the upper cooling fan retaining clips (1).

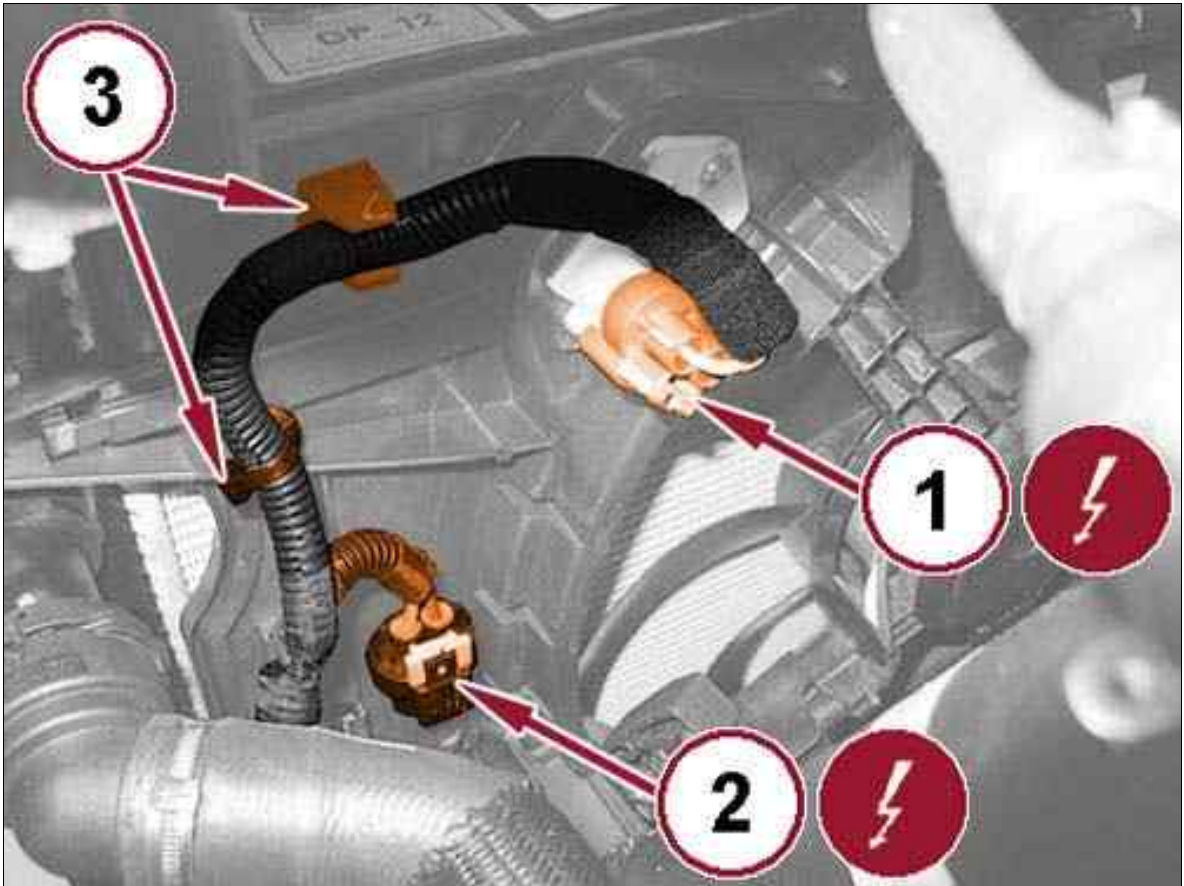
Fig 4: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

6. Install the coolant hose onto the fan shroud and lock the retaining clips (1).

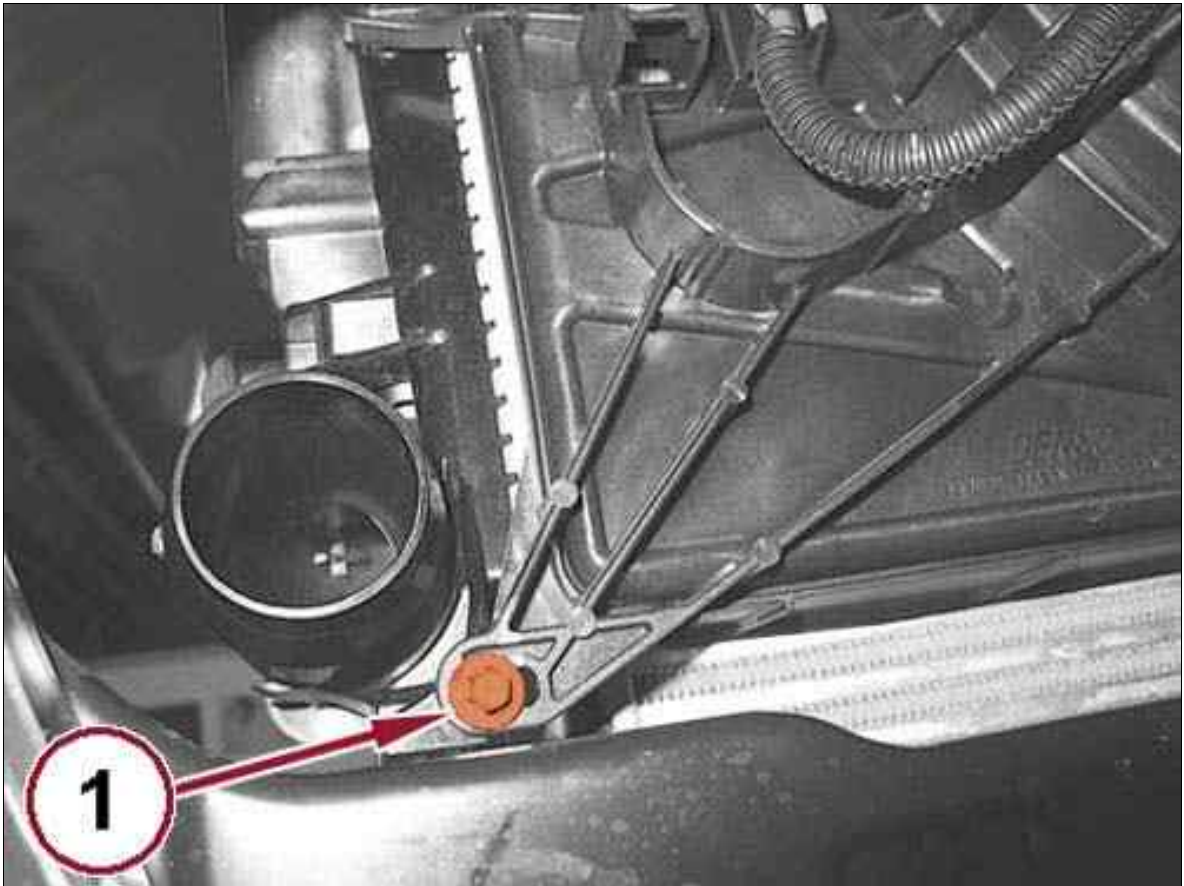
Fig 5: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Attach the wiring harness and install the retaining clip (3).
8. Connect the cooling fan wire harness connector (1 and 2).

Fig 6: Cooling Fan Bolts



Courtesy of CHRYSLER GROUP, LLC

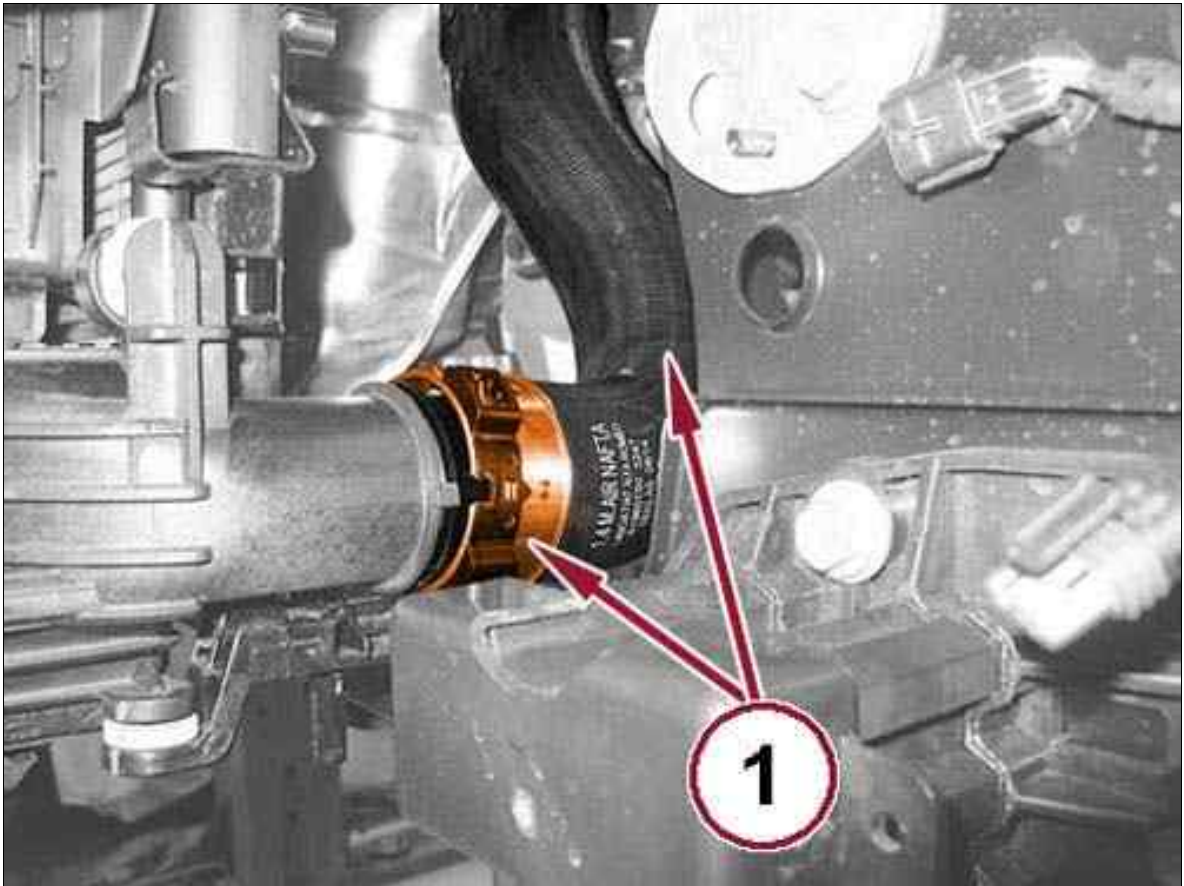


NOTE:

Left side shown in illustration, right side similar.

9. Raise and support the vehicle.
10. Install the lower cooling fan mounting bolts (1) and securely tighten.

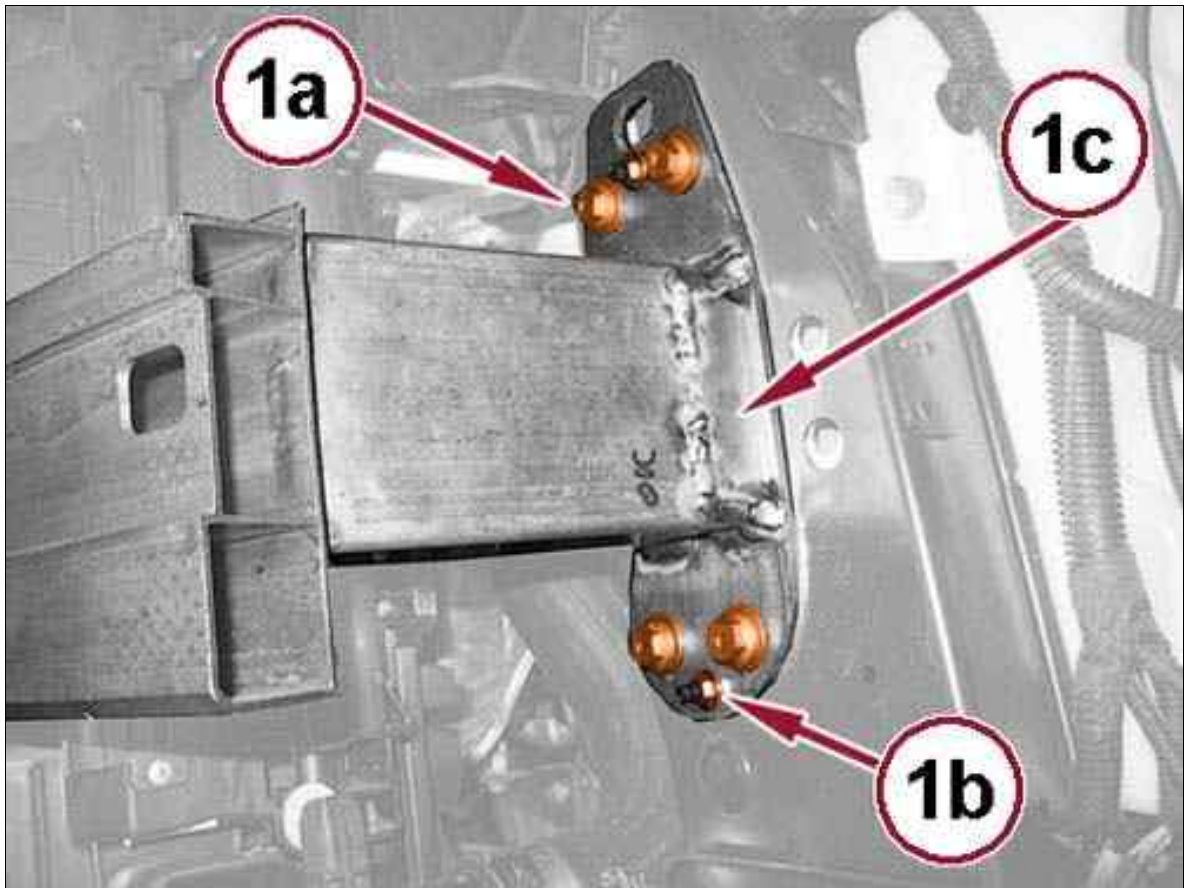
Fig 7: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

11. Install the left side Charge Air Cooler (CAC) hose (1) to the CAC.

Fig 8: Front Bumper Beam, Bolts & Nuts



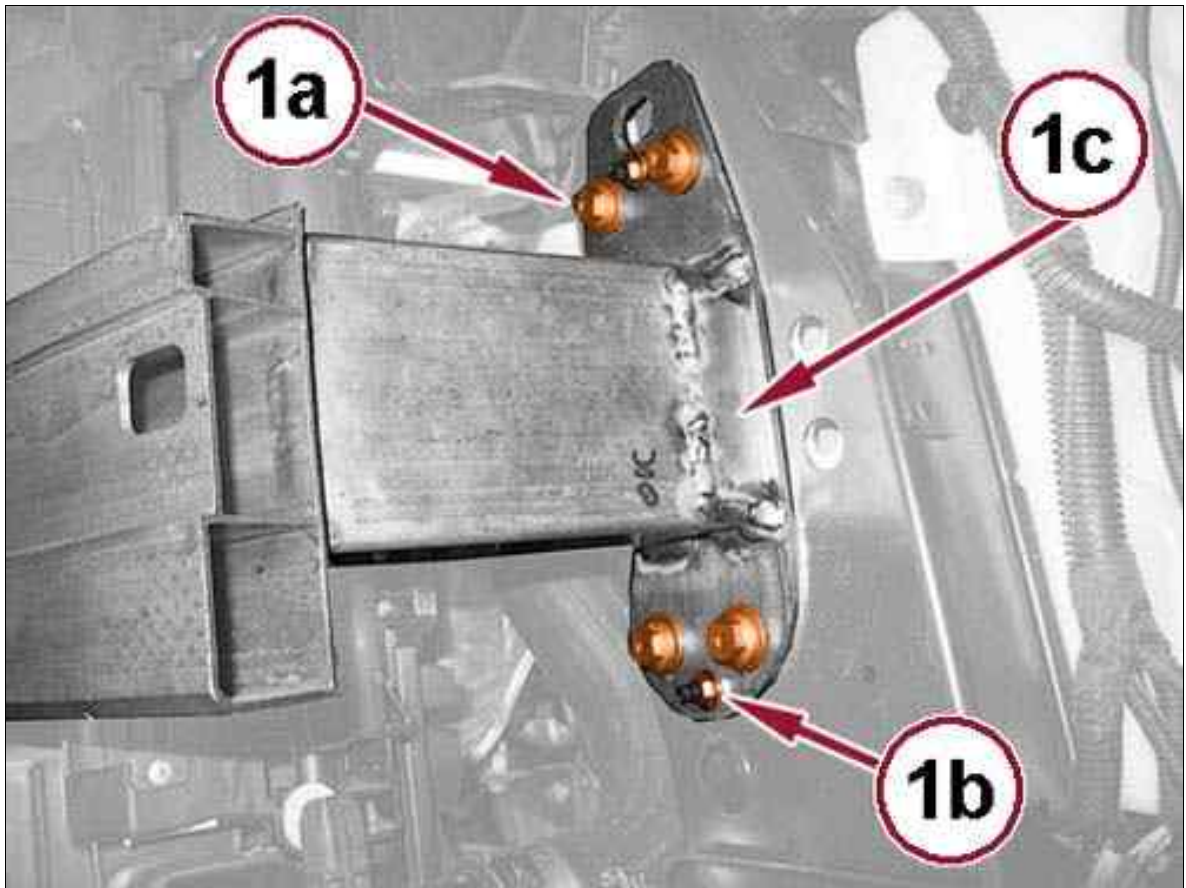
Courtesy of CHRYSLER GROUP, LLC

12. Install the front bumper (1c) with bolts (1a) and nuts (1b) tightened to the proper specification. Refer to SPECIFICATIONS .
13. Install the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
14. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
15. Connect the negative battery cable.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 120/140 CV > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

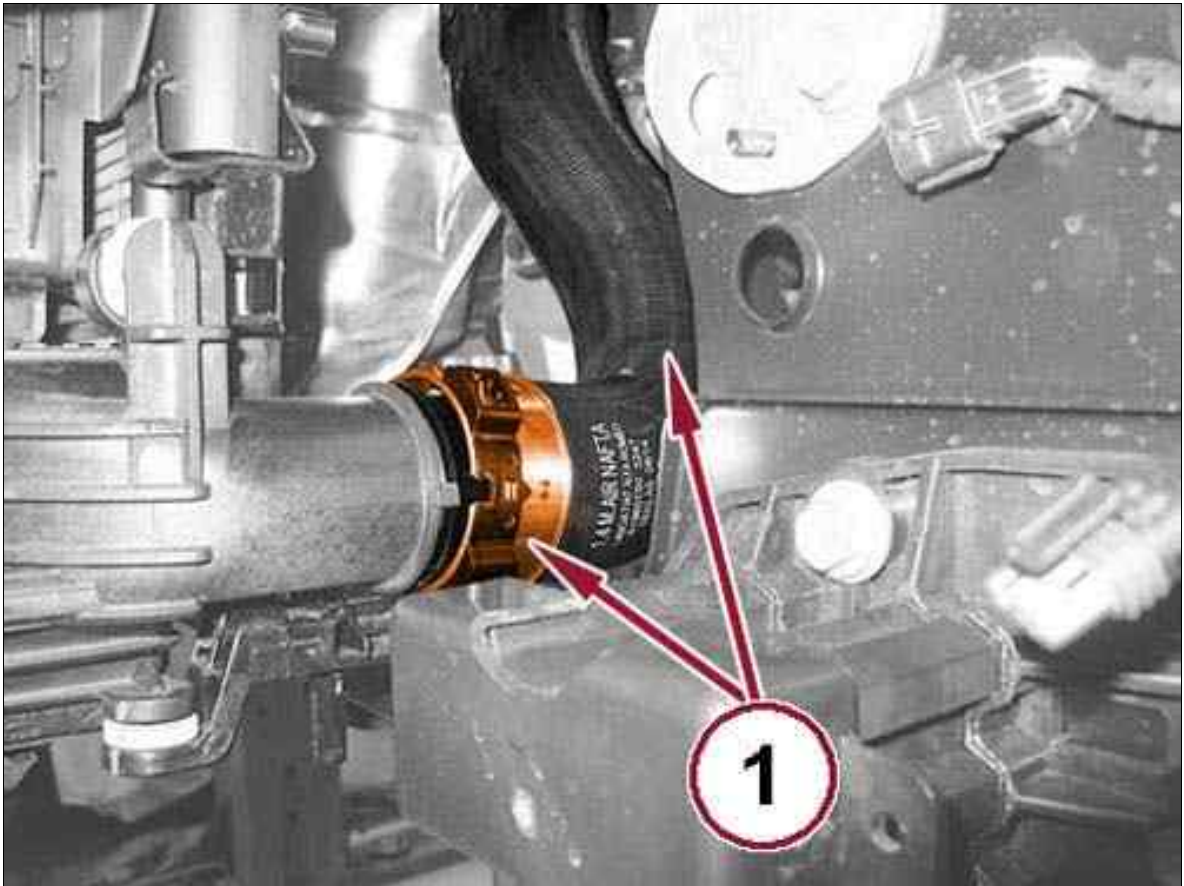
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

4. Remove the screws (1a), nuts (1b) and remove the bumper (1c).

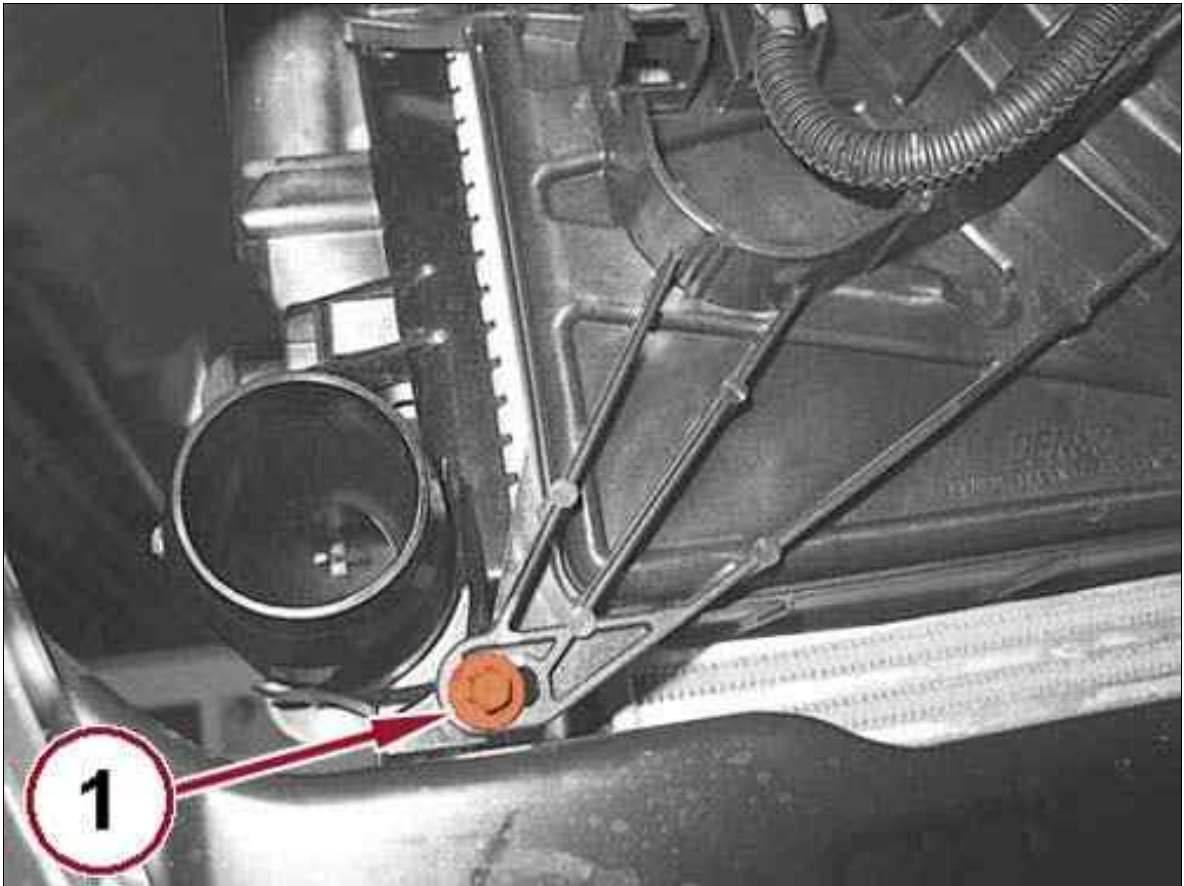
Fig 2: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

5. Remove the left side Charge Air Cooler (CAC) hose (1) from the CAC.

Fig 3: Cooling Fan Bolts



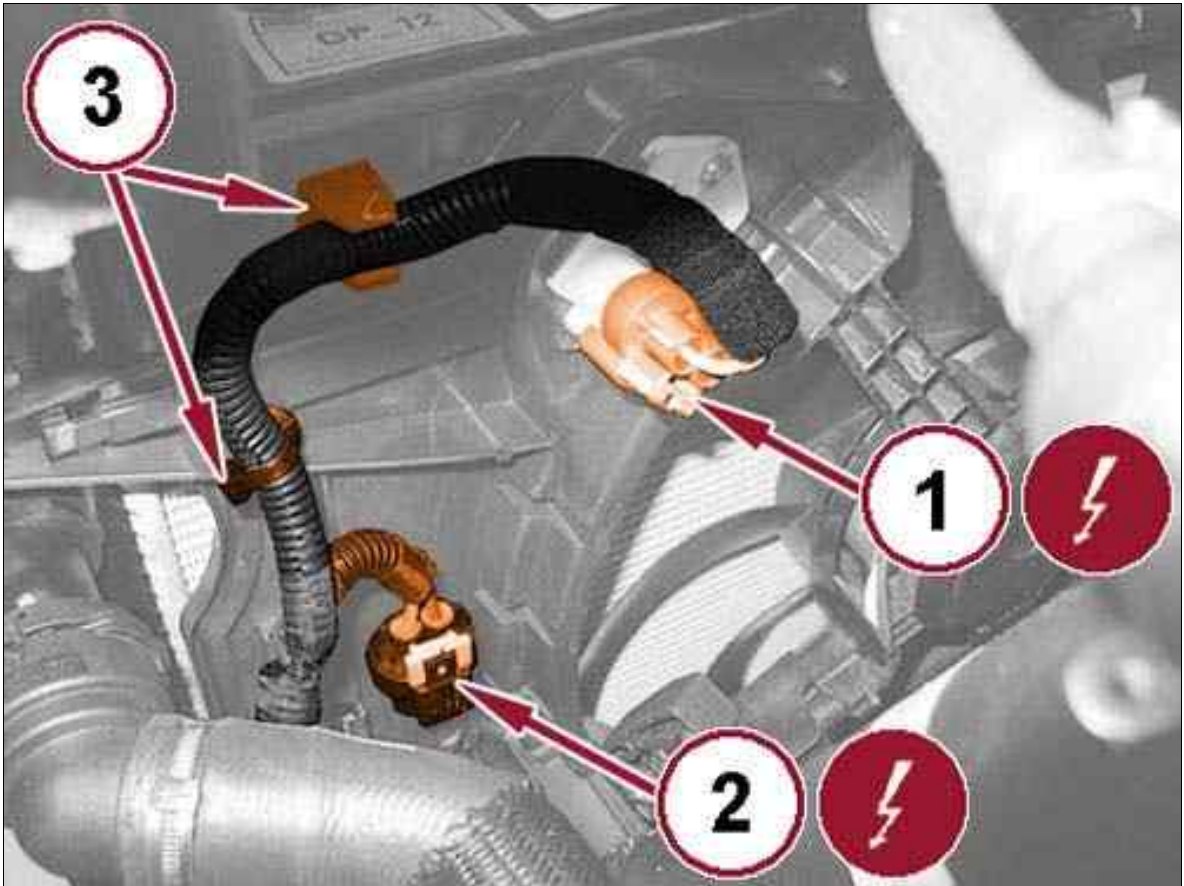
Courtesy of CHRYSLER GROUP, LLC

 **NOTE:**

Left side shown in illustration, right side similar.

6. Remove the lower cooling fan mounting bolts (1)

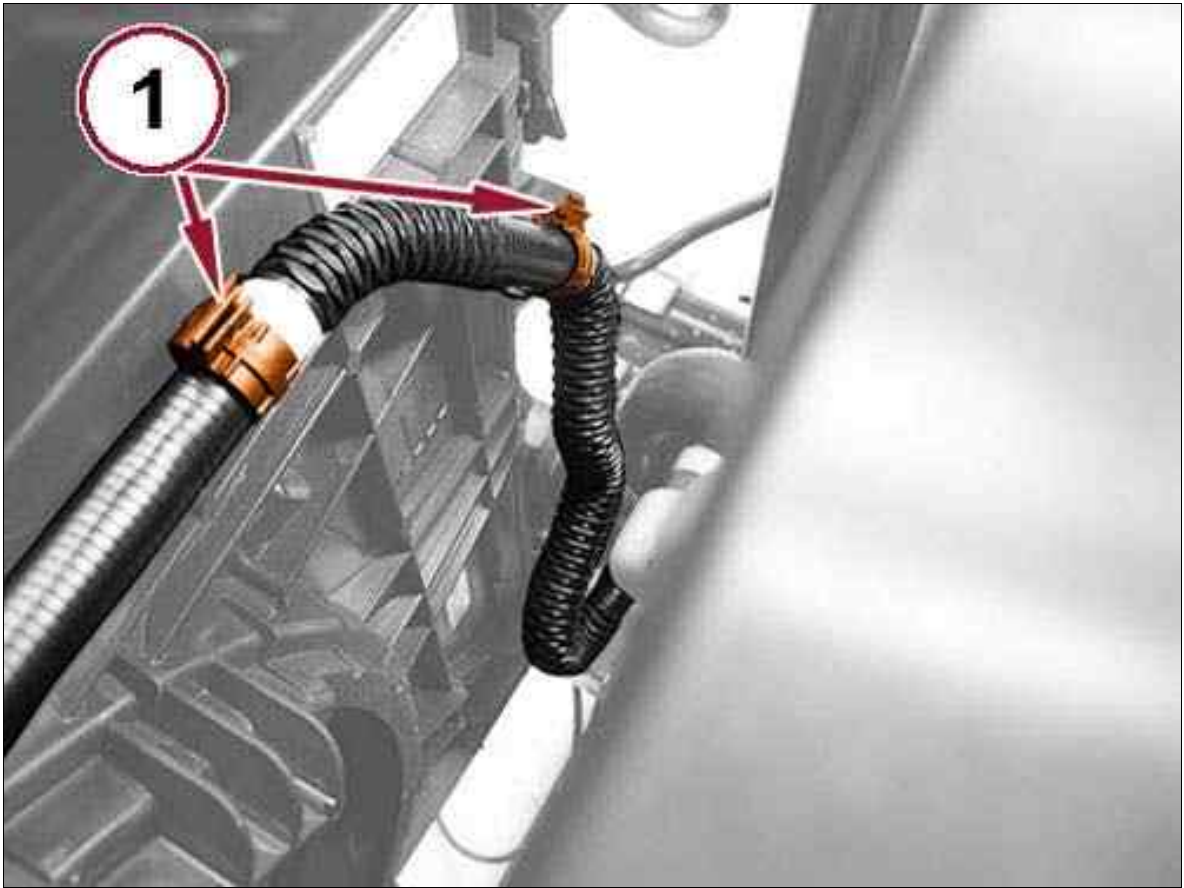
Fig 4: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Disconnect the resistor wire harness connectors (1).
8. Disconnect the cooling fan wire harness connectors (2).
9. Remove the wiring harness retaining clip and detach the wire harness (3).

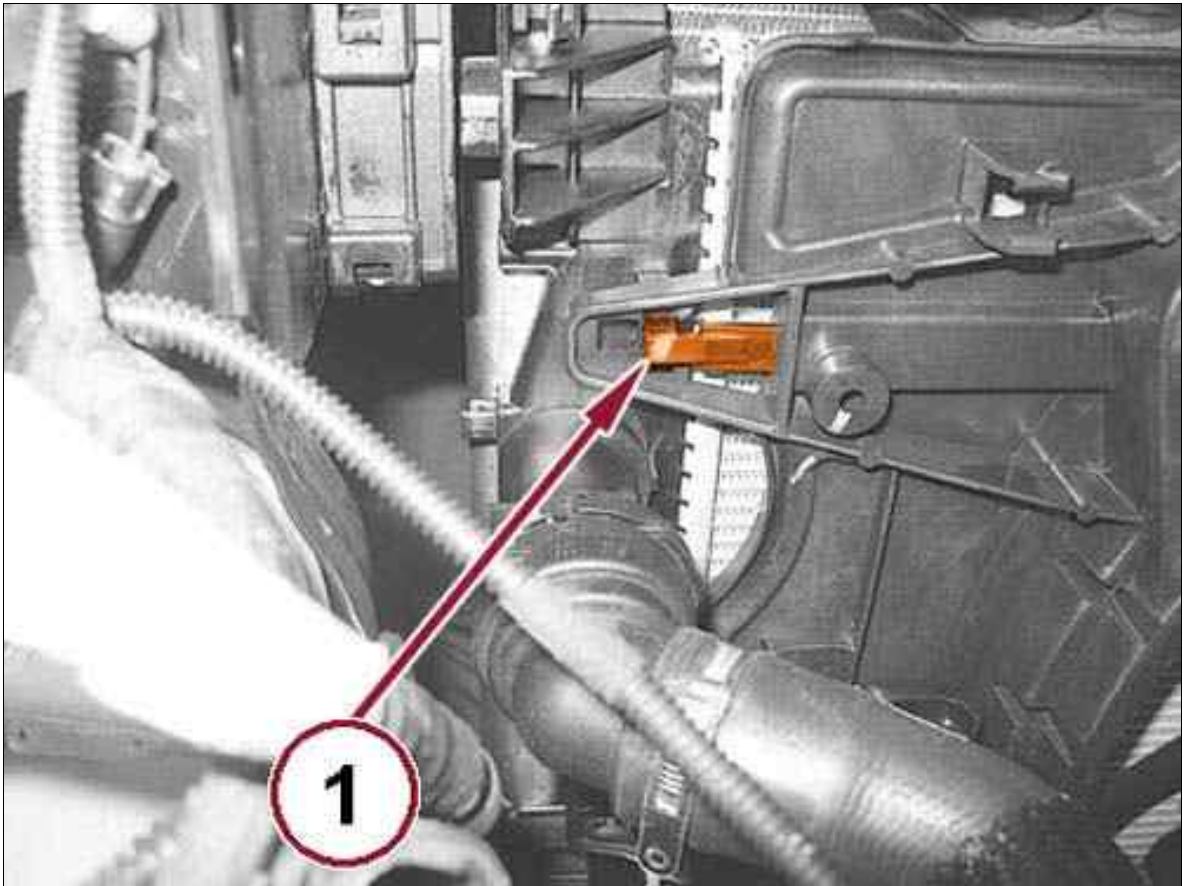
Fig 5: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

10. Unlock retainer clips (1) and remove the coolant hose from fan shroud.

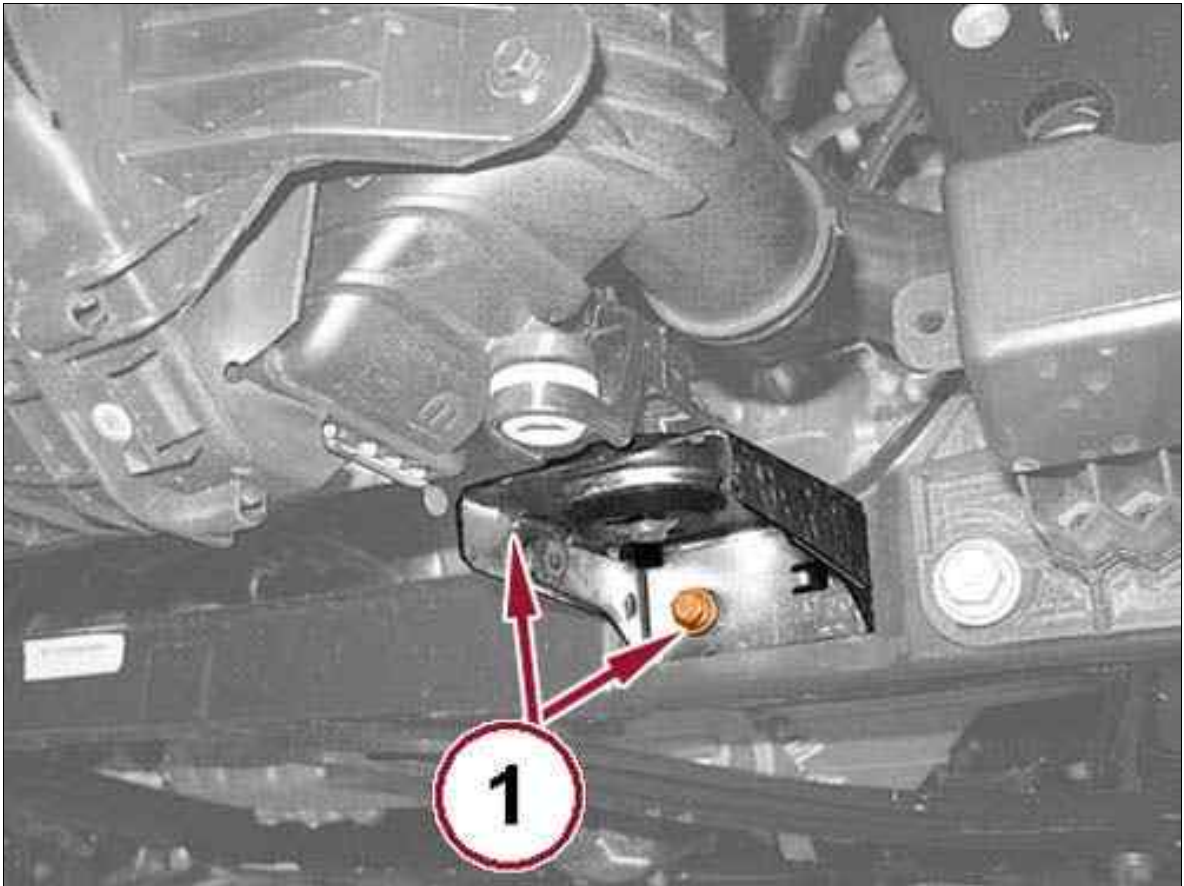
Fig 6: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

11. Disengage the upper cooling fan retaining clips.

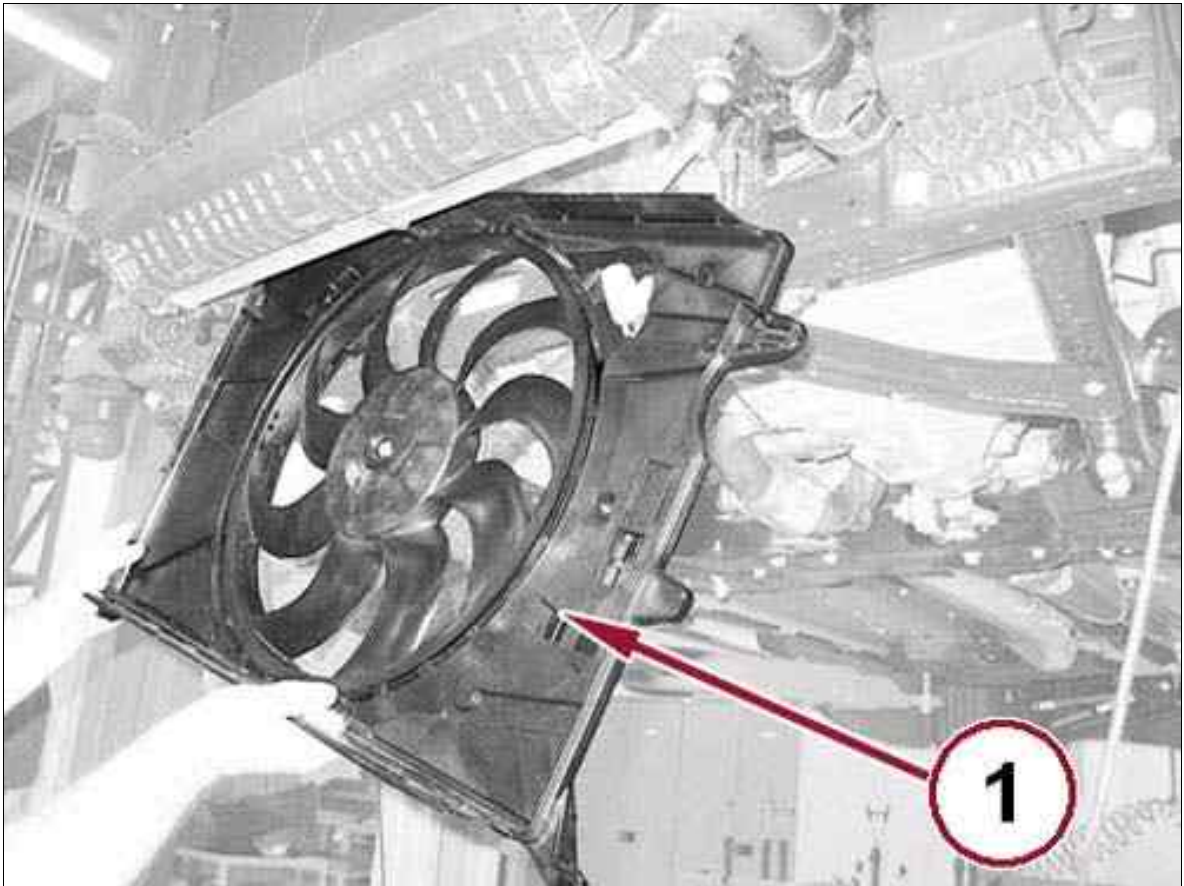
Fig 7: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

12. Raise and support the vehicle.
13. Support the radiator to hold in place.
14. Remove the bolt and the lower radiator support bracket (1).

Fig 8: Cooling Fan

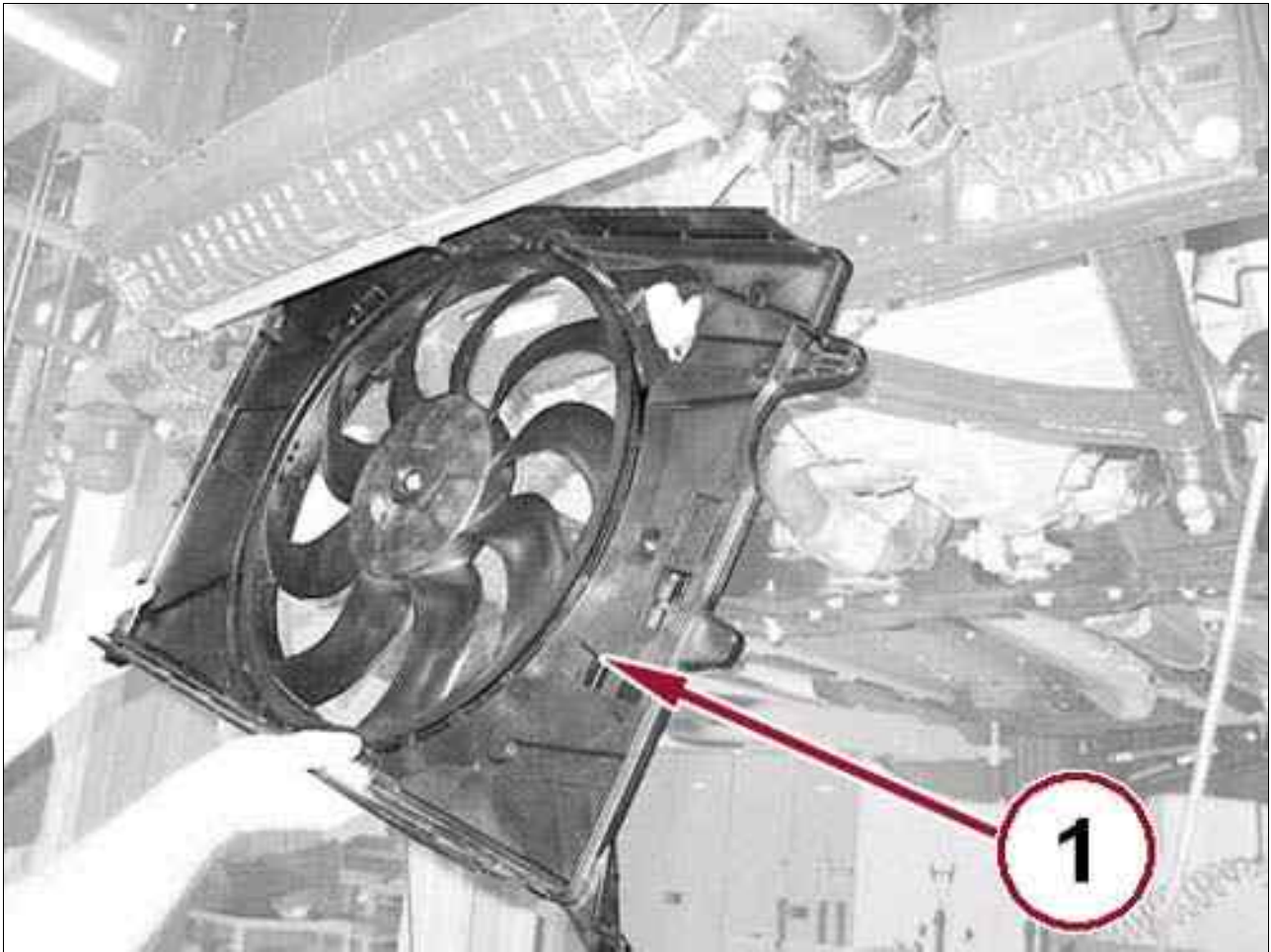


Courtesy of CHRYSLER GROUP, LLC

15. Unhook and remove the cooling fan (1) from the vehicle.

**ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 120/140
CV > INSTALLATION**

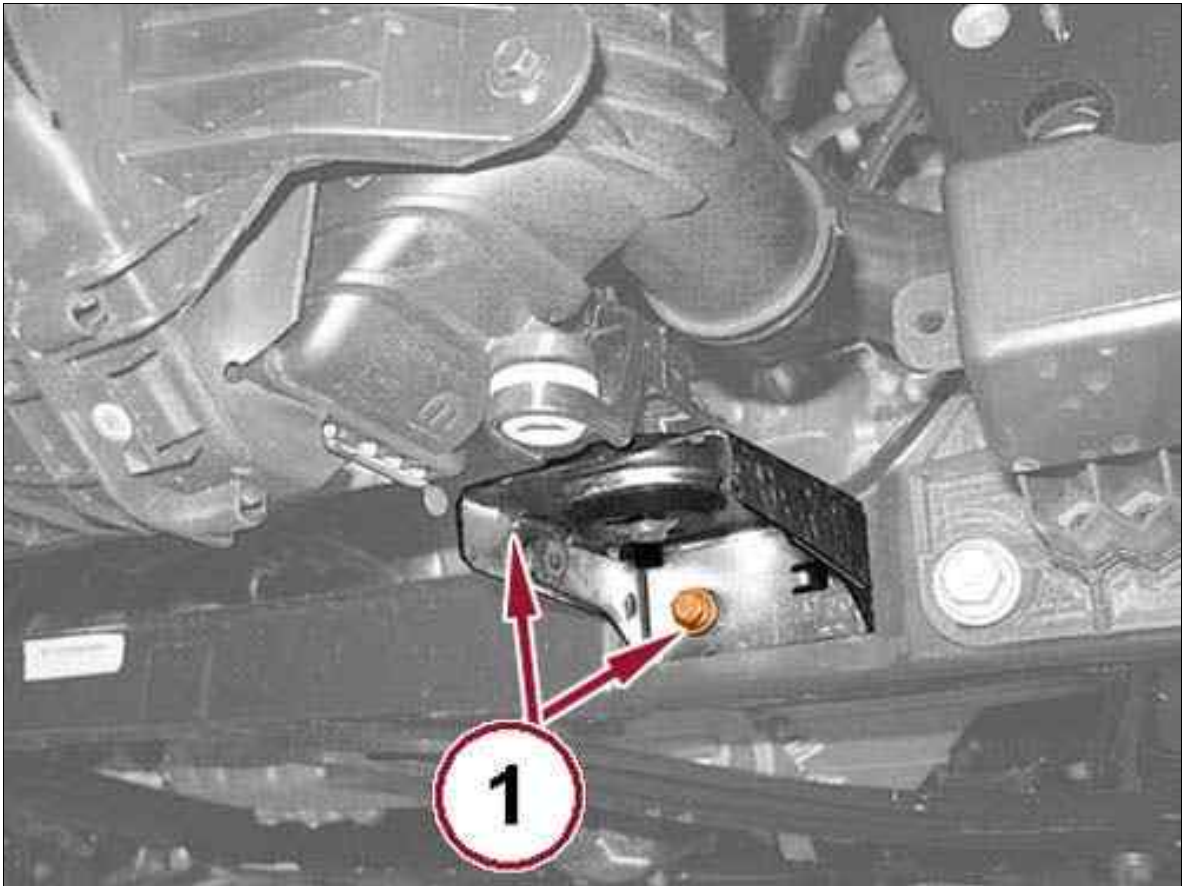
Fig 1: Cooling Fan



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan (1) onto the radiator.

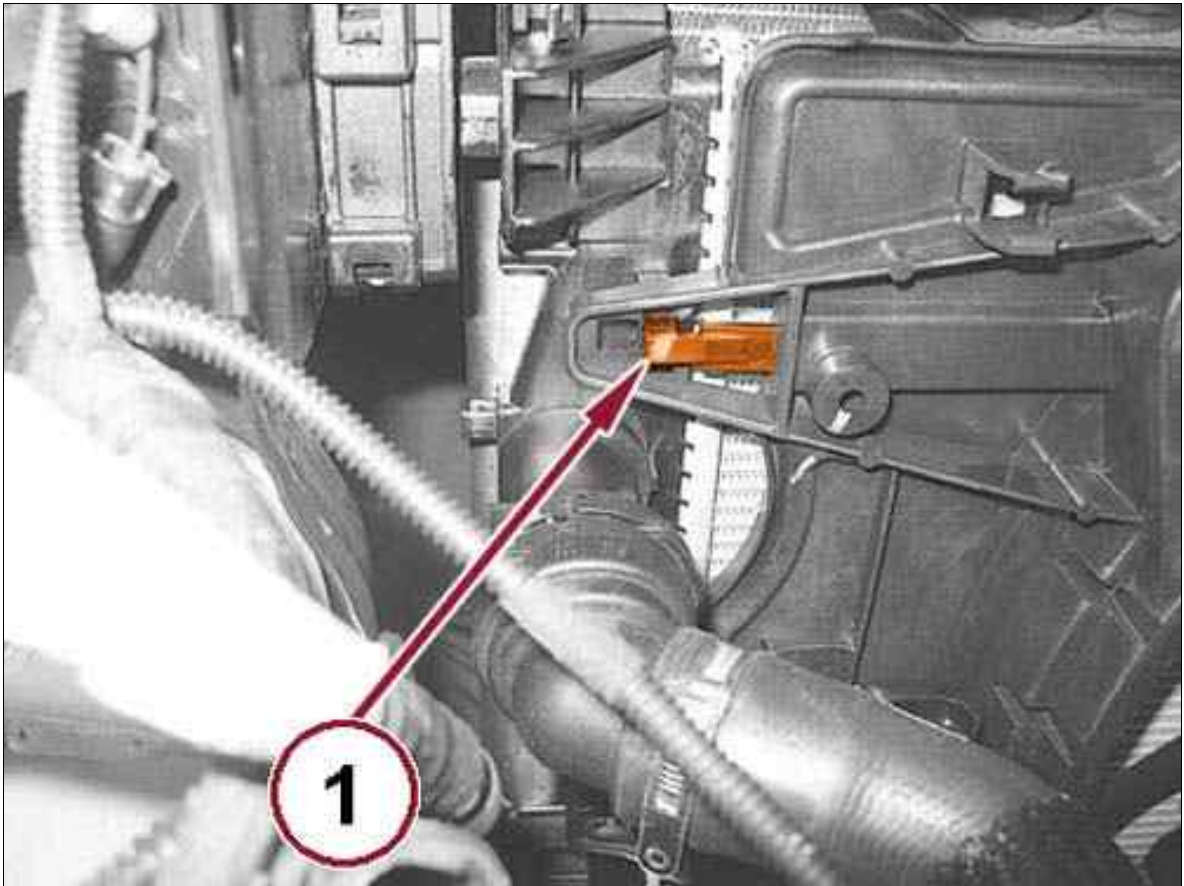
Fig 2: Lower Bracket & Bolt



Courtesy of CHRYSLER GROUP, LLC

2. Install the lower radiator support bracket and securely tighten the bolts (1).
3. Remove the support holding the radiator in place.
4. Remove support and lower the vehicle.

Fig 3: Cooling Fan Upper Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

5. Engage the upper cooling fan retaining clips (1).

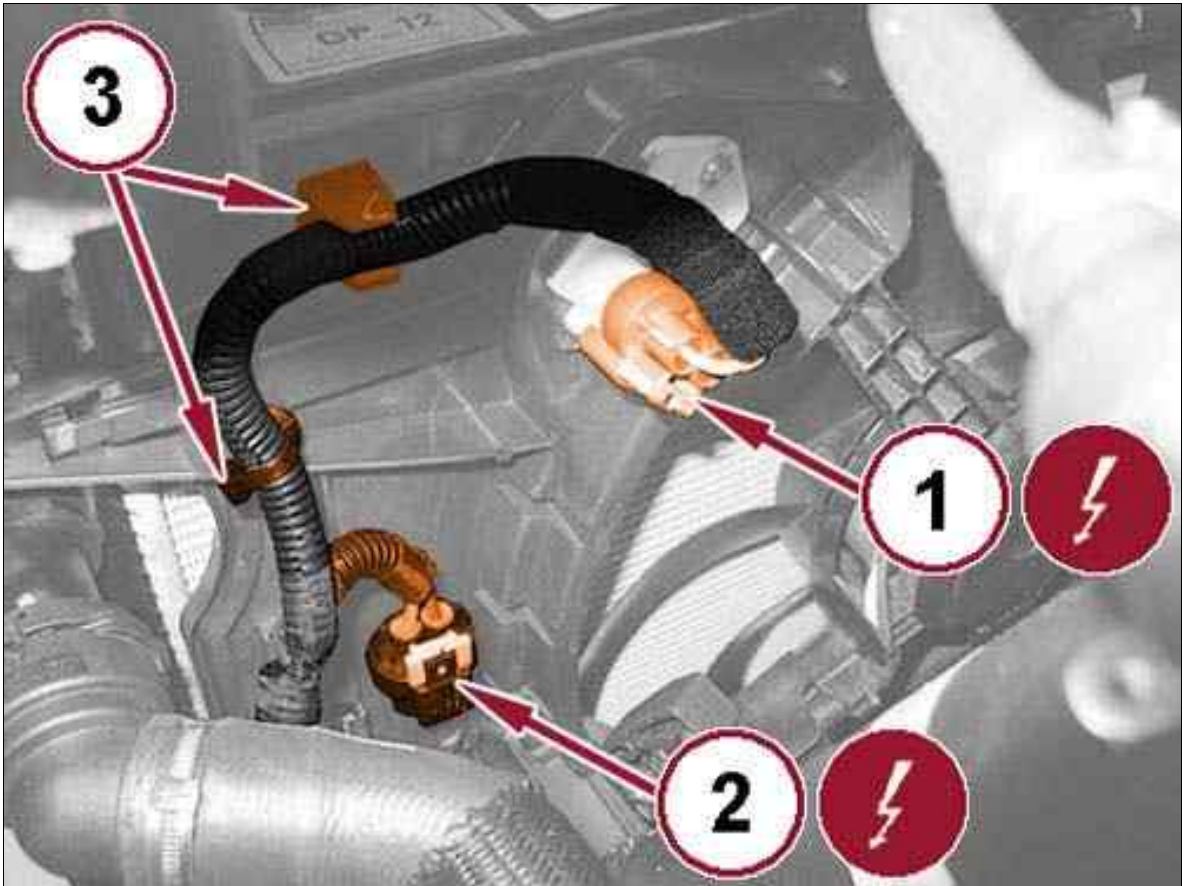
Fig 4: Coolant Pipe Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

6. Install the coolant hose onto the fan shroud and lock the retaining clips (1).

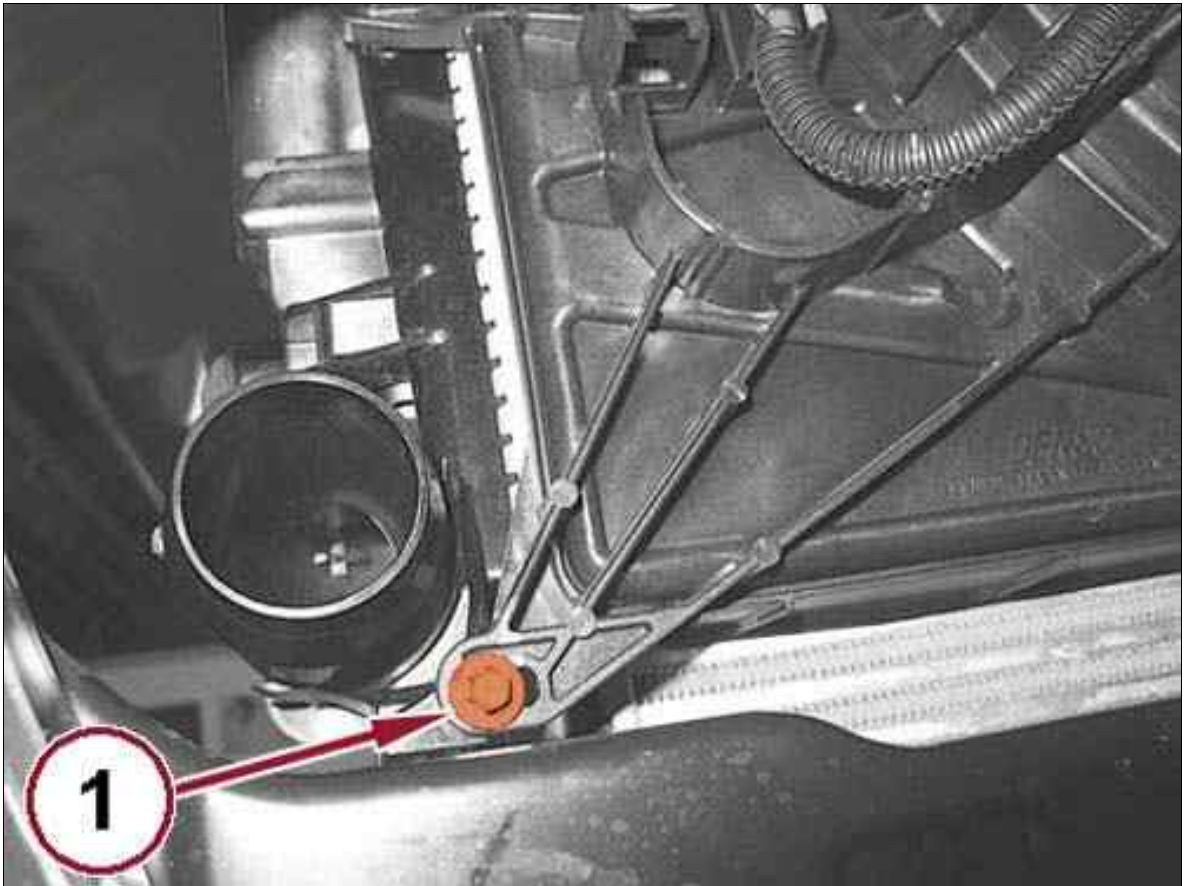
Fig 5: Cooling Fan Wire Harness Connectors & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Attach the wiring harness and install the retaining clip (3).
8. Connect the cooling fan wire harness connector (1 and 2).

Fig 6: Cooling Fan Bolts



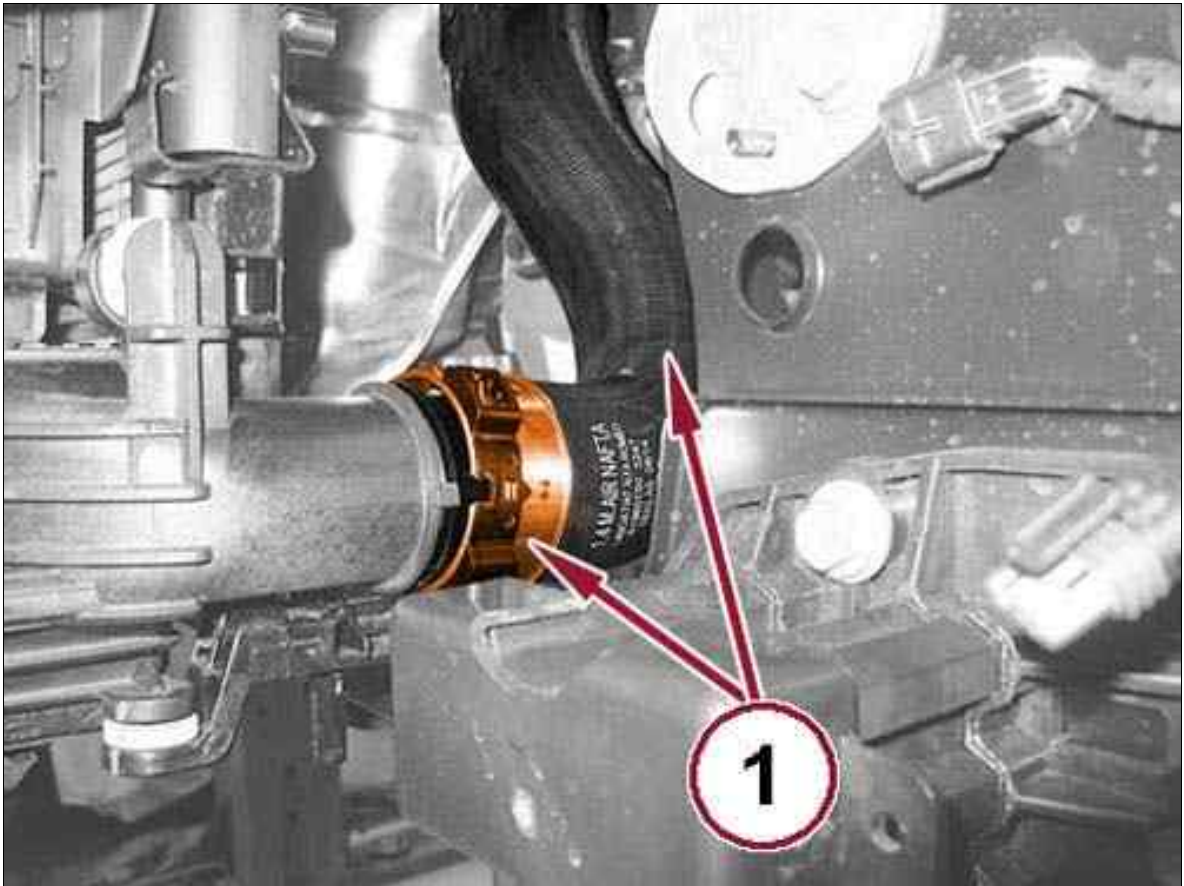
Courtesy of CHRYSLER GROUP, LLC

 **NOTE:**

Left side shown in illustration, right side similar.

9. Raise and support the vehicle.
10. Install the lower cooling fan mounting bolts (1) and securely tighten.

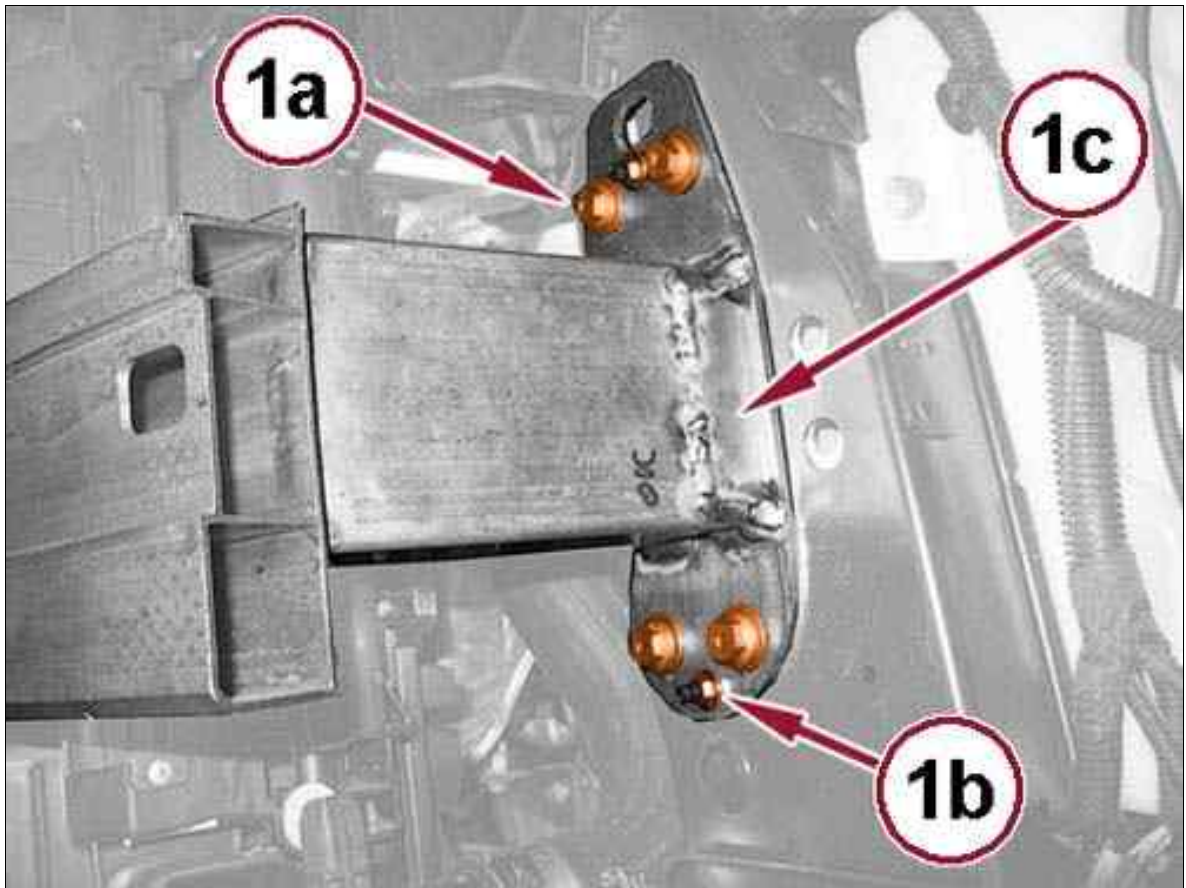
Fig 7: Charge Air Cooler Quick Coupling Sleeve



Courtesy of CHRYSLER GROUP, LLC

11. Install the left side Charge Air Cooler (CAC) hose (1) to the CAC.

Fig 8: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

12. Install the front bumper (1c) with bolts (1a) and nuts (1b) tightened to the proper specification. Refer to SPECIFICATIONS .
13. Install the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
14. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
15. Connect the negative battery cable.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 170 CV > REMOVAL



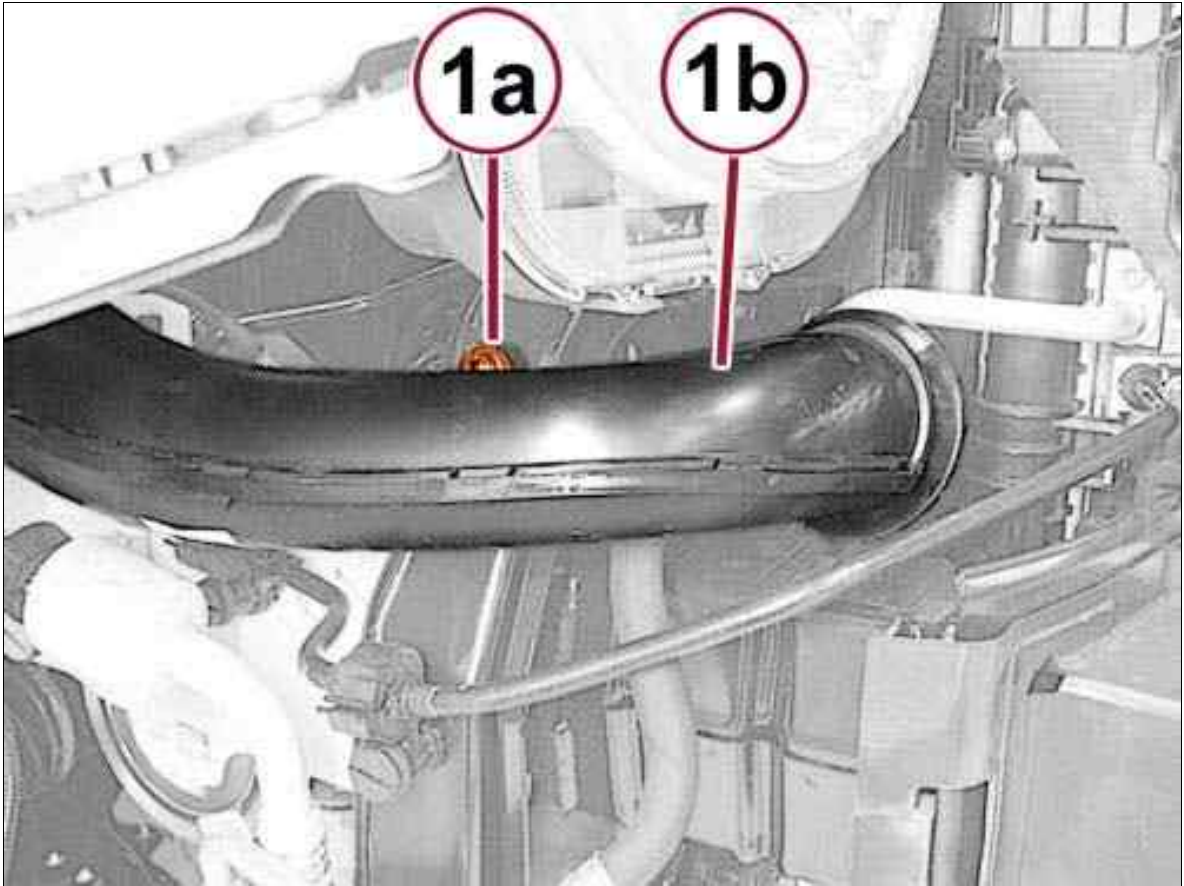
NOTE:

The cooling fan is integrated into the front radiator closure panel and can be removed separately.

1. Disconnect and isolate the negative battery cable.
2. Raise and support the vehicle.

3. Drain the cooling system. Refer to STANDARD PROCEDURE .
4. Recover the A/C refrigerant. Refer to PLUMBING, STANDARD PROCEDURE .
5. Remove the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

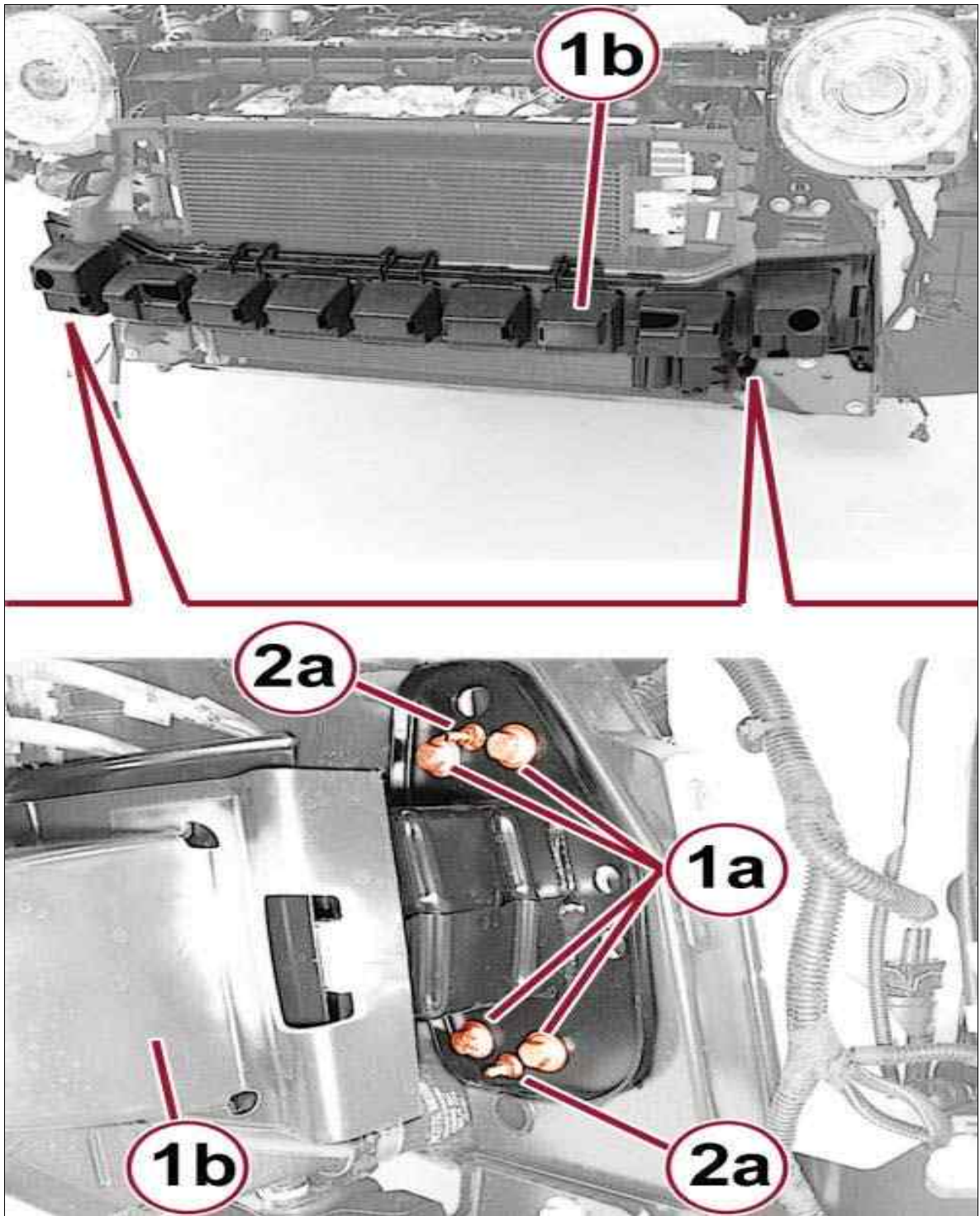
Fig 1: Air Tube & Nut



Courtesy of CHRYSLER GROUP, LLC

6. Working on the right side, remove the nut (1a) and slightly remove the Charge Air Cooler (CAC) inlet tube (1b).

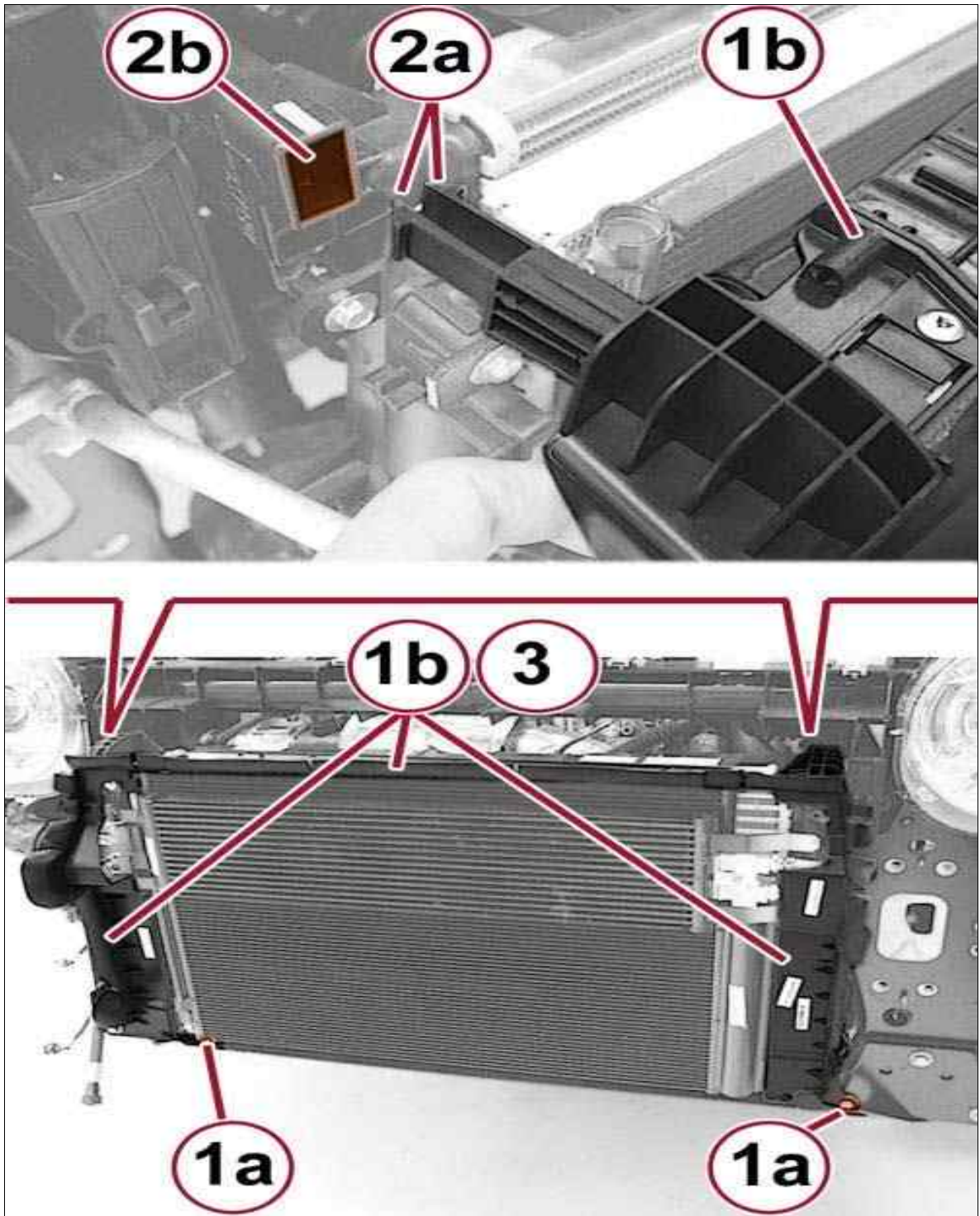
Fig 2: Front Energy Absorber & Bolts, Front Bumper Reinforcement & Nuts



Courtesy of CHRYSLER GROUP, LLC

7. Remove the bolts (1a) and front energy absorber (1b).
8. Remove the three nuts (2a) and the front energy absorber (1b).

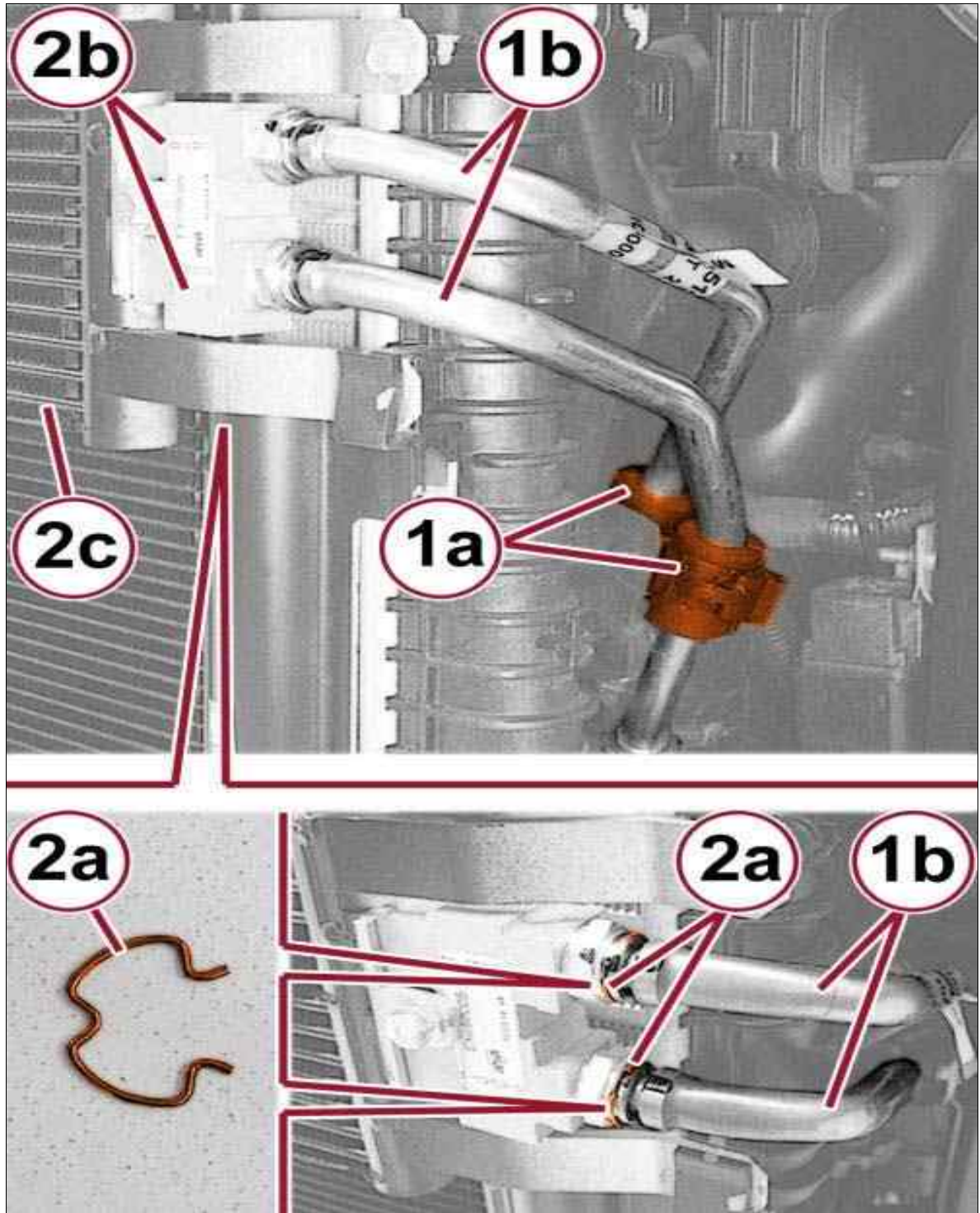
Fig 3: Air Duct & Bolts, Seats & Retainers & Air Cooler



Courtesy of CHRYSLER GROUP, LLC

9. Remove the bolts (1a) securing the air cooler (1b).
10. Release the retainers (2a) from the seats (2b) of the front end
11. Remove the air cooler (1b).

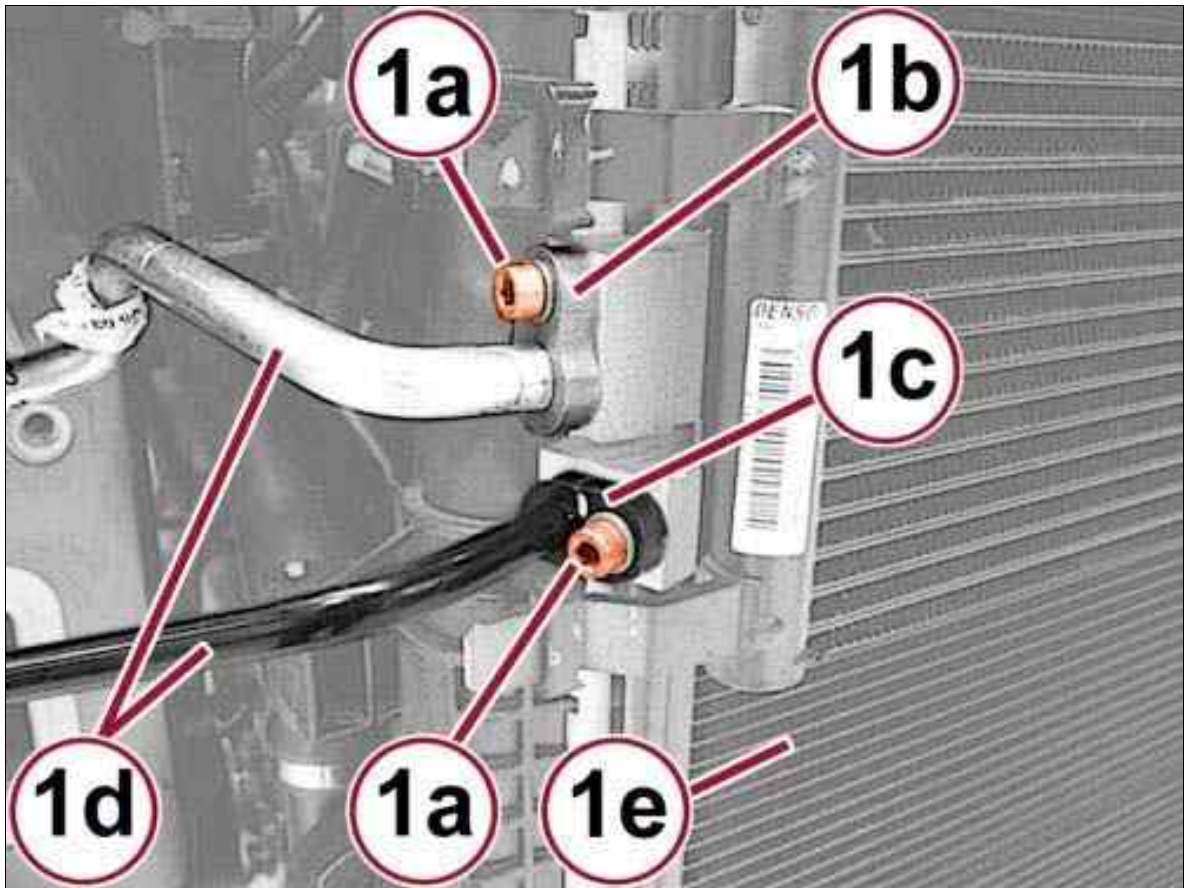
Fig 4: Transmission Oil Cooler Pipes & Retaining Clamps, Transmission Oil Cooler & Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

12. Open the retaining clamps (1a) securing the transmission oil cooler pipes (1b).
13. Carefully disengage the retainer clips (2a) and disconnect the pipes (1b) from the transmission oil cooler (2c). Recover oil drops leaking from the pipes and fittings.

Fig 5: Bolts, Fitting, Pipes & Connections At Condenser



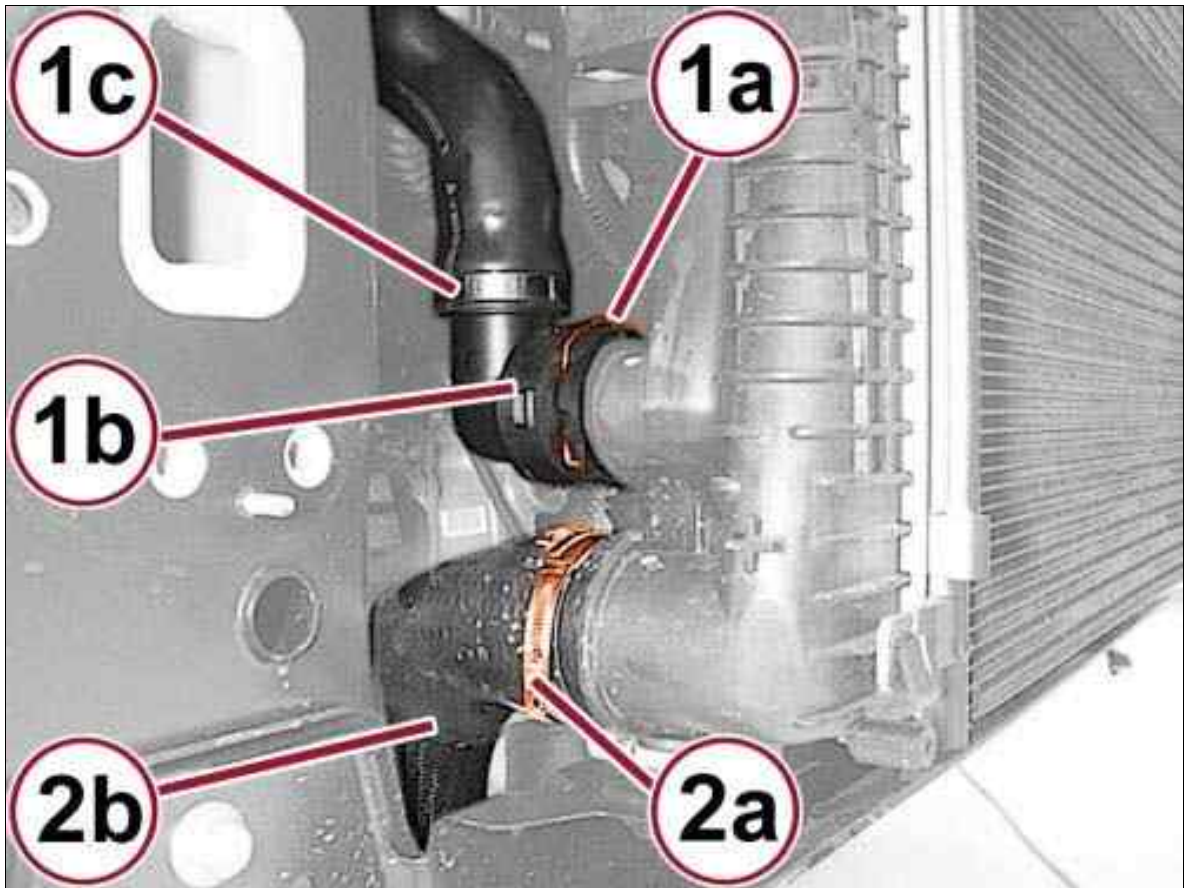
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Install plugs to seal the fittings disconnected to prevent the entrance of moisture and impurities in the system.

14. Unscrew the screws (1a) and disconnect the fittings (1b) and (1c) of the pipes (1d) connection to the condenser (1e).

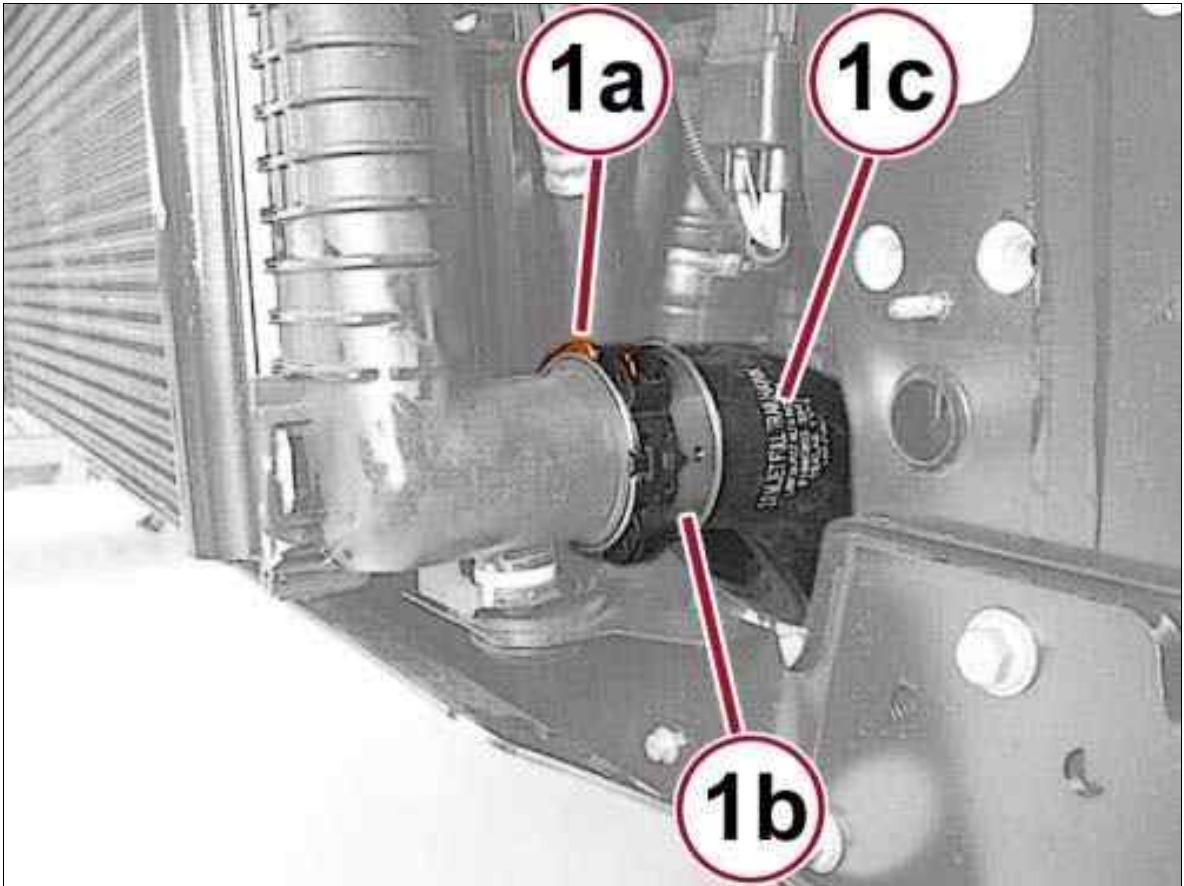
Fig 6: Hose, Pipe, Clamp, Quick Coupling & Spring Retainer



Courtesy of CHRYSLER GROUP, LLC

15. Working on the lower right side of the radiators, disengage the spring retainer (1a) and disconnect the quick coupling (1b) of the pipe (1c) of the engine coolant from the radiator.
16. Open the clamp (2a) and disconnect pipe (2b) from the Charge Air Cooler (CAC).

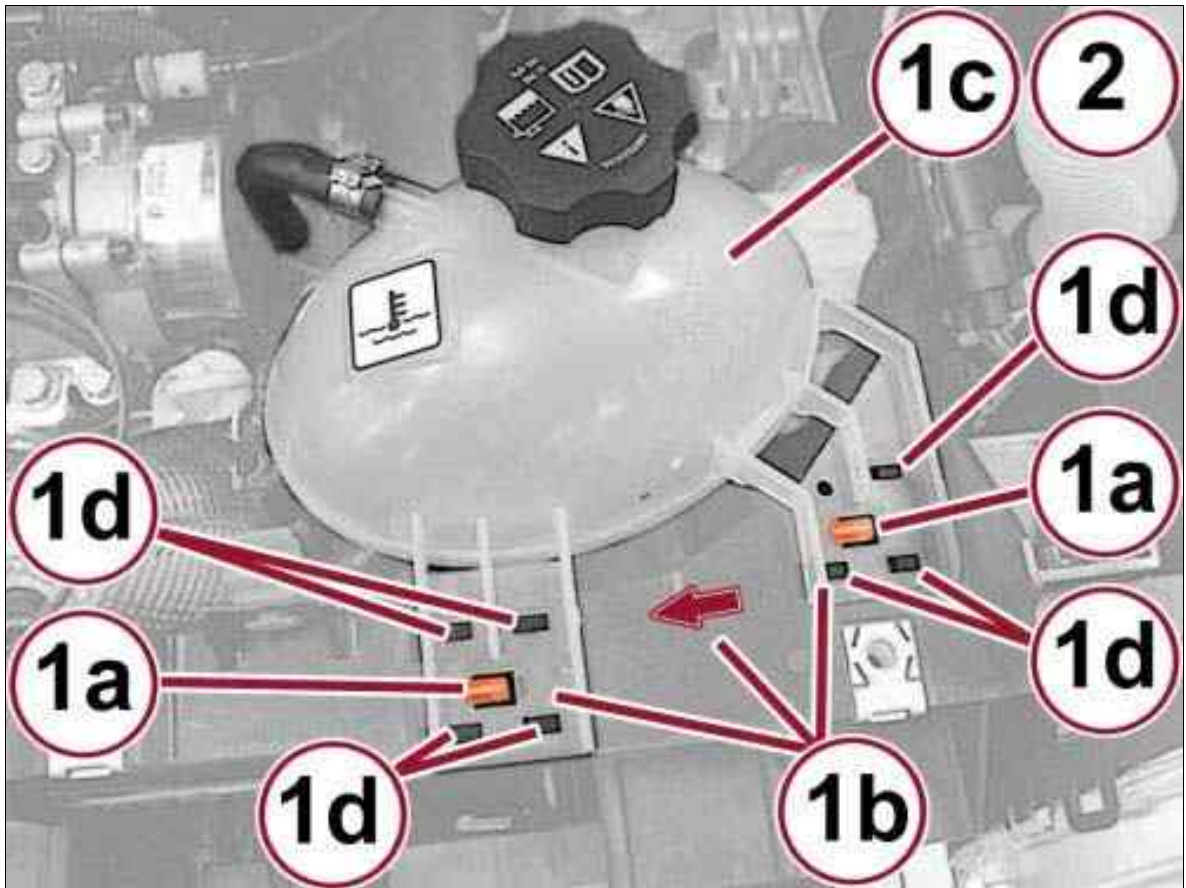
Fig 7: Quick Coupling, Pipe & Spring Retainer



Courtesy of CHRYSLER GROUP, LLC

17. Working on the lower left side of the radiators, disengage the spring retainer (1a) and disconnect the quick coupling (1b) of the pipe (1c) from the CAC.

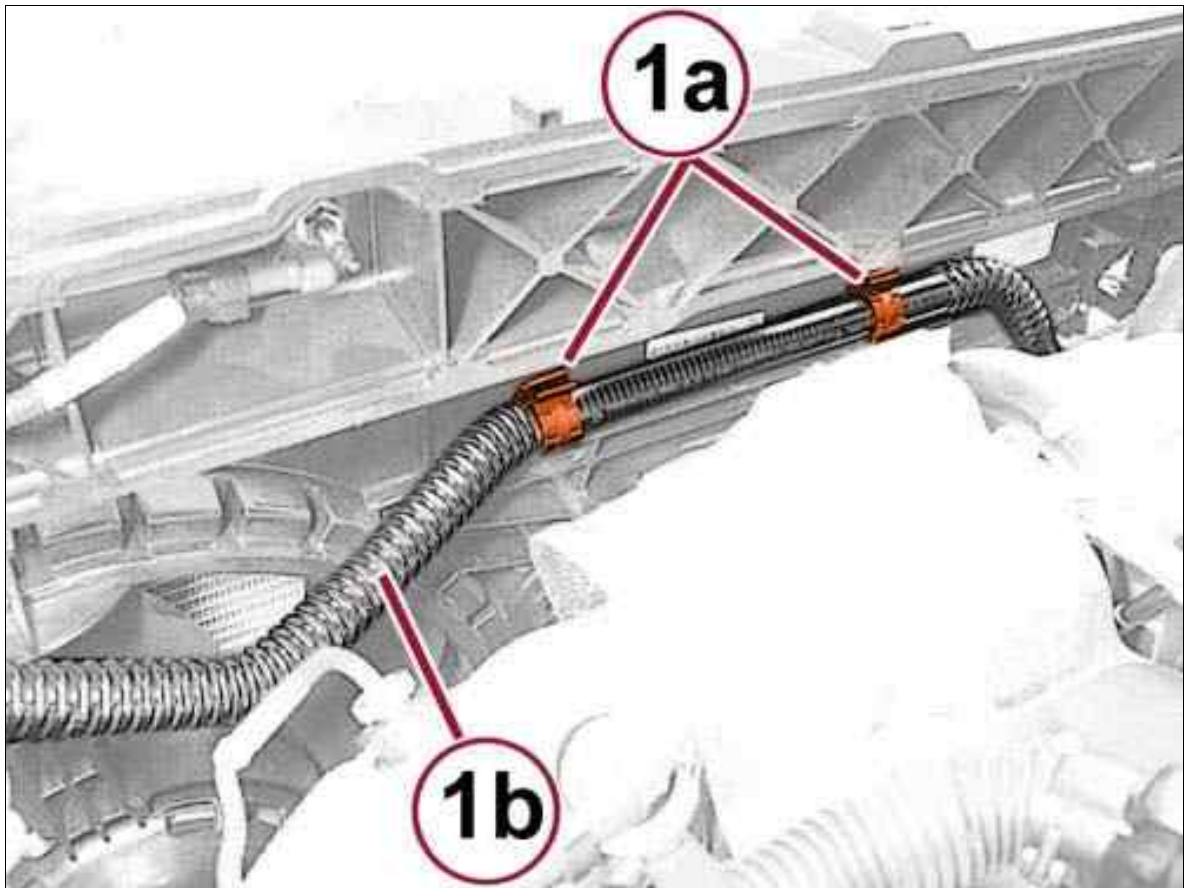
Fig 8: Pressurized Coolant Bottle, Retainers & Bracket



Courtesy of CHRYSLER GROUP, LLC

18. Lift and disengage the retainers (1a) and slide in the direction of the arrow brackets (1b) of the pressurized coolant bottle (1c) of the engine coolant, by disengaging the retainers (1d).
19. Remove the pressurized coolant bottle (1c) after having disengaged its lower restraint.

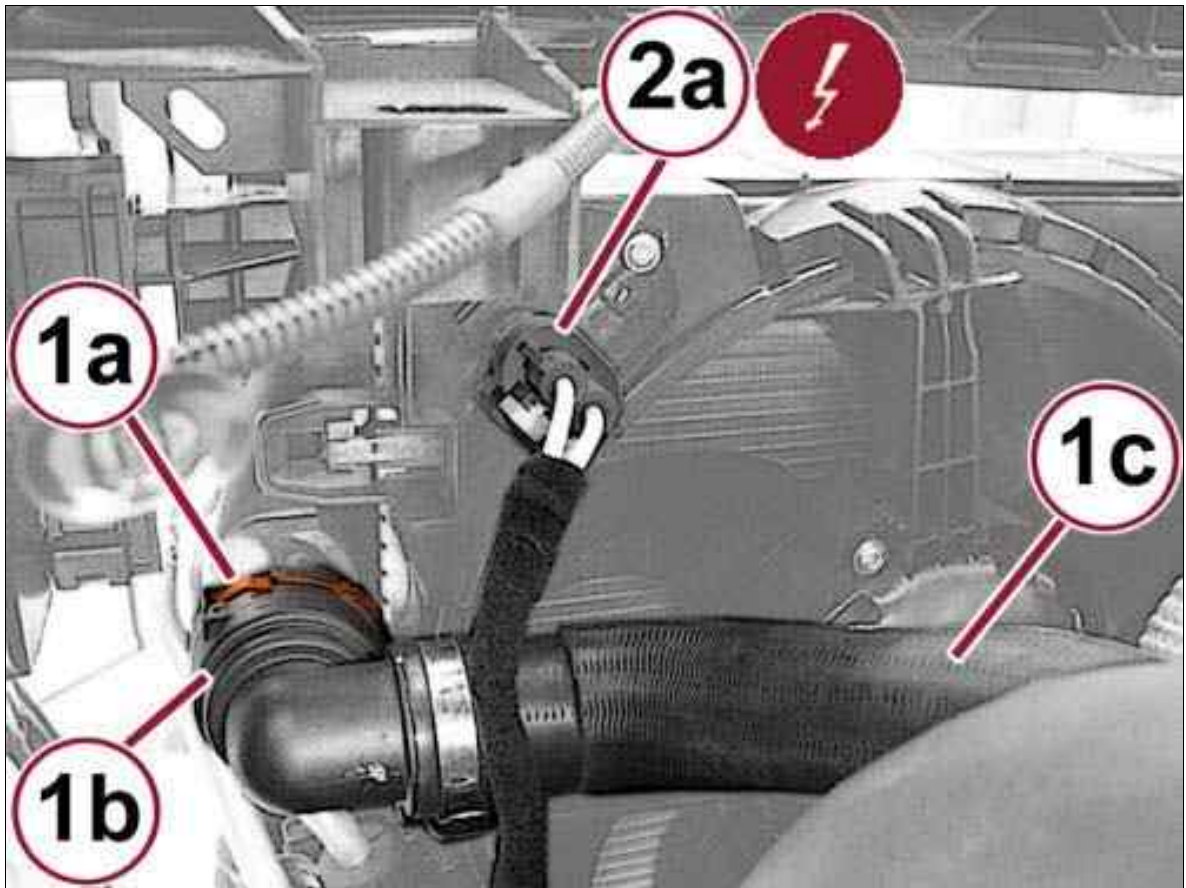
Fig 9: Coolant Tube & Retainers



Courtesy of CHRYSLER GROUP, LLC

20. Disengage from the retainers (1a) and the coolant tube (1b).

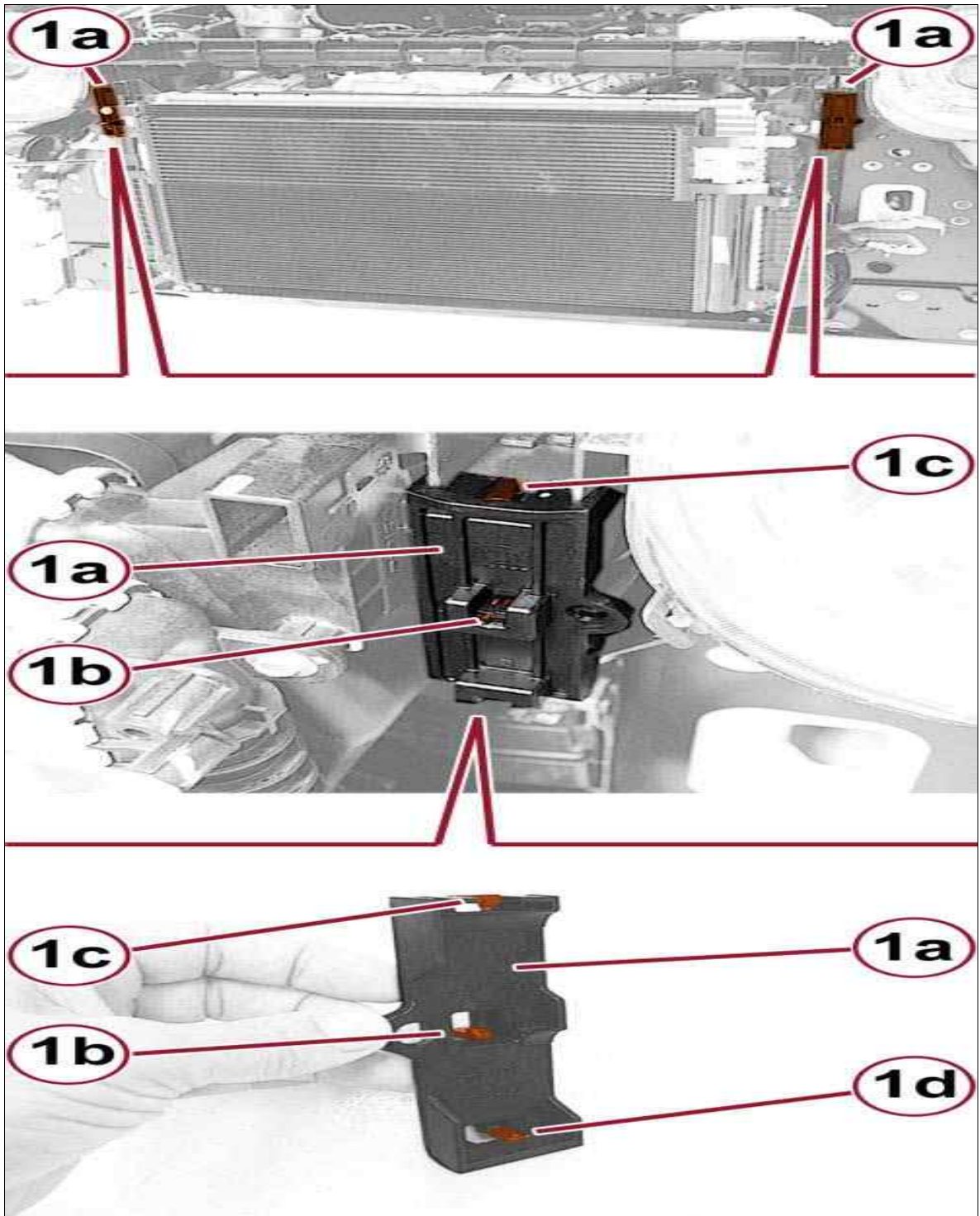
Fig 10: Pipe, Quick Coupling, Retainer & Connector



Courtesy of CHRYSLER GROUP, LLC

21. Working on the upper left side of the radiators, disengage the spring retainer (1a) and disconnect the quick coupling (1b) of the pipe (1c) of the engine coolant in the radiator inlet.
22. Disconnect the resistor wire harness connector (2a).

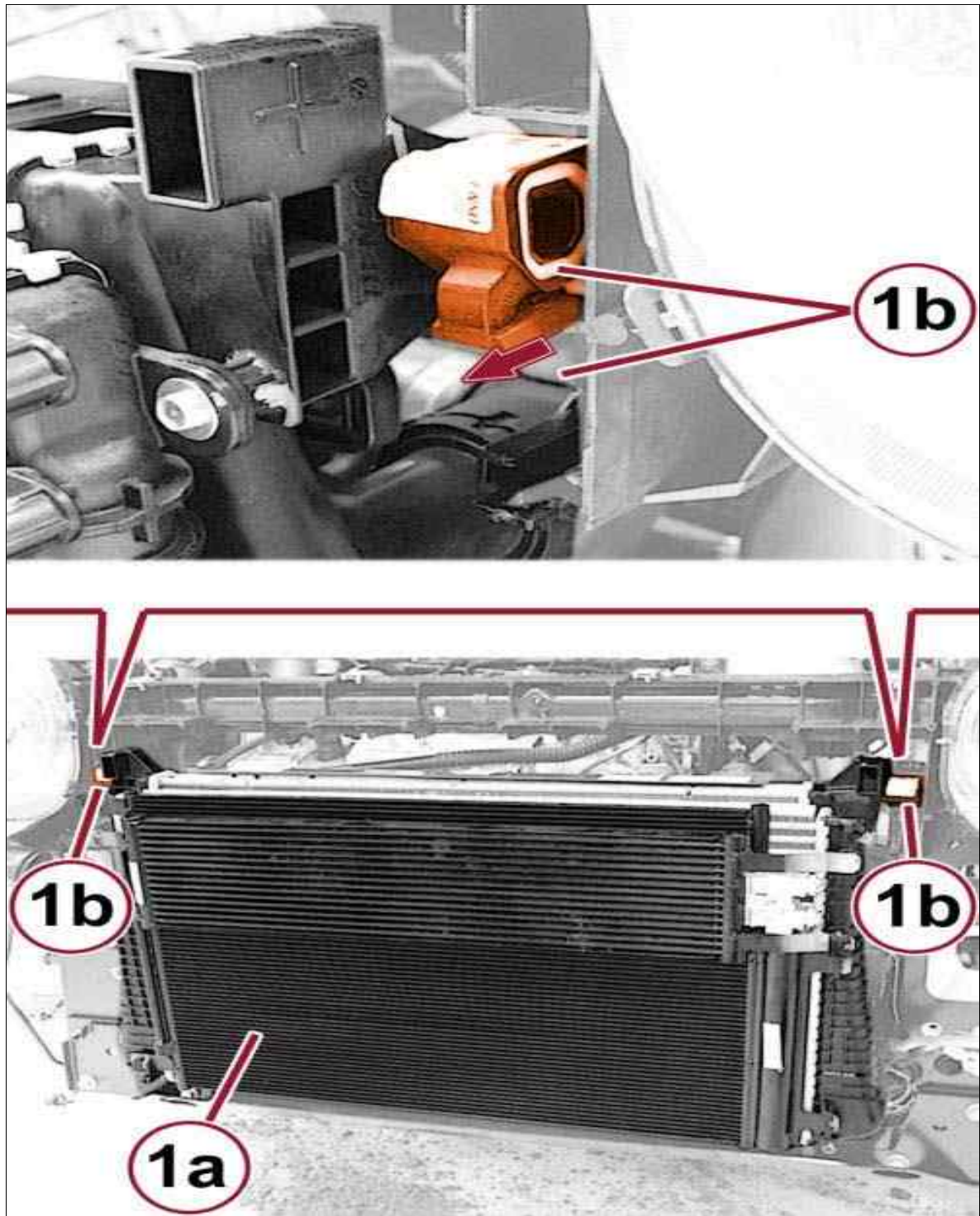
Fig 11: Covers & Retainers



Courtesy of CHRYSLER GROUP, LLC

23. Remove the covers (1a) for retaining the upper radiator, after having disengaged the central retaining (1b) and upper retainers (1c) and lower (1d).

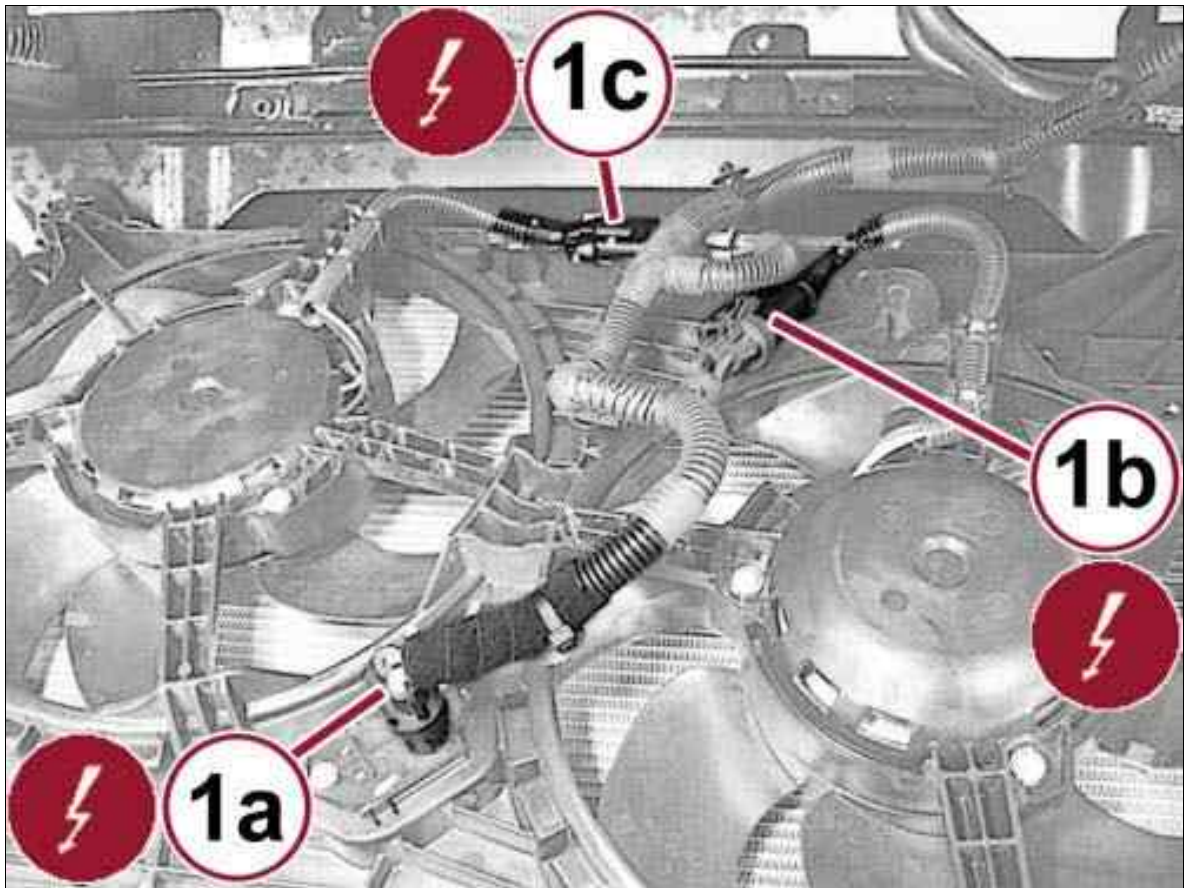
Fig 12: Radiator & Supports



Courtesy of CHRYSLER GROUP, LLC

24. Move the upper part of the radiator (1a) forward to disengage the supports (1b) from the seats.

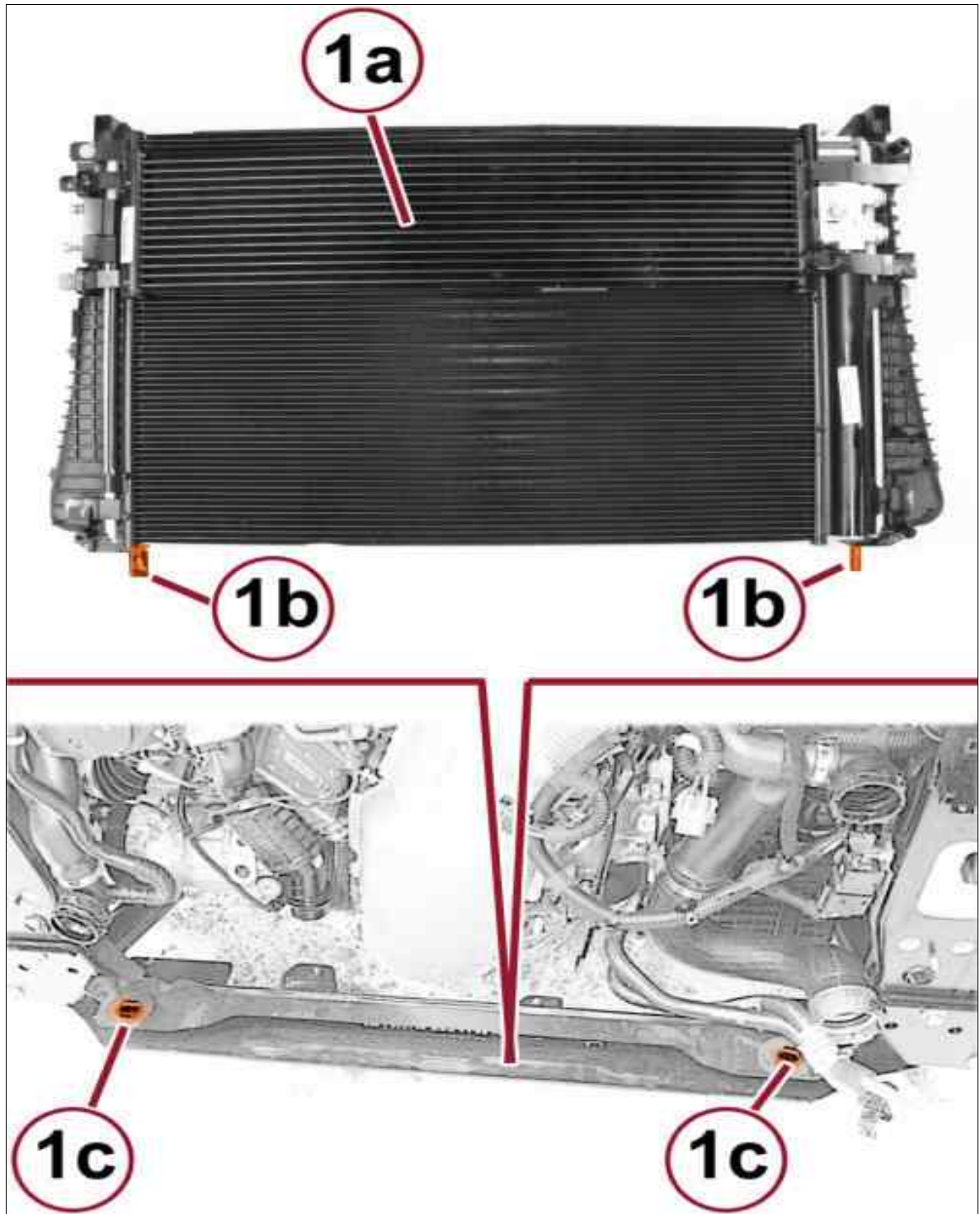
Fig 13: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

25. Disconnect the cooling fan wire harness connectors (1a, 1b, 1c).

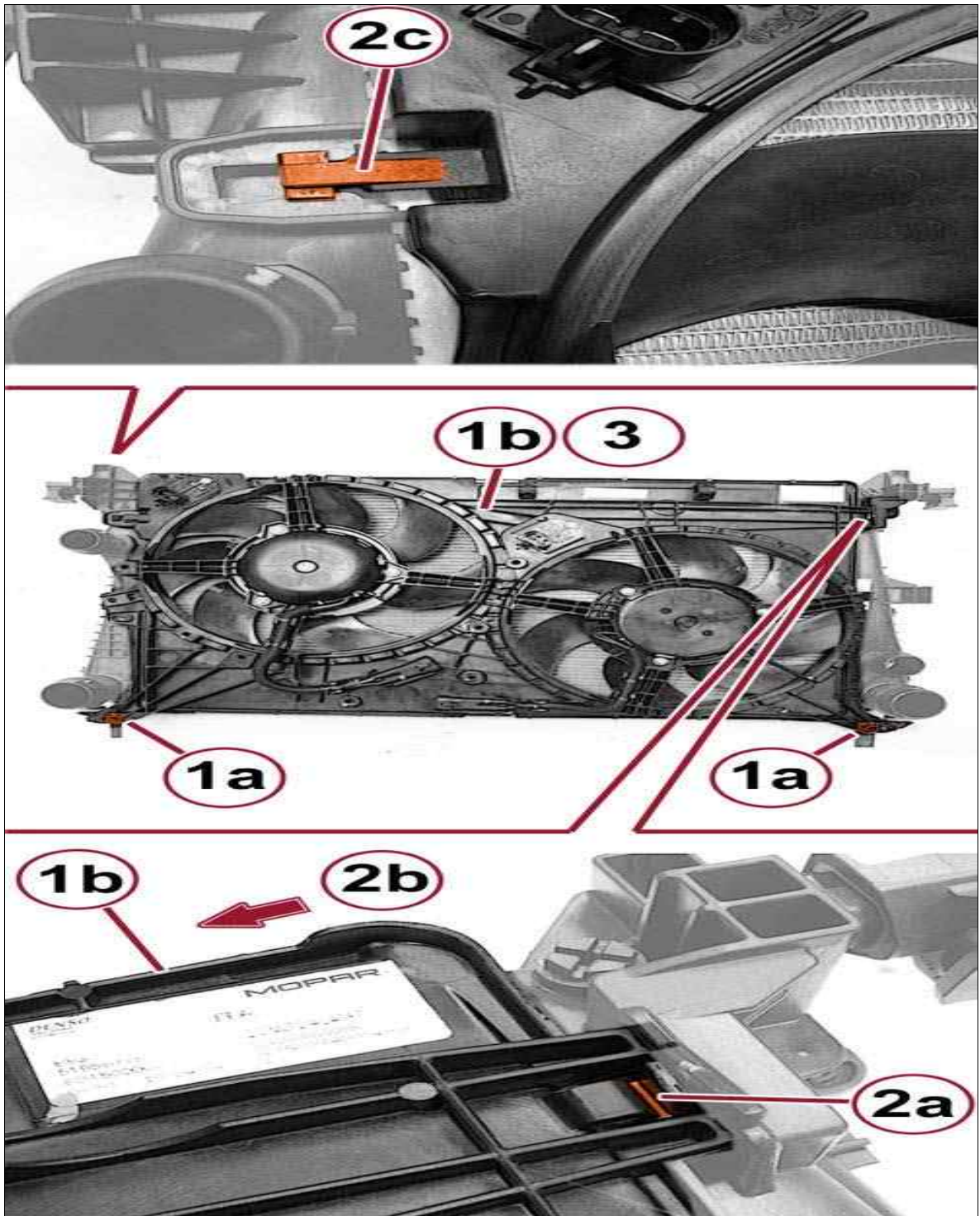
Fig 14: Radiator, Pins & Seats



Courtesy of CHRYSLER GROUP, LLC

26. Lift and remove the radiator with cooling fan (1a) disengaging its lower pins (1b) from the seats (1c) of the front-end.

Fig 15: Cooling Fan, Retainers & Screws

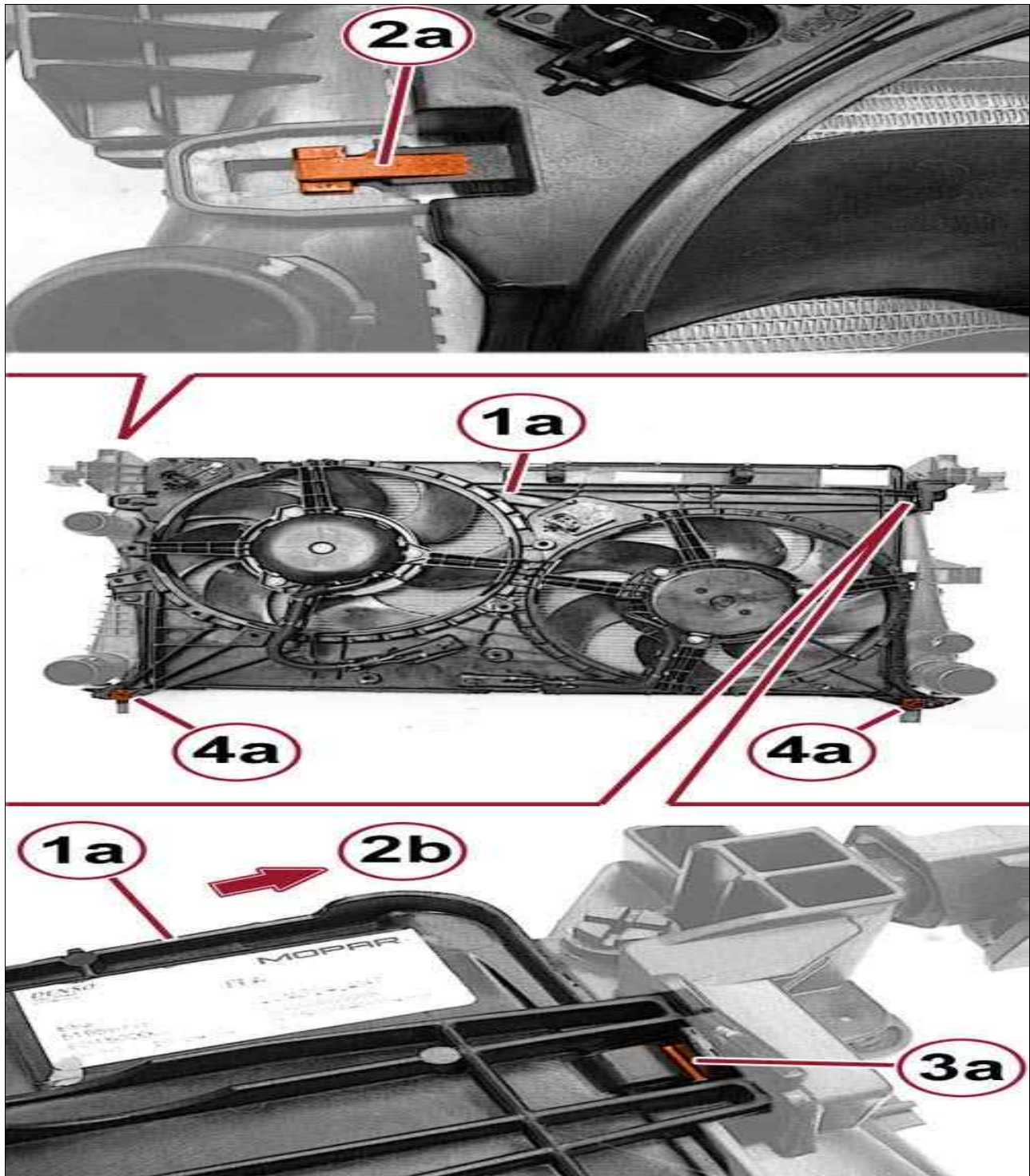


Courtesy of CHRYSLER GROUP, LLC

27. Remove the screws (1a) of the lower fixing of the cooling fan (1b).
28. Disengage the retainer (2a), and slide the fan (1b) in the direction of the arrow (2b), then disengage the retainer (2c).
29. Remove the cooling fan (1b) from the radiator.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 170 CV > INSTALLATION

Fig 1: Cooling Fan, Retainers & Screws

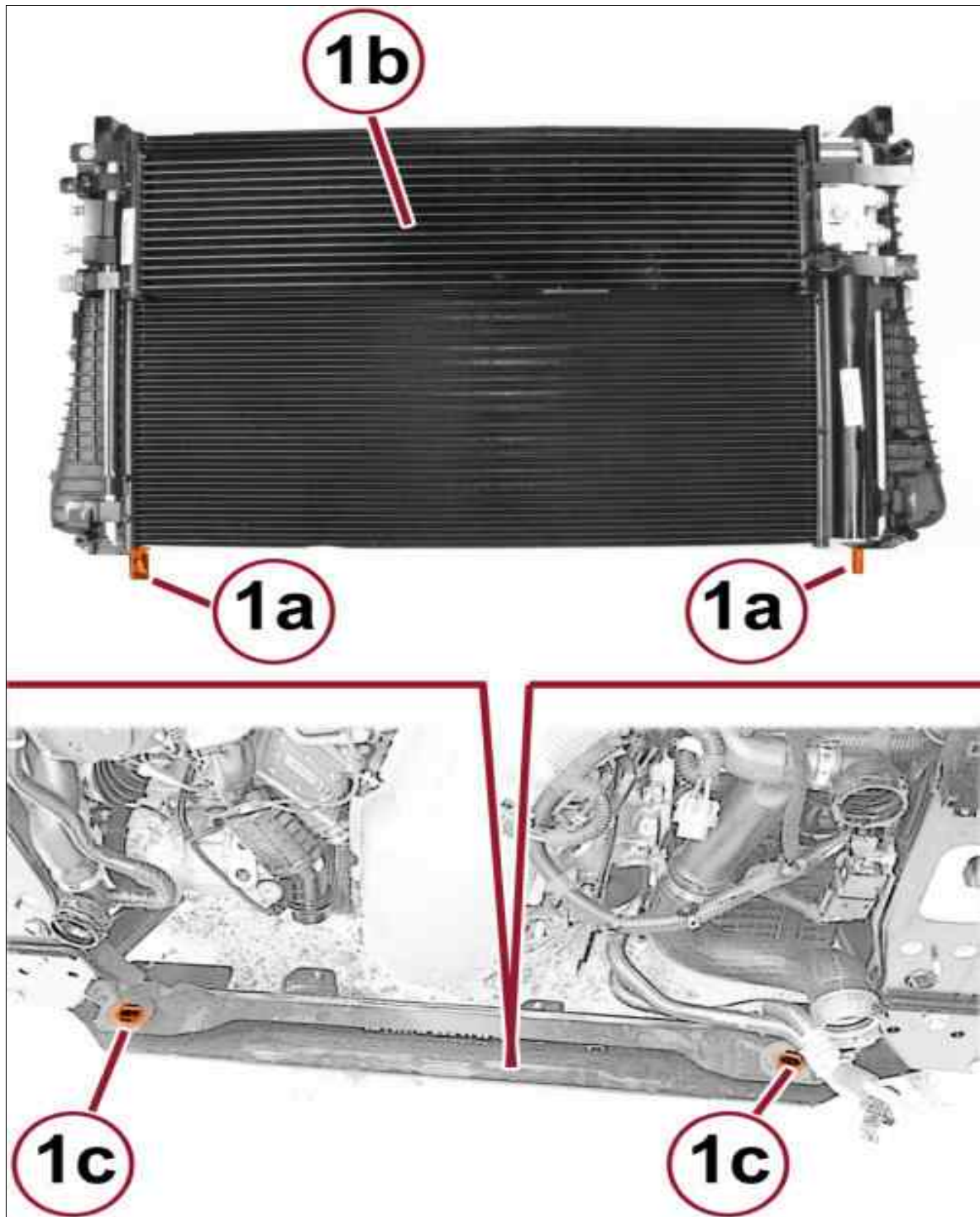


Courtesy of CHRYSLER GROUP, LLC

1. Check that the cooling fan is not damaged.
2. Position the cooling fan (1a) onto radiator unit.

3. Engage the retainer (2a), and slide the fan (1a) in the direction of the arrow (2b).
4. Engage the retainer (3a).
5. Securely tighten the screws (4a) of the lower fixing the electric fan (1a).

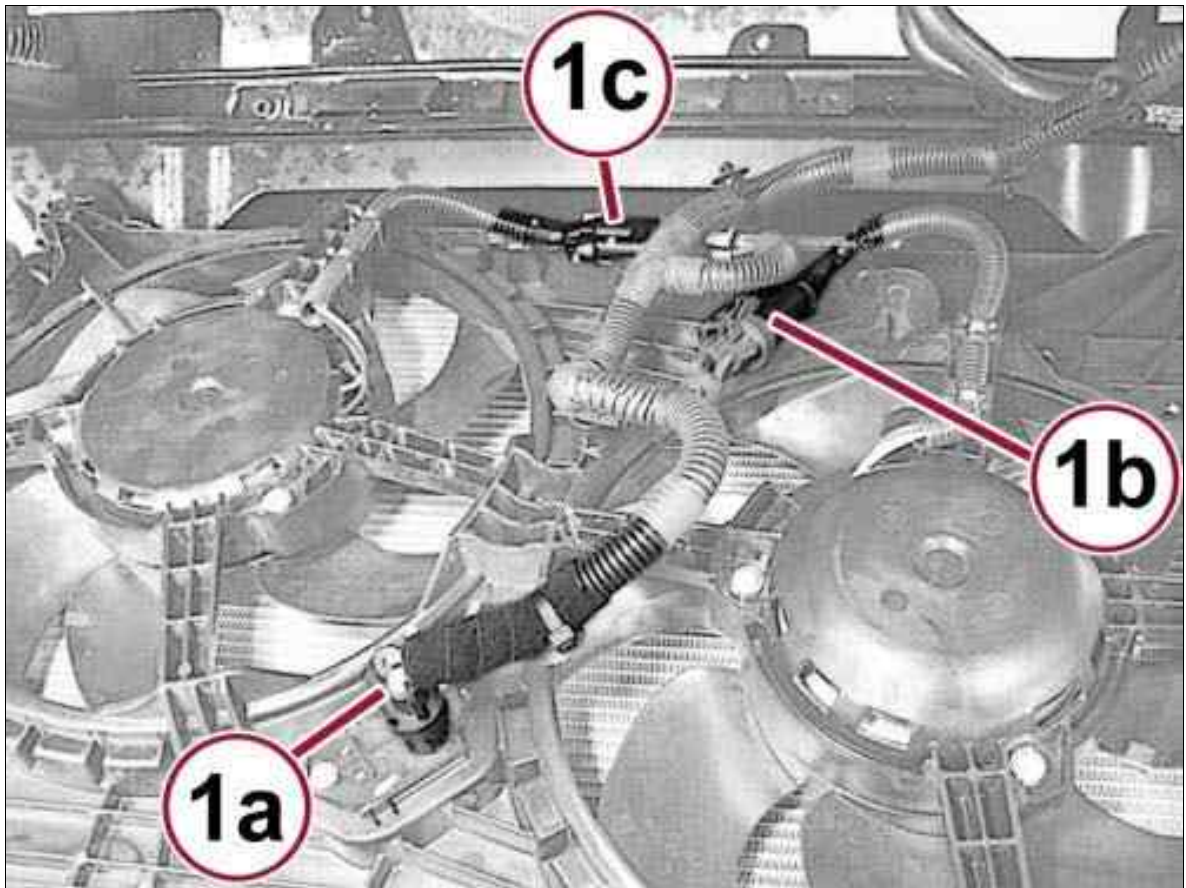
Fig 2: Radiator, Pins & Seats



Courtesy of CHRYSLER GROUP, LLC

6. Position and engage the lower pins (1a) of the radiator with cooling fan (1b) in the seats (1c) of the front-end.

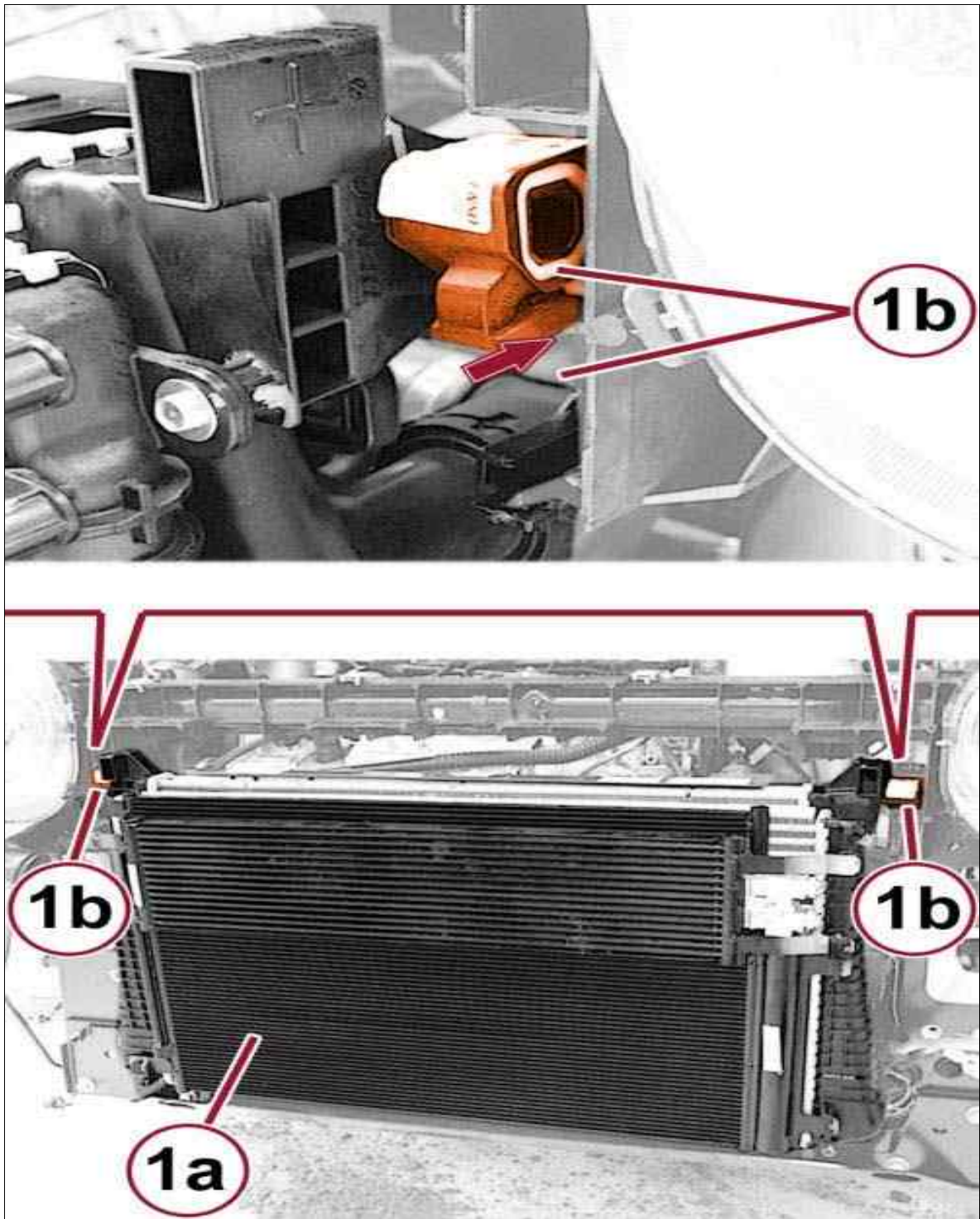
Fig 3: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

7. Working on the inner side of the radiator unit, connect the cooling fan wire harness connectors (1a, 1b, 1c).

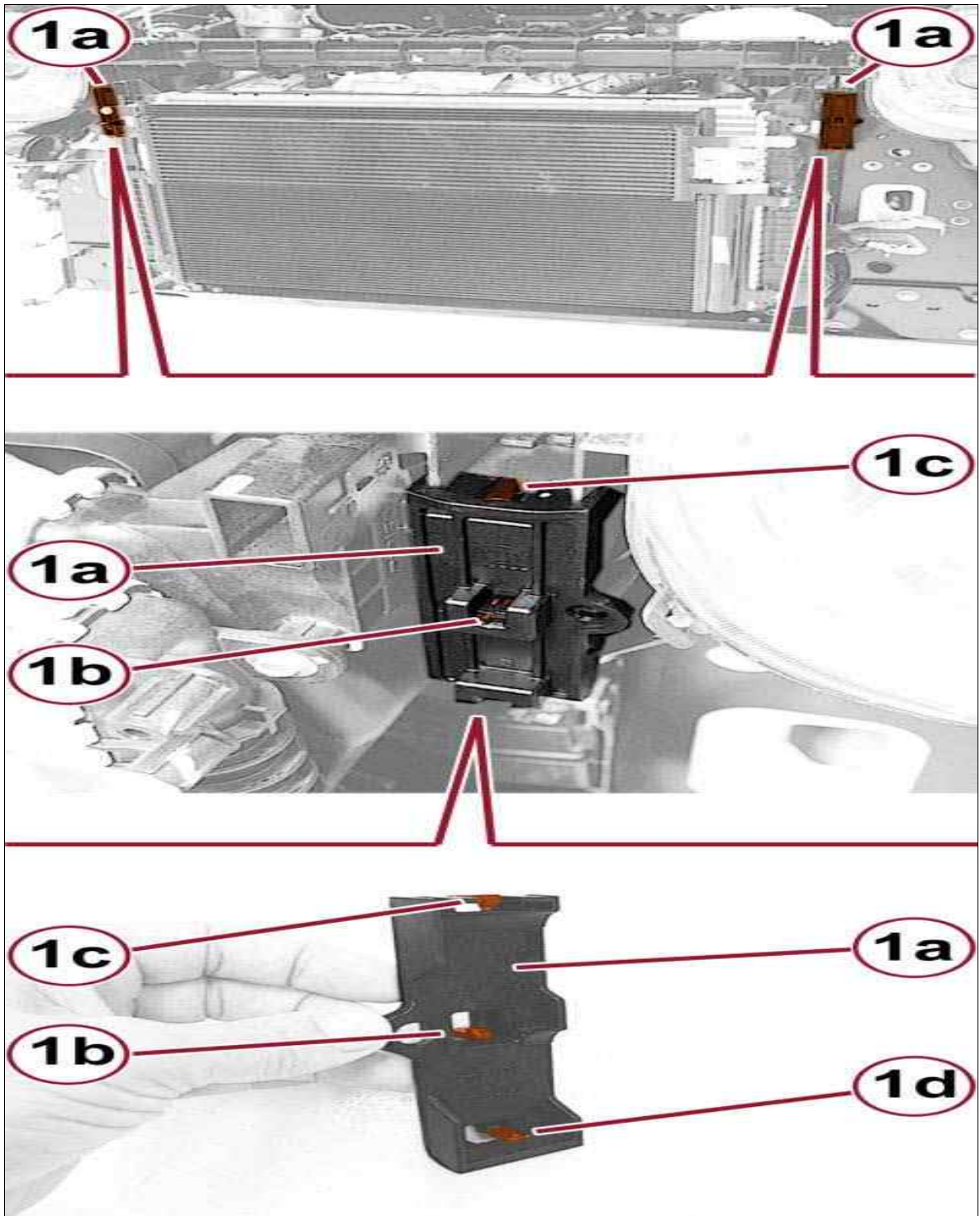
Fig 4: Radiator & Supports



Courtesy of CHRYSLER GROUP, LLC

8. Position the upper part of the radiator (1a) in the seats (1b) and engage the elastic supports.

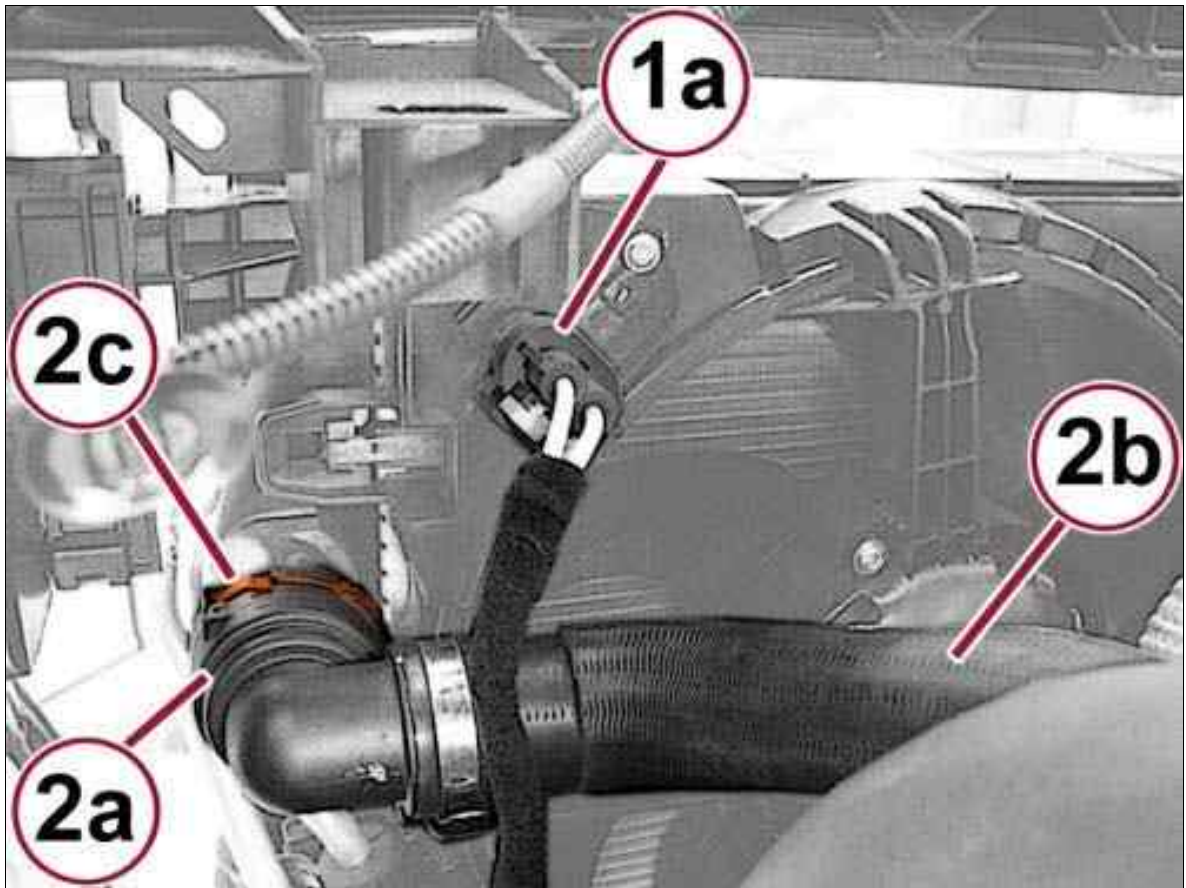
Fig 5: Covers & Retainers



Courtesy of CHRYSLER GROUP, LLC

9. Install the cover (1a) for retaining the upper radiator, and then engage the central retaining (1b) and upper retainers (1c) and lower (1d).

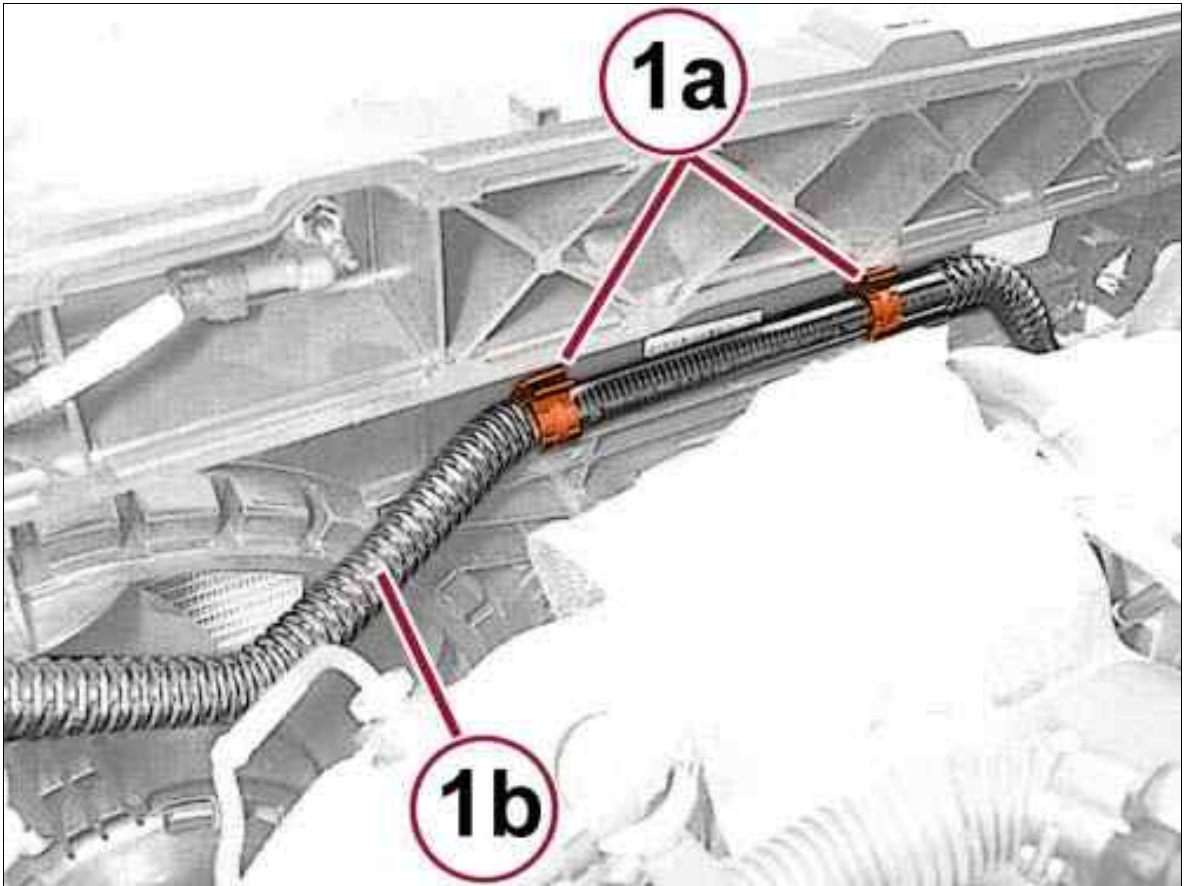
Fig 6: Pipe, Quick Coupling, Retainer & Connector



Courtesy of CHRYSLER GROUP, LLC

10. Connect the resistor wire harness connector (1a).
11. Connect the quick coupling (2a) of the pipe (2b) of the engine coolant in the radiator inlet, and then engage the clip retainer (2c).

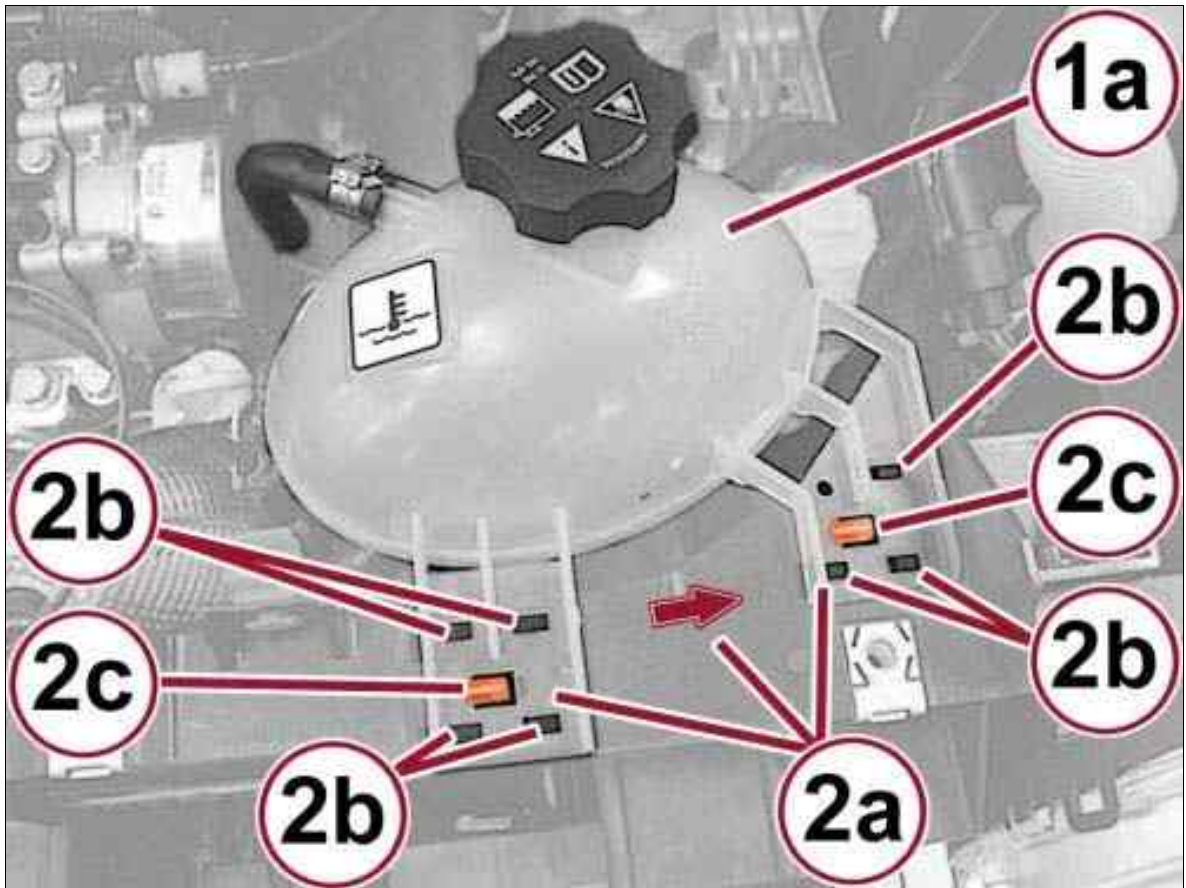
Fig 7: Coolant Tube & Retainers



Courtesy of CHRYSLER GROUP, LLC

12. Engage the coolant tube (1b) and the retainers (1a).

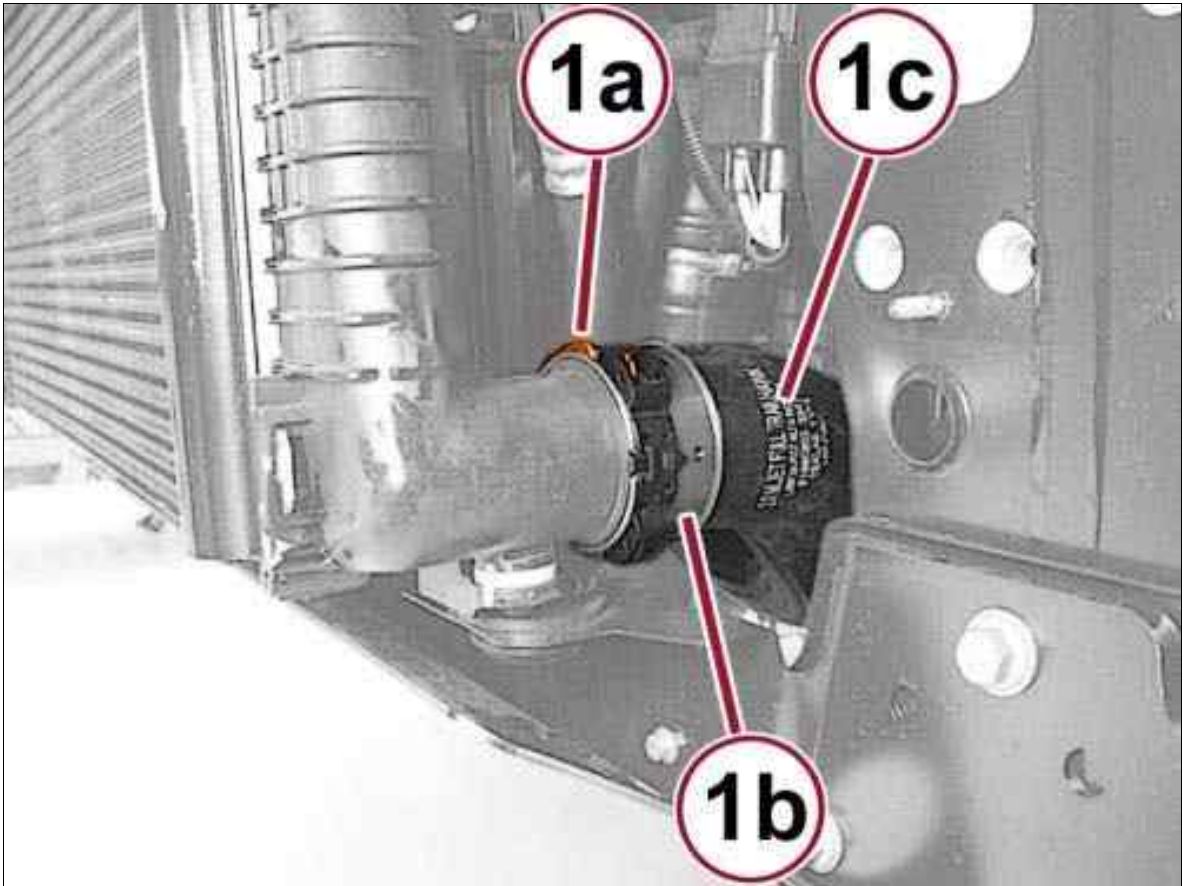
Fig 8: Pressurized Coolant Bottle, Retainers & Bracket



Courtesy of CHRYSLER GROUP, LLC

13. Install the pressurized coolant bottle (1a) and engage the lower retainer
14. Slide in the direction of the arrow brackets (2a) of the pressurized coolant bottle (1a), by engaging the retainers (2b), then engage the retainers (2c).

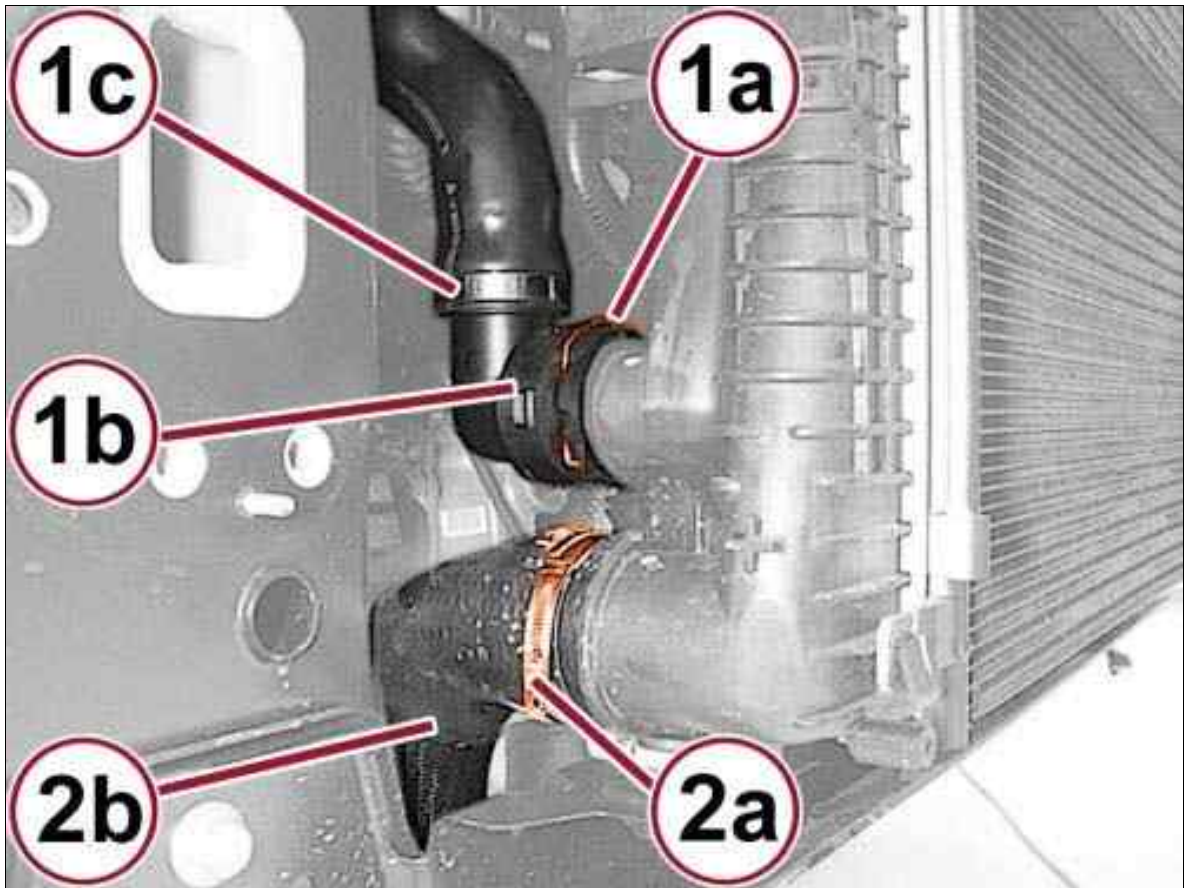
Fig 9: Quick Coupling, Pipe & Spring Retainer



Courtesy of CHRYSLER GROUP, LLC

15. Working on the lower left side of the radiator, connect the quick coupling (1b) of the pipe (1c) to the Charge Air Cooler (CAC), then engage the retaining clip (1a).

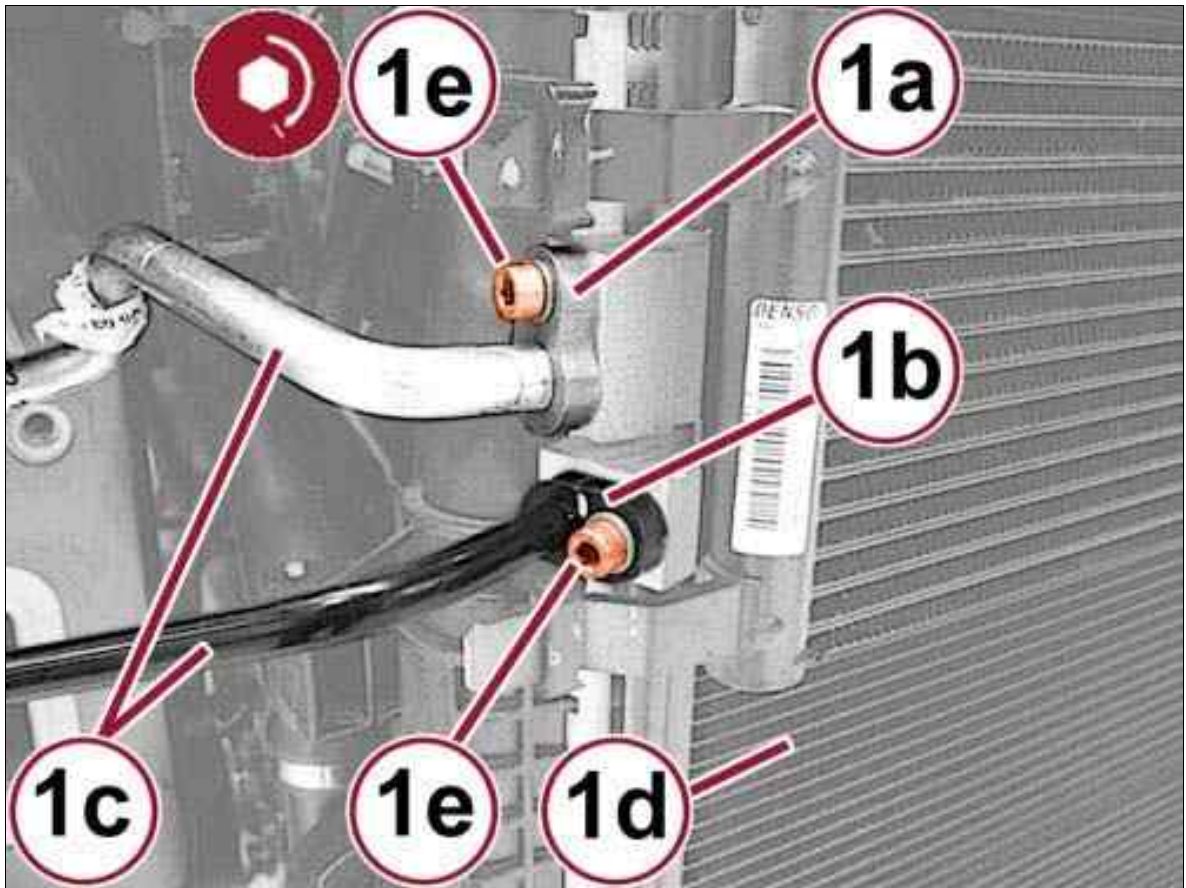
Fig 10: Hose, Pipe, Clamp, Quick Coupling & Spring Retainer



Courtesy of CHRYSLER GROUP, LLC

16. Working on the lower right side of the radiator, connect the quick coupling (1b) of the pipe (1c) onto the radiator, then engage the retaining clip (1a).
17. Connect the pipe (2b) to the CAC, then apply the clamp (2a).

Fig 11: Bolts, Fitting, Pipes & Connections At Condenser



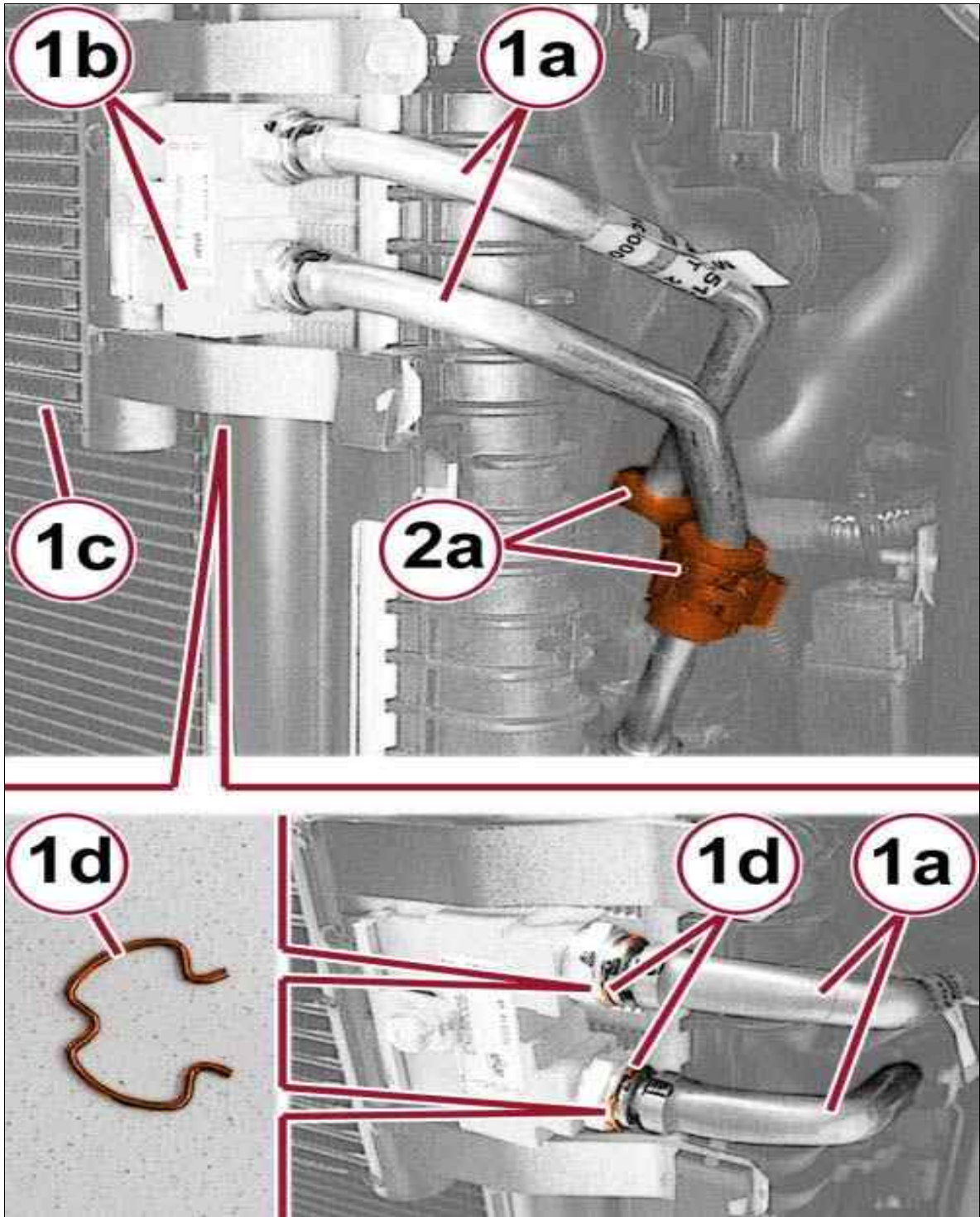
Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Replace the O-ring sealing fittings. Use only O-ring seal washer with part HNBR elastomeric material resistant to refrigerant R1234 yf. The use of rings seal washer with other elastomeric material is liable to give serious losses of refrigerant from the air conditioner.

18. Using NEW O-ring sealing washers, connect the fittings (1a) and (1b) of the pipes (1c) to the condenser (1d). Tighten the bolts (1e) to the proper specification. Refer to SPECIFICATIONS .

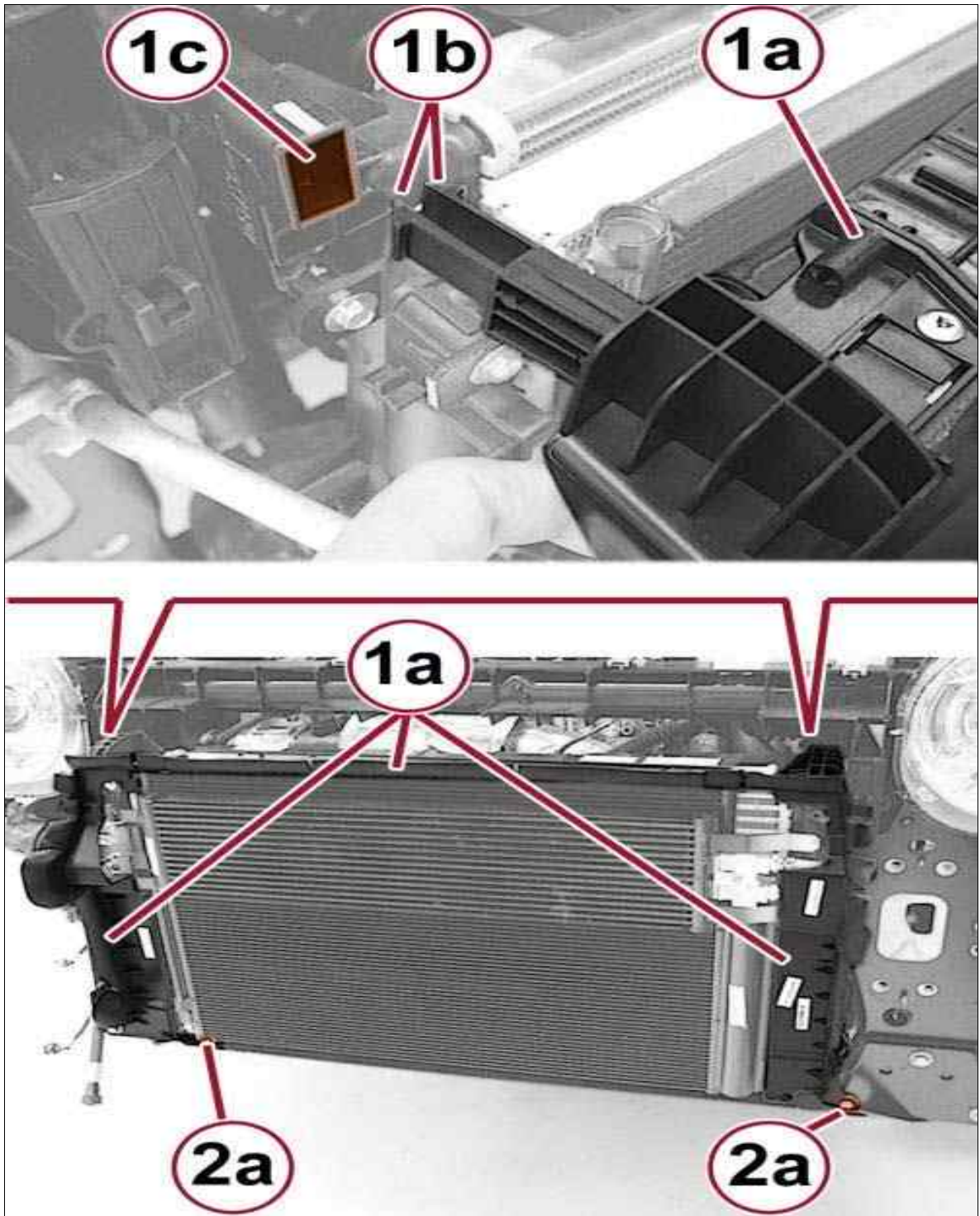
Fig 12: Transmission Oil Cooler Pipes & Retaining Clamps, Transmission Oil Cooler & Retaining Clips



Courtesy of CHRYSLER GROUP, LLC

19. Connect the pipes (1a) to the fittings (1b) on the transmission oil cooler (1c), then engage the retaining clips (1d).
20. Close the retainer clips (2a) securing the transmission oil cooler pipes (1a).

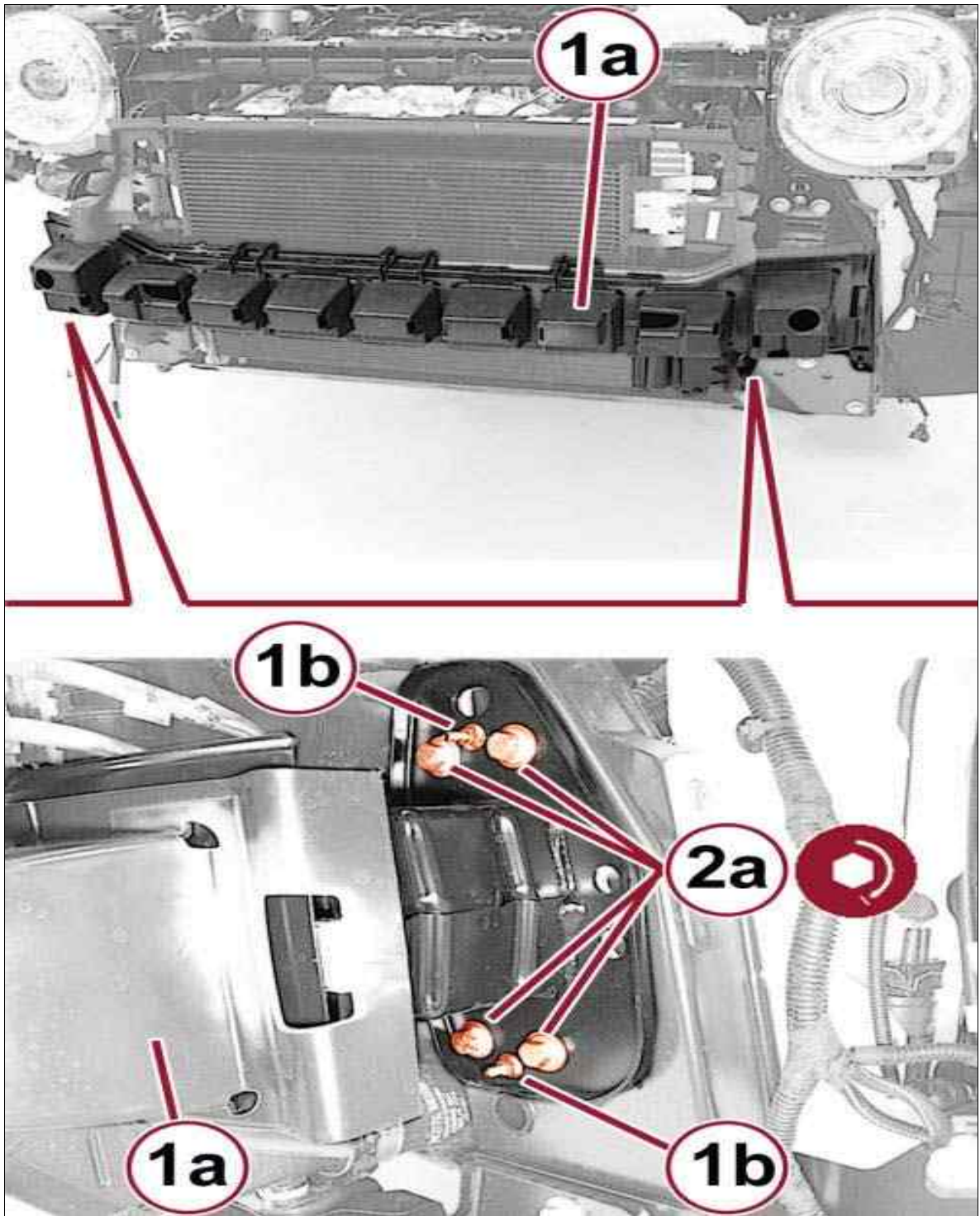
Fig 13: Air Duct & Bolts, Seats & Retainers & Air Cooler



Courtesy of CHRYSLER GROUP, LLC

21. Install the air cooler (1a) and engage the retainers (1b) in the seats (1c).
22. Install the bolts (2a) securing the air cooler (1a) and securely tighten the bolts.

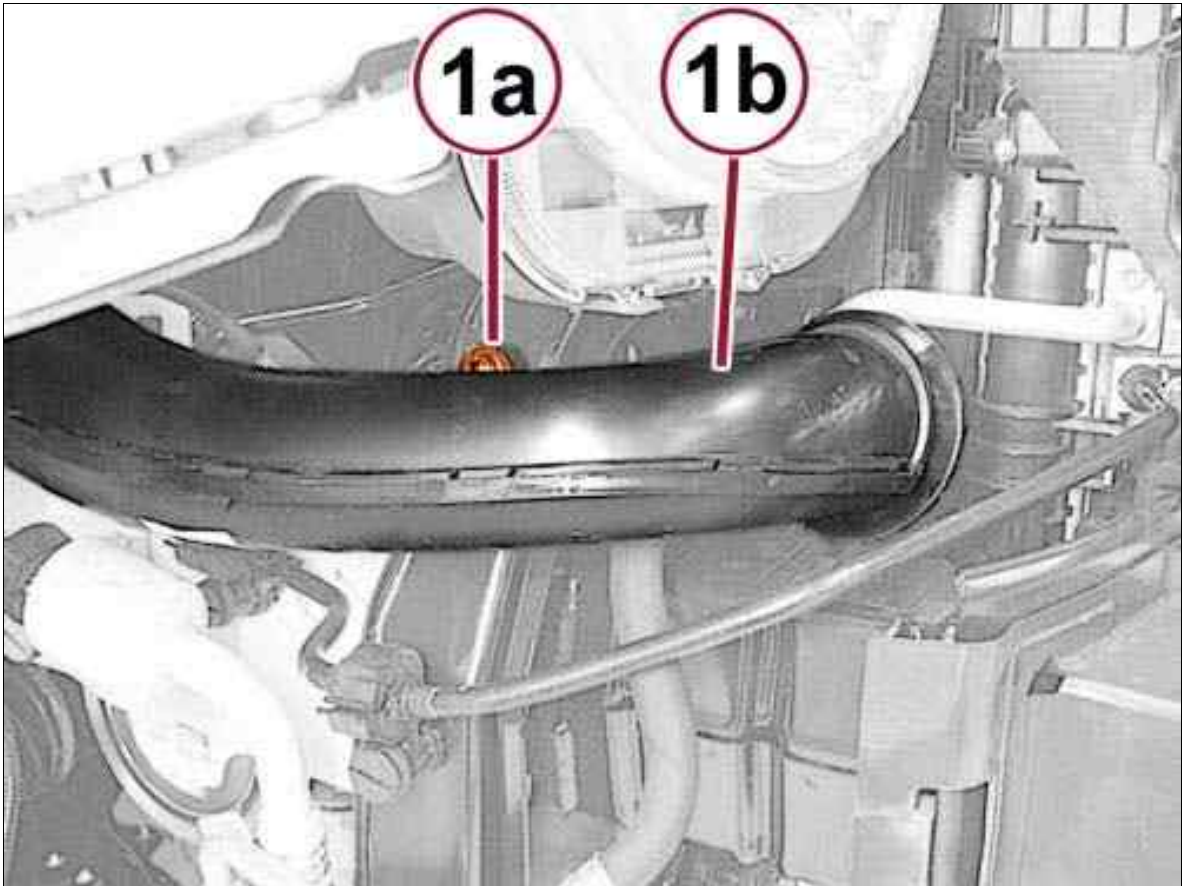
Fig 14: Front Energy Absorber & Bolts, Front Bumper Reinforcement & Nuts



Courtesy of CHRYSLER GROUP, LLC

23. Install the front energy absorber (1a) and securely tighten the three nuts (1b).
24. Tighten the front bumper reinforcement to the proper specification. Refer to SPECIFICATIONS

Fig 15: Air Tube & Nut

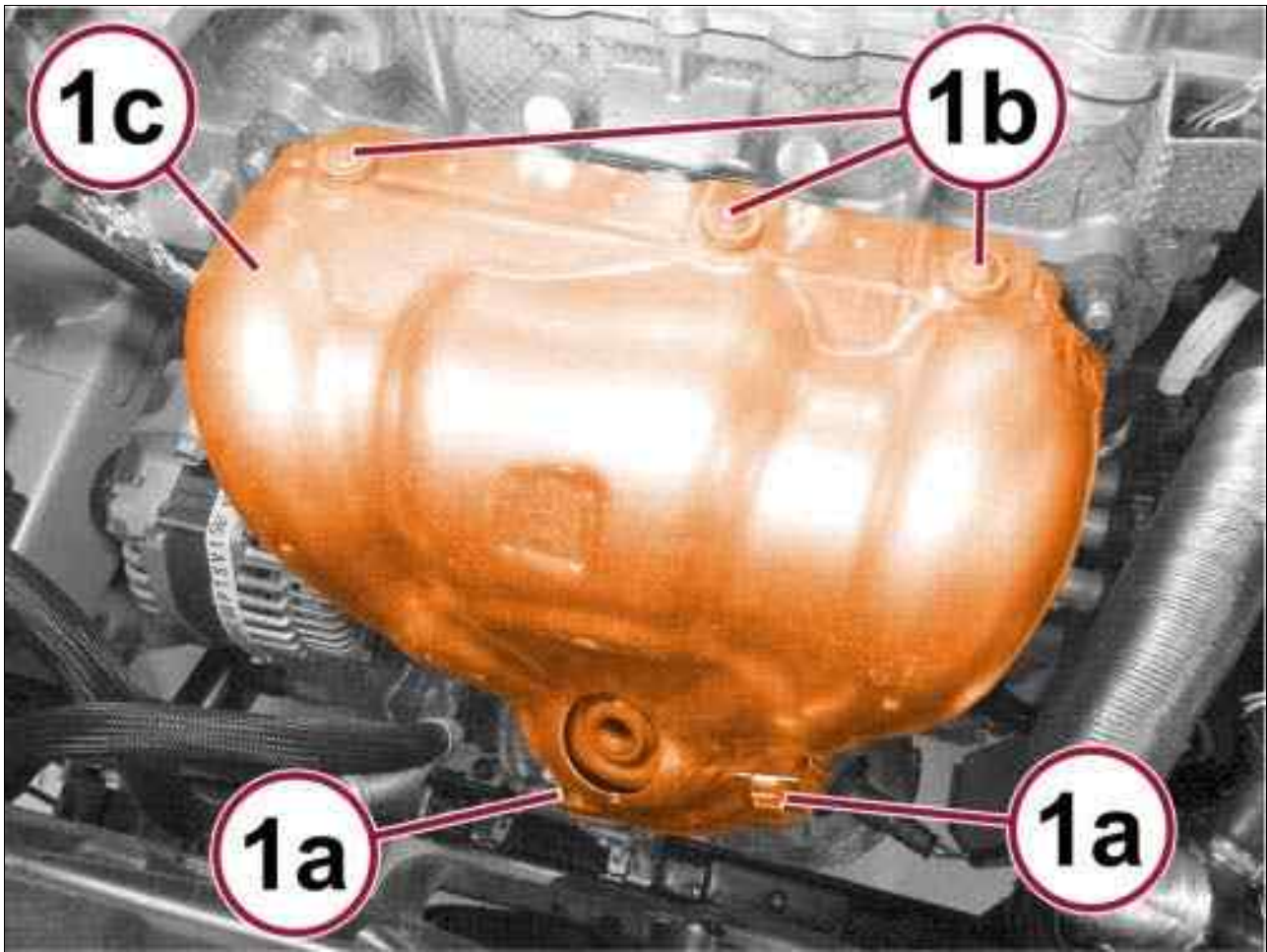


Courtesy of CHRYSLER GROUP, LLC

25. Working on the right side, Install the nut securing the CAC tube (1b).
26. Install the front bumper cover.
27. Remove support and lower the vehicle.
28. Evacuate and charge the A/C system. Refer to PLUMBING, STANDARD PROCEDURE .
29. Fill the cooling system. Refer to STANDARD PROCEDURE .
30. Check the automatic transmission fluid level and fill with the recommended transmission fluid.
Refer to CAPACITIES AND RECOMMENDED FLUIDS, SPECIFICATIONS .
31. Connect the negative battery cable.

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > REMOVAL

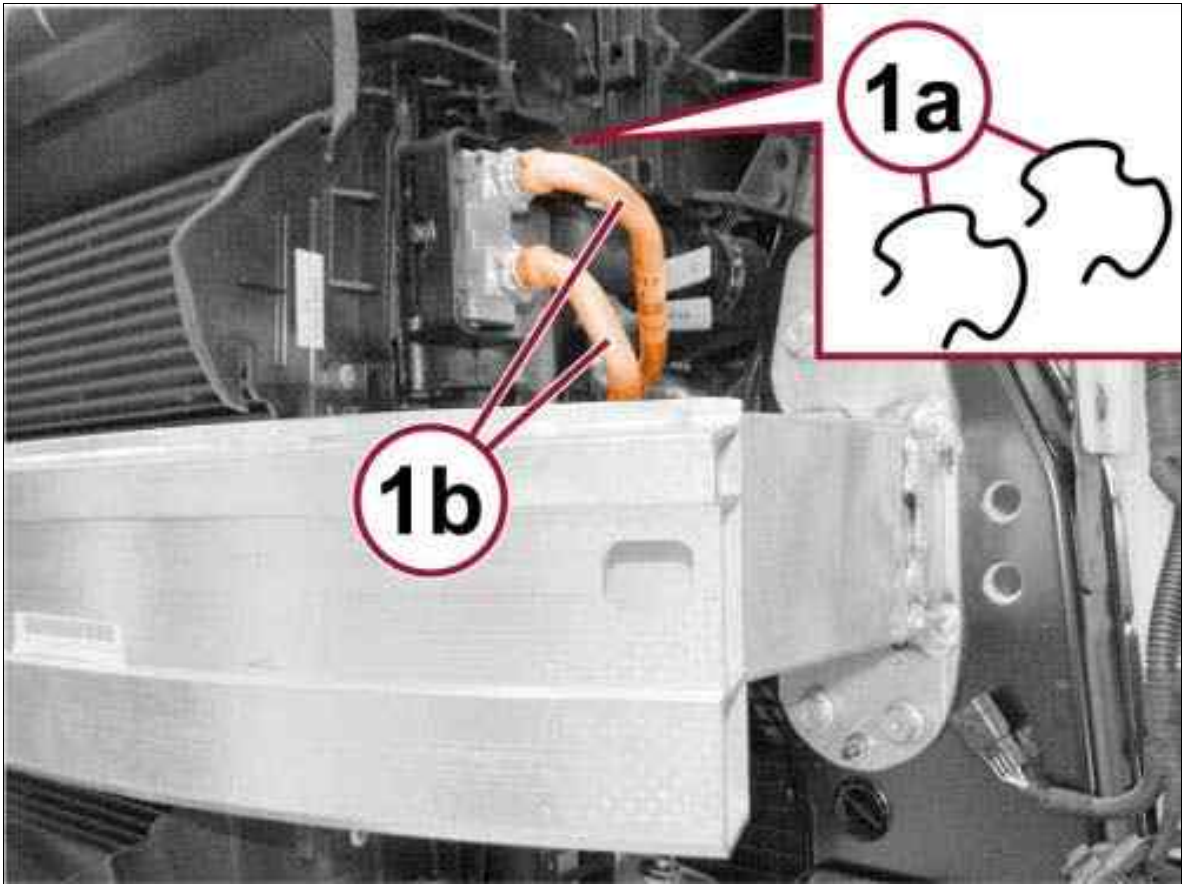
Fig 1: Exhaust Heat Shield, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative battery cable.
2. Remove the bolts (1a) and nuts (1b) and the exhaust heat shield (1c).

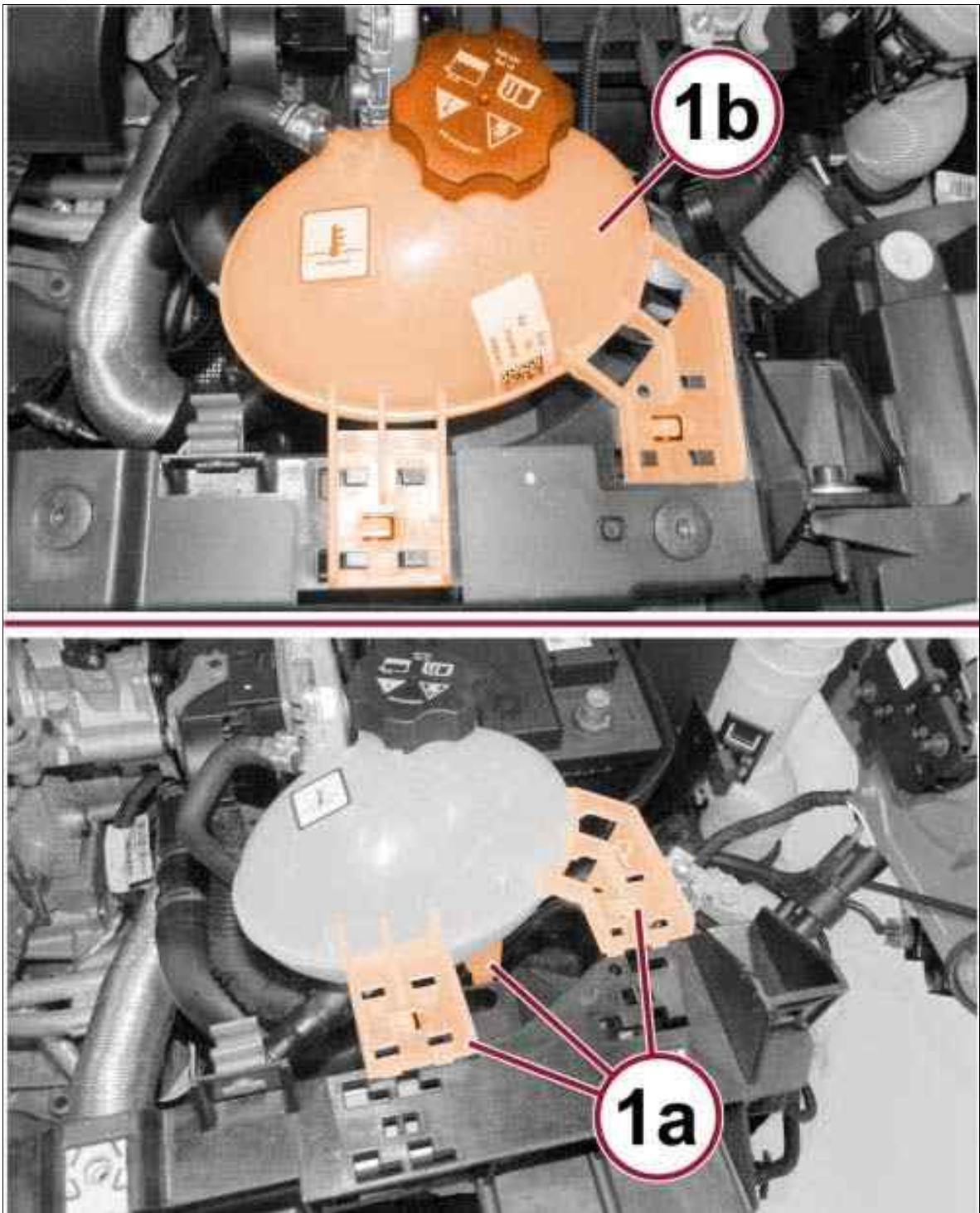
Fig 2: Transmission Oil Cooler Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

3. Remove the retaining clips (1a) and disconnect the transmission oil cooler line (1b).
4. Plug and seal the ends of the transmission cooler lines and lines disconnected, to prevent leakage of oil or moisture, contaminants, or impurities entering into the system.

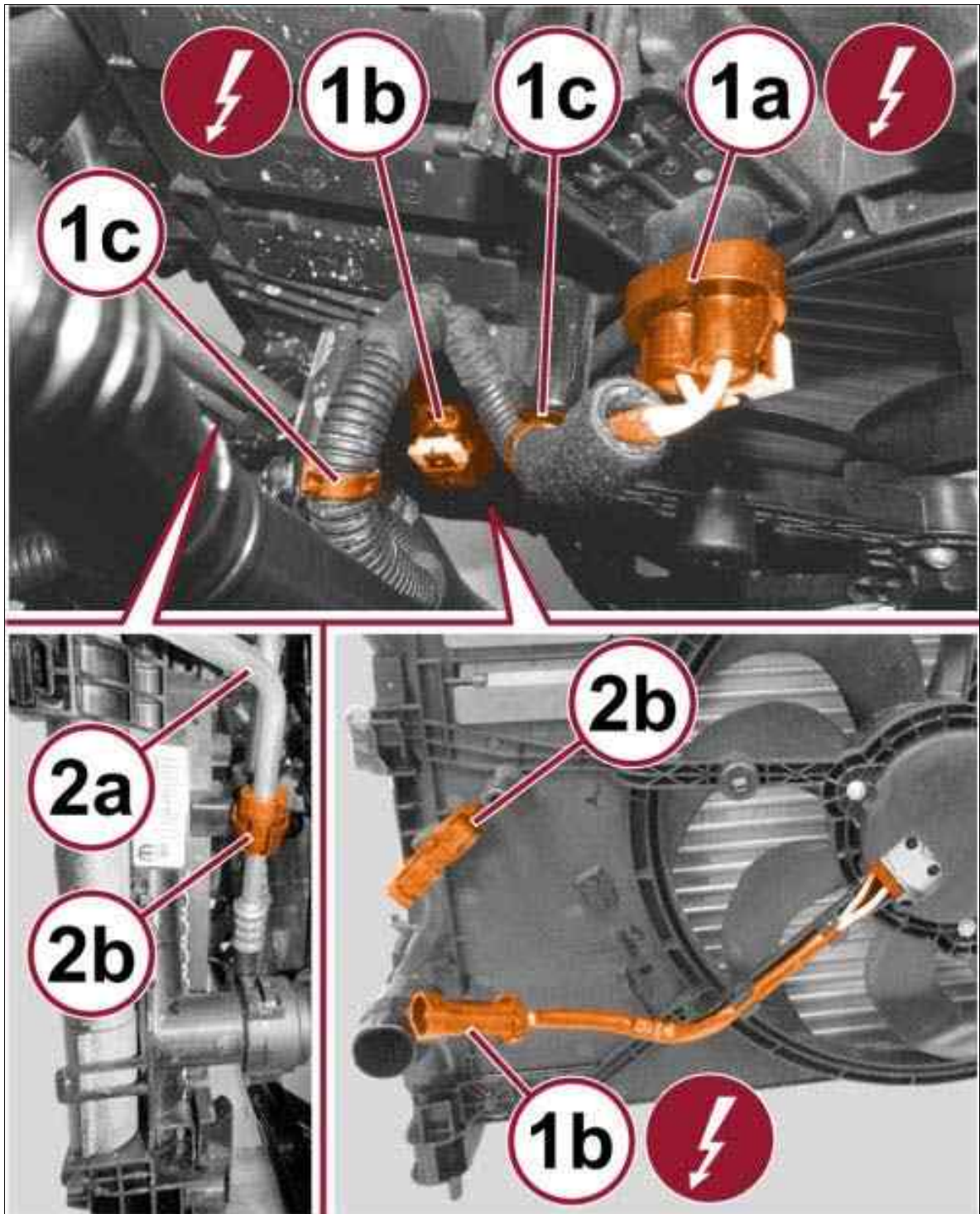
Fig 3: Pressurized Coolant Bottle & Fasteners



Courtesy of CHRYSLER GROUP, LLC

5. Remove the fasteners (1a) and the pressurized coolant bottle (1b).

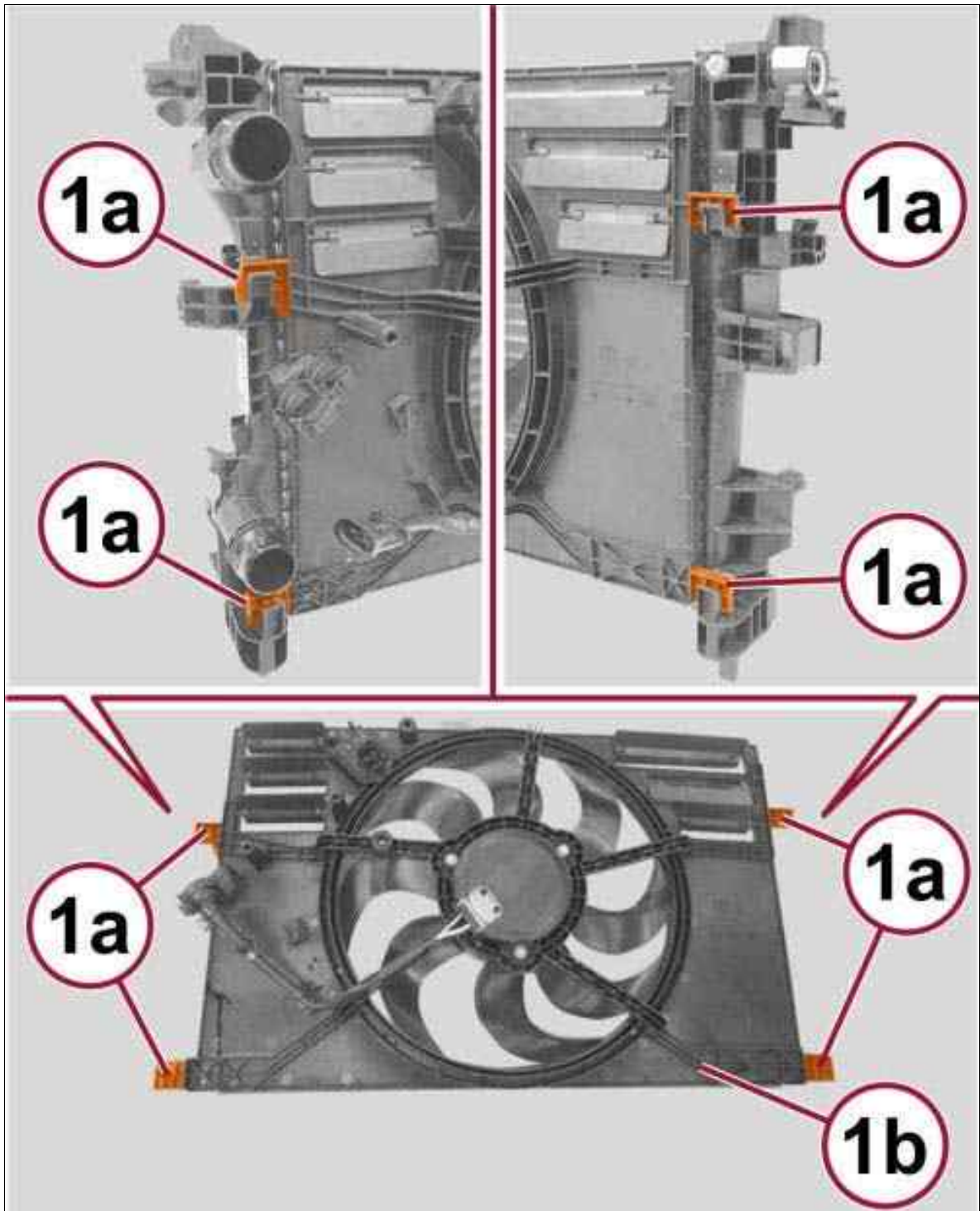
Fig 4: Cooling Fan Wire Harness Connectors & Retainers



Courtesy of CHRYSLER GROUP, LLC

6. Disconnect the resistor wire harness connector (1a).
7. Disconnect the cooling fan wire harness connector (1b).
8. Detach the wire harness retainer (1c) from fan shroud.
9. Open the retainer (2b) detach the cooler lines from retainer.

Fig 5: Cooling Fan & Brackets

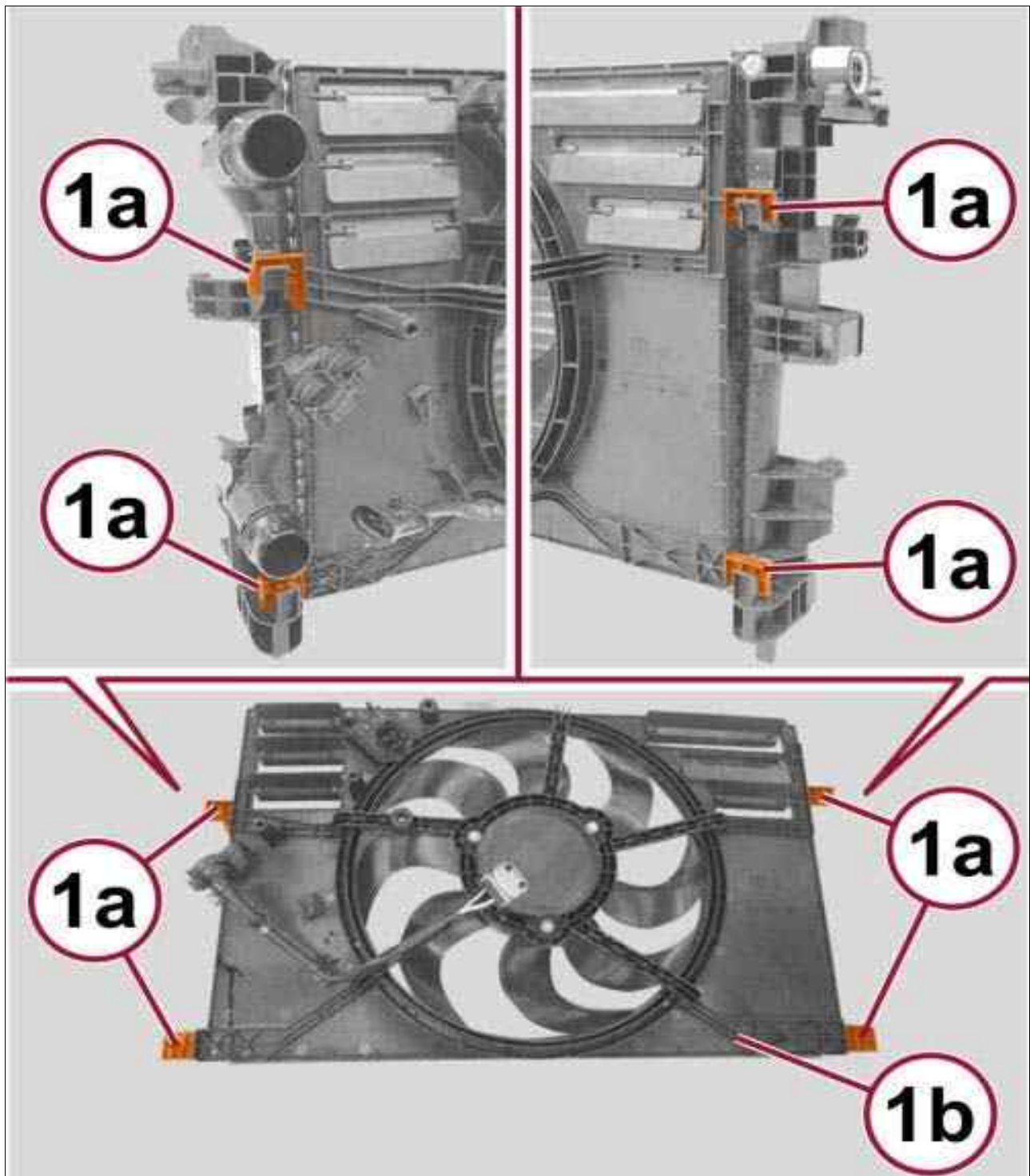


Courtesy of CHRYSLER GROUP, LLC

10. Release the retaining brackets (1a) and remove the cooling fan (1b).

ENGINE > FAN, COOLING > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > INSTALLATION

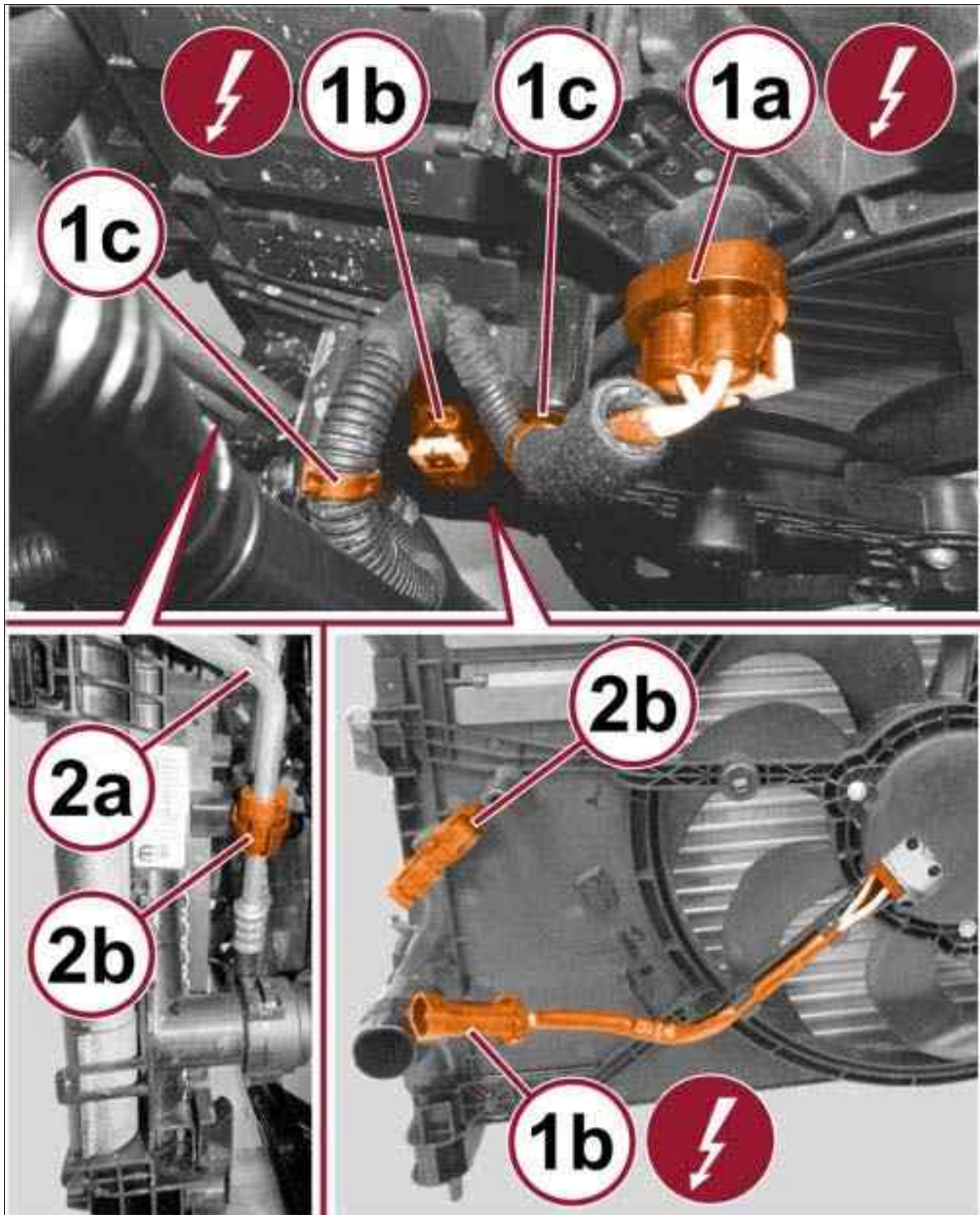
Fig 1: Cooling Fan & Brackets



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan (1b) and engage the retaining brackets (1a).

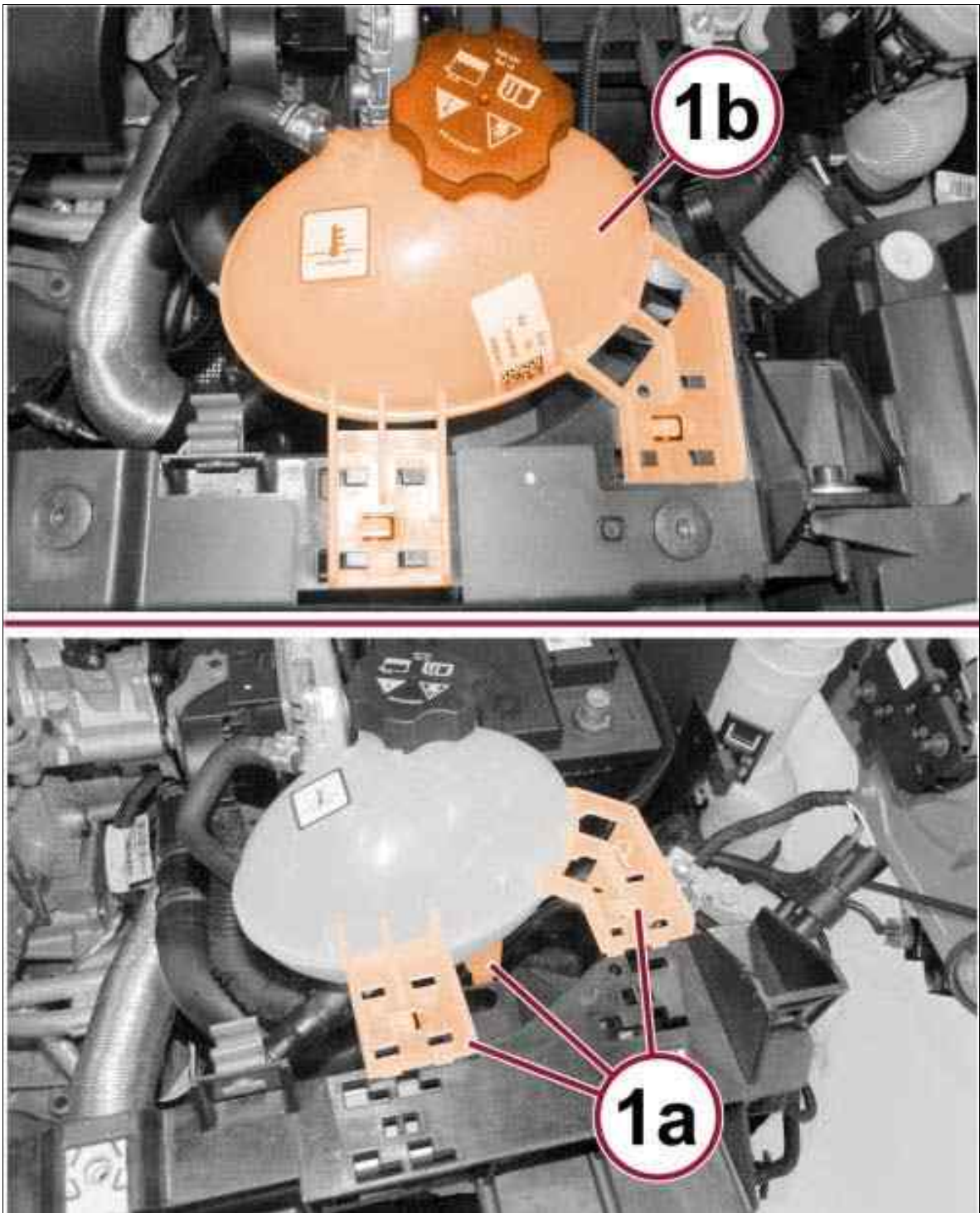
Fig 2: Cooling Fan Wire Harness Connectors & Retainers



Courtesy of CHRYSLER GROUP, LLC

2. Attach the cooler lines to the retainer and close the retainer (2b).
3. Attach the wire harness retainer (1c) from fan shroud.
4. Connect the cooling fan wire harness connector (1b).
5. Connect the resistor wire harness connector (1a).

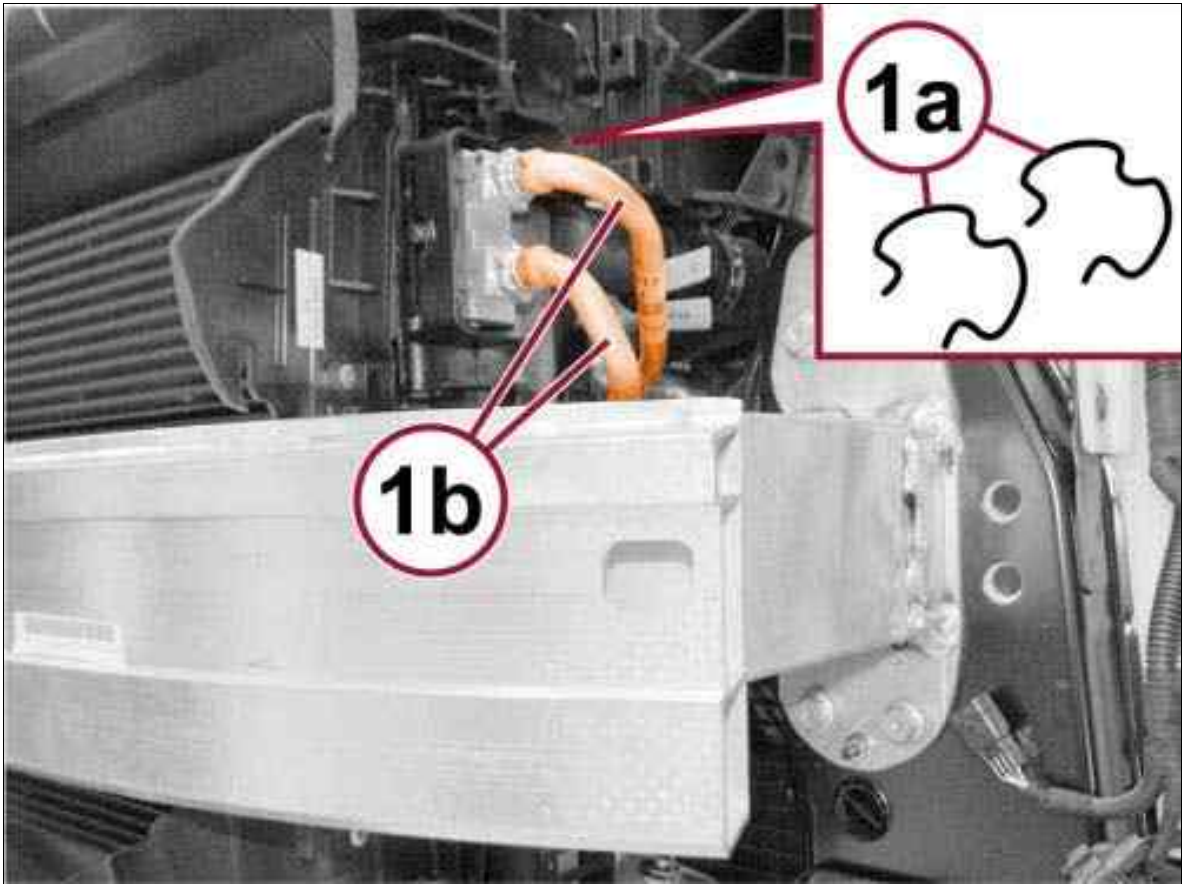
Fig 3: Pressurized Coolant Bottle & Fasteners



Courtesy of CHRYSLER GROUP, LLC

6. Install the pressurized coolant bottle (1b) and the fasteners (1a).

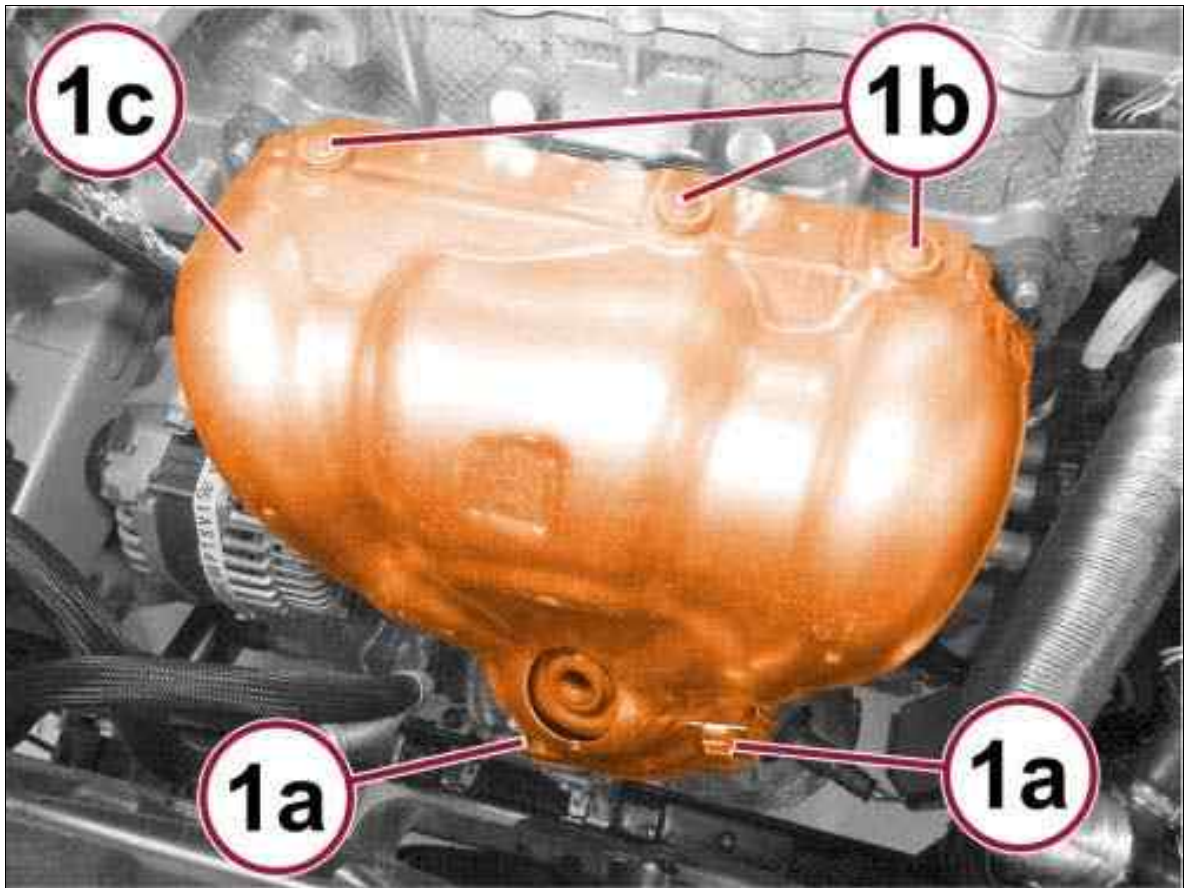
Fig 4: Transmission Oil Cooler Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

7. Remove the plugs from the cooler lines and cooler.
8. Connect the transmission oil cooler line (1b) and the retaining clips (1a).

Fig 5: Exhaust Heat Shield, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

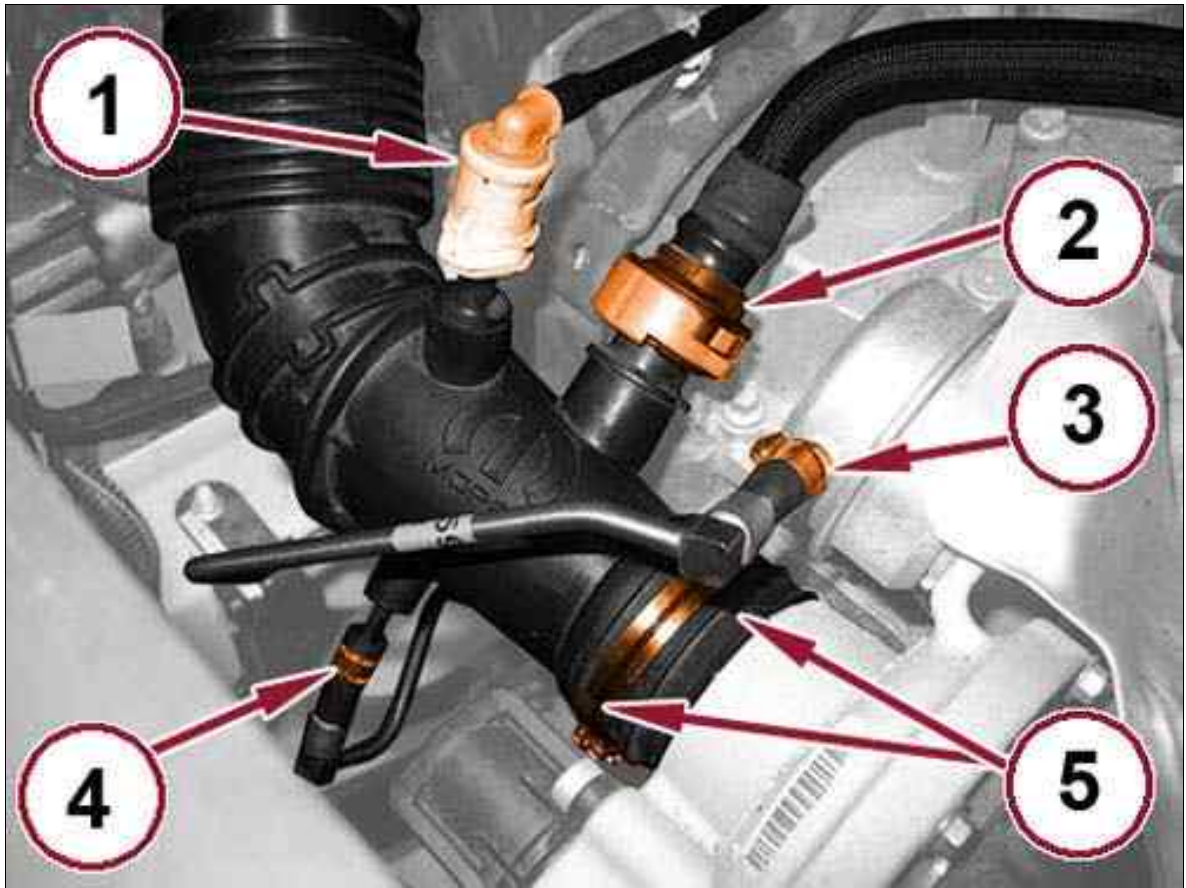
9. Install the exhaust heat shield (1c) and securely tighten the nuts (1b) and bolts (1a).
10. Connect the negative battery cable.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X2 PRIMARY > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
3. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
4. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
5. Drain the cooling system. Refer to STANDARD PROCEDURE .
6. Remove the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .
7. Remove the vibration damper. Refer to DAMPER, VIBRATION, REMOVAL AND INSTALLATION .

8. Remove the engine cover.
9. Remove the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
10. Remove the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .

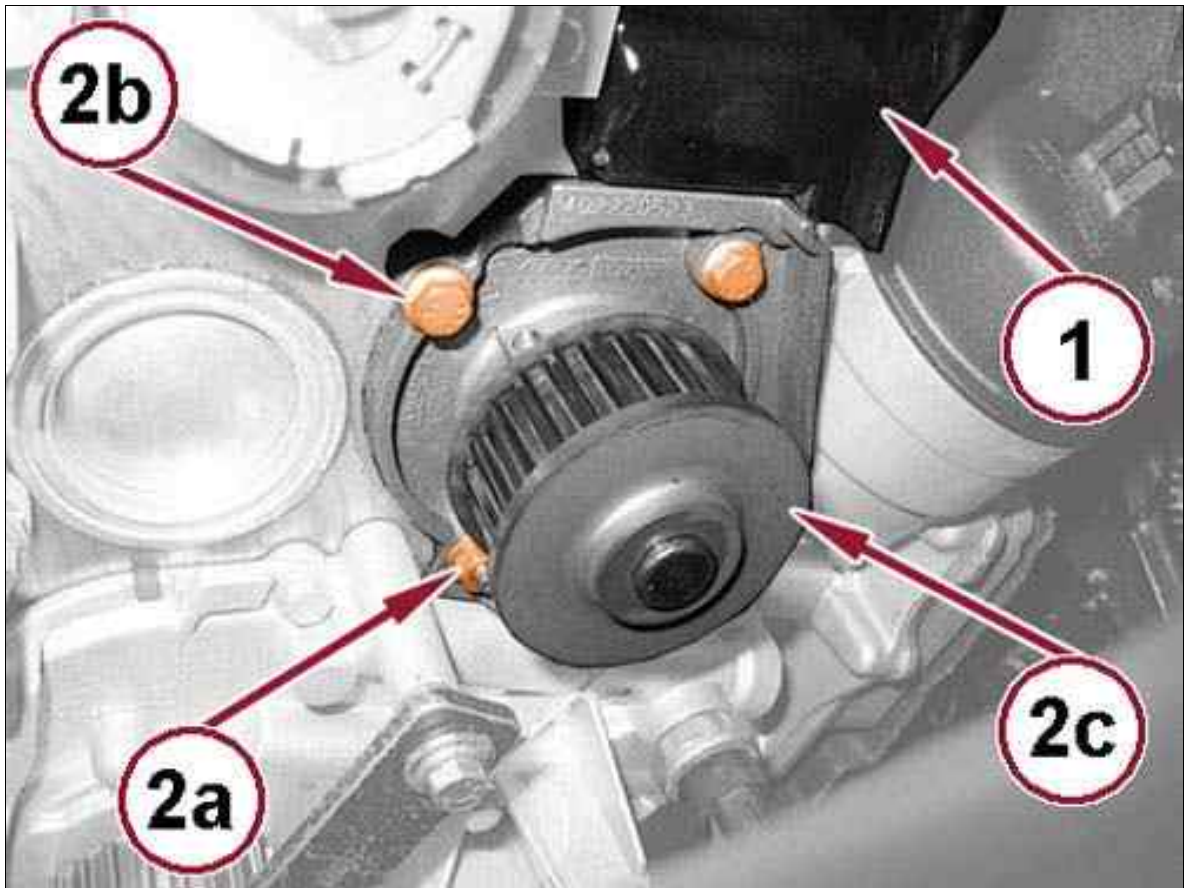
Fig 1: Waste-Gate Actuator Air Control Valve Piping, Inlet Air Hose, Return Line & Couplings



Courtesy of CHRYSLER GROUP, LLC

11. Disconnect the fuel vapor pipe quick coupling (1).
12. Disconnect the engine oil vapor pipe quick coupling (2).
13. Loosen the clamp and disconnect the Waste-Gate actuator air control valve piping (3).
14. Loosen the clamp and disconnect the waste-gate air solenoid return line (4).
15. Loosen the clamp and remove the inlet air hose (5) to the turbocharger.

Fig 2: Inner Timing Belt Cover, Water Pump, Nuts & Bolts



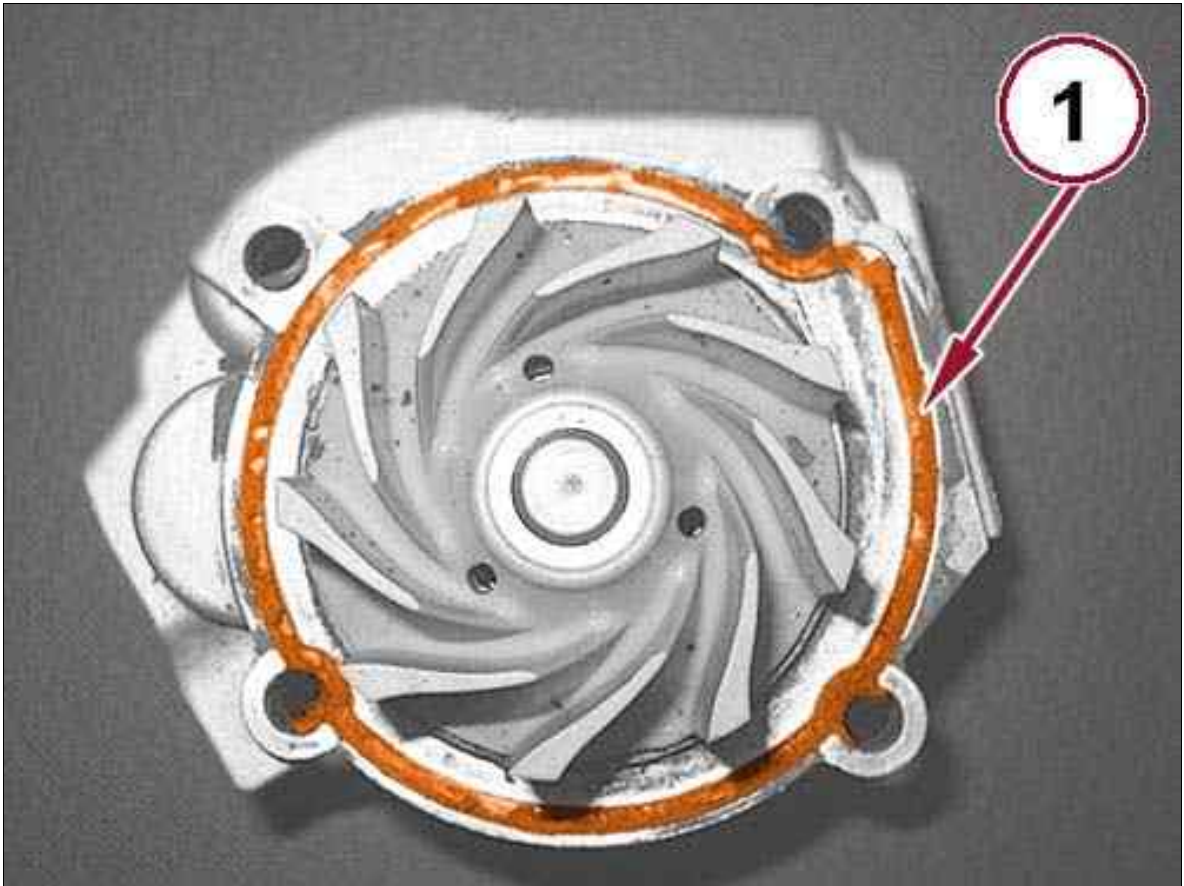
Courtesy of CHRYSLER GROUP, LLC

16. Remove the bolt and the inner timing belt cover (1).
17. Remove the nut (2a) and the bolts (2b) and the water pump (2c).

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X2 PRIMARY > INSTALLATION

1. Clean the gasket mating surfaces.

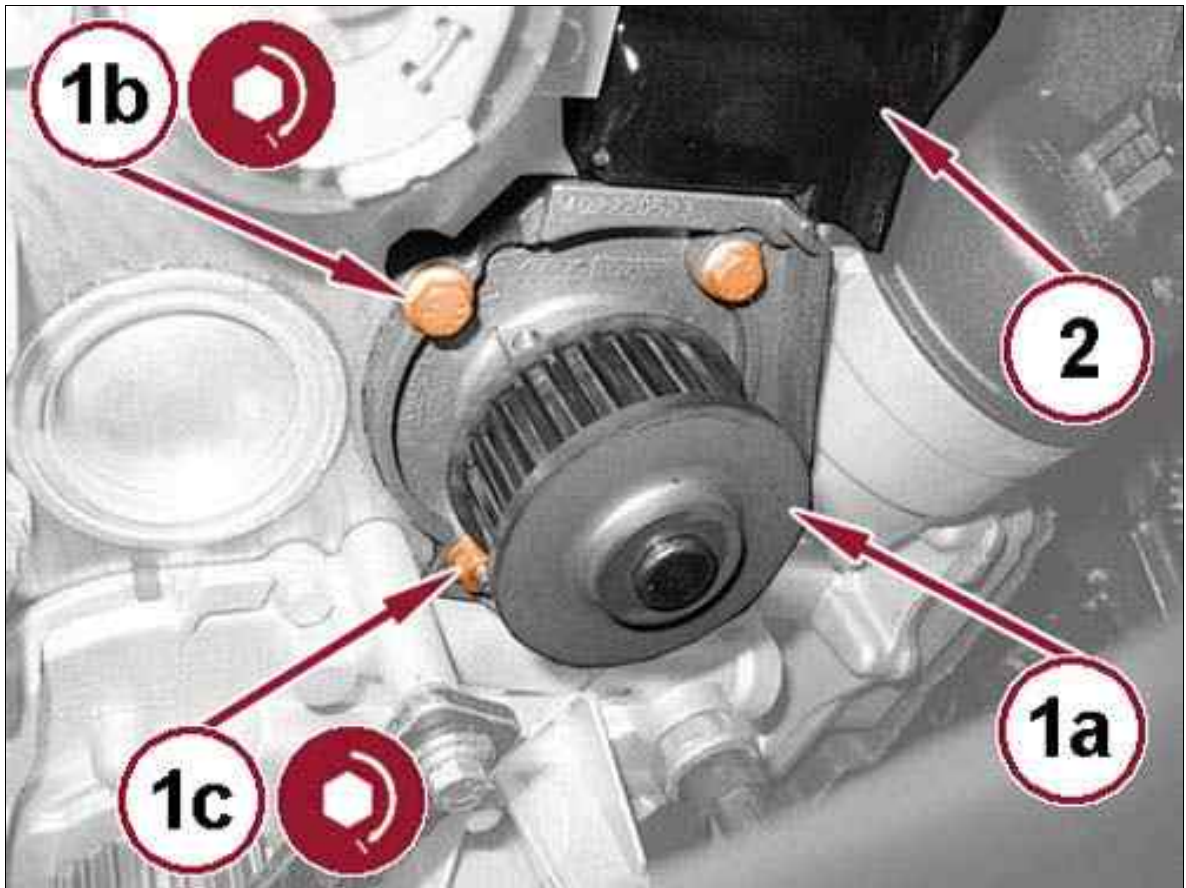
Fig 1: Sealant



Courtesy of CHRYSLER GROUP, LLC

2. Apply a bead of sealant in the groove shown in the illustration of the new water pump (1).

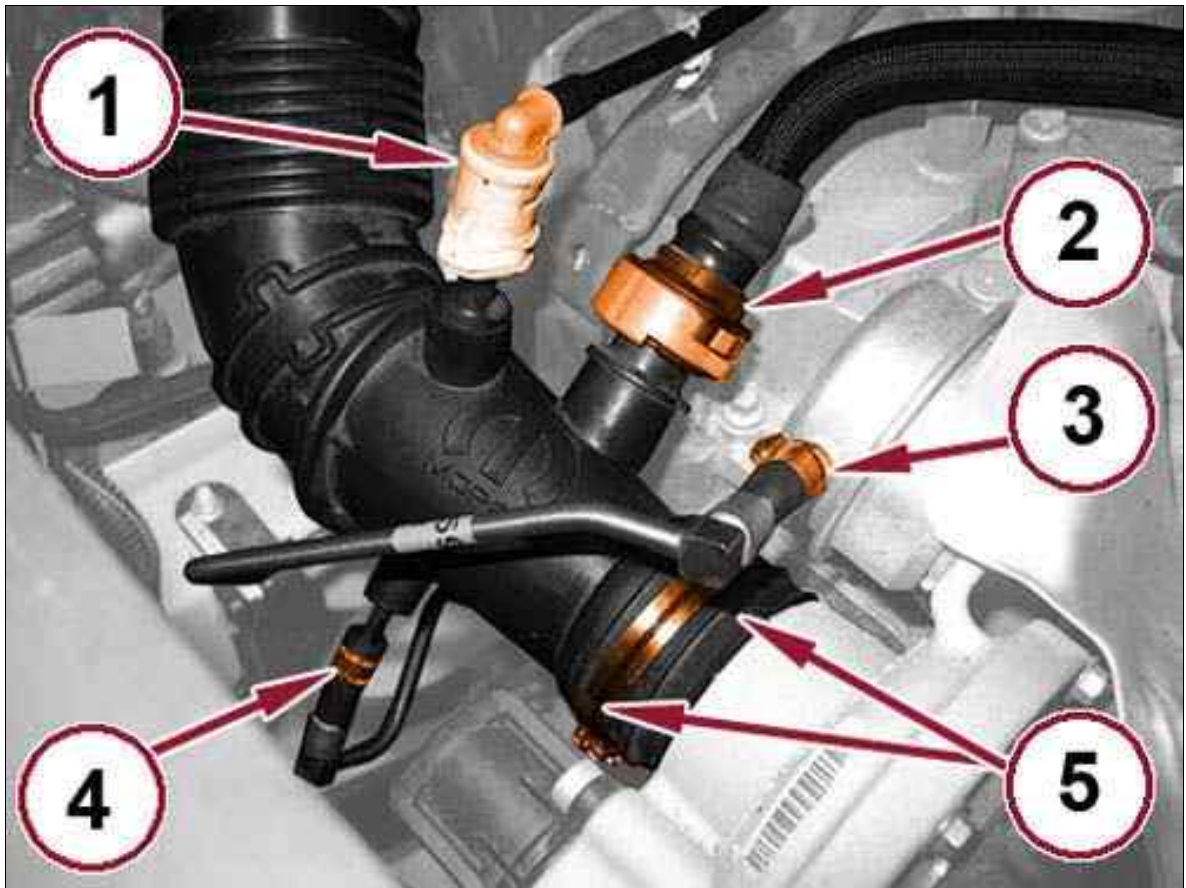
Fig 2: Inner Timing Belt Cover, Water Pump, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Install the water pump (1a). Tighten the bolts (1b) and nut (1c) to the proper specification. Refer to SPECIFICATIONS .
4. Install the inner timing belt cover (2). Tighten the bolt to the proper specification. Refer to SPECIFICATIONS .

Fig 3: Waste-Gate Actuator Air Control Valve Piping, Inlet Air Hose, Return Line & Couplings



Courtesy of CHRYSLER GROUP, LLC

5. Install the inlet air hose (5) onto the turbocharger and securely tighten the clamp.
6. Connect the wastegate air solenoid return line (4) and securely tighten the clamp.
7. Connect the wastegate actuator air control valve piping (3) and securely tighten the clamp.
8. Connect the engine oil vapor pipe quick coupling (2).
9. Connect the fuel vapor pipe quick coupling (1).
10. Install the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .
11. Install the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
12. Install the engine cover.
13. Install the vibration damper. Refer to DAMPER, VIBRATION, REMOVAL AND INSTALLATION .
14. Install the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .
15. Evacuate air and fill the cooling system. Refer to STANDARD PROCEDURE .
16. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
17. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .

18. Install the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

19. Connect the negative battery cable.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X4 PRIMARY > REMOVAL

1. Disconnect and isolate the negative battery cable.

2. Remove the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

3. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .

4. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .

5. Drain the cooling system. Refer to STANDARD PROCEDURE .

6. Remove the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .

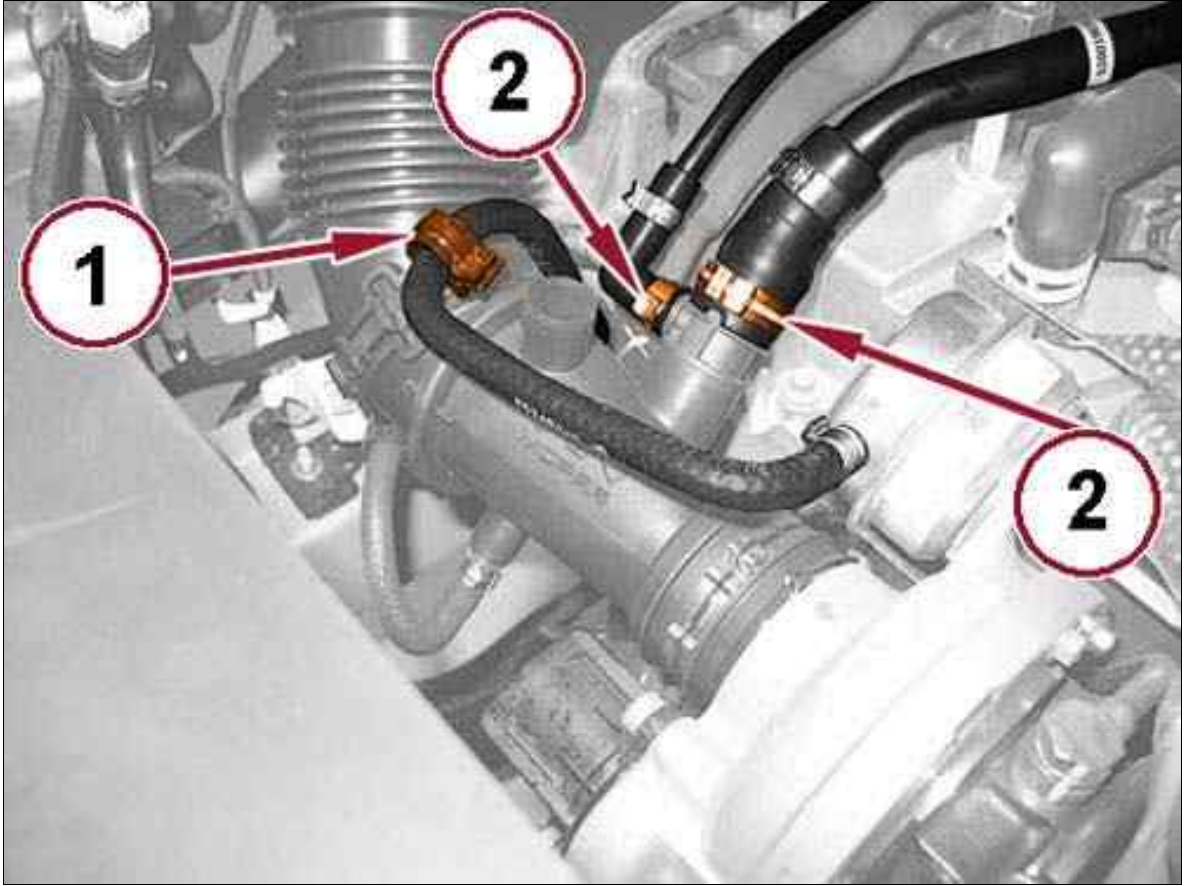
7. Remove the vibration damper. Refer to DAMPER, VIBRATION, REMOVAL AND INSTALLATION .

8. Remove the engine cover.

9. Remove the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .

10. Remove the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .

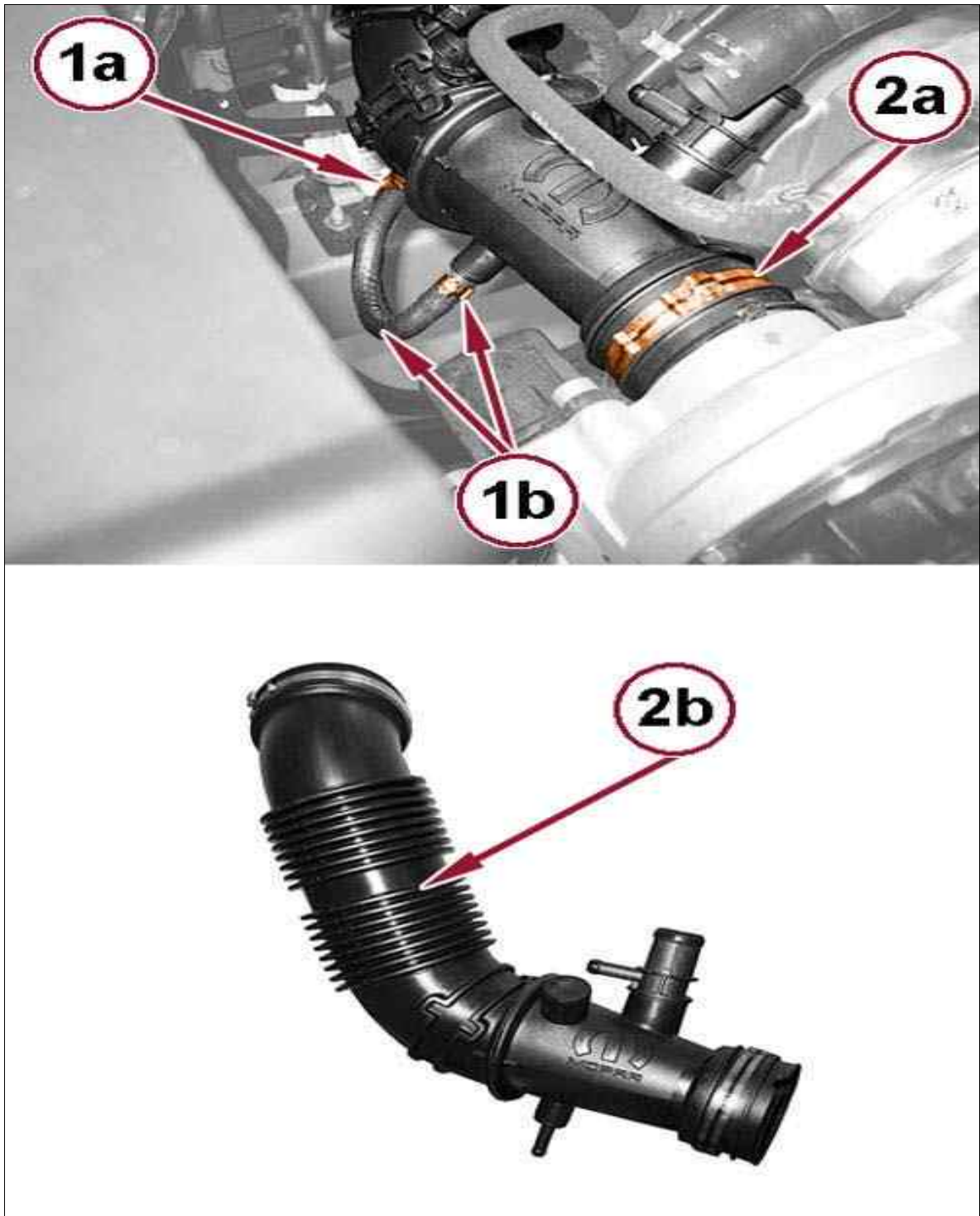
Fig 1: Waste-Gate Actuator Air Control Actuator Tube, Engine Oil Vapor Pipe Quick Coupling & Clip



Courtesy of CHRYSLER GROUP, LLC

11. Open the retaining clip (1) and disengage the Waste-Gate actuator air control actuator tube.
12. Disconnect the engine oil vapor pipe quick coupling (2).

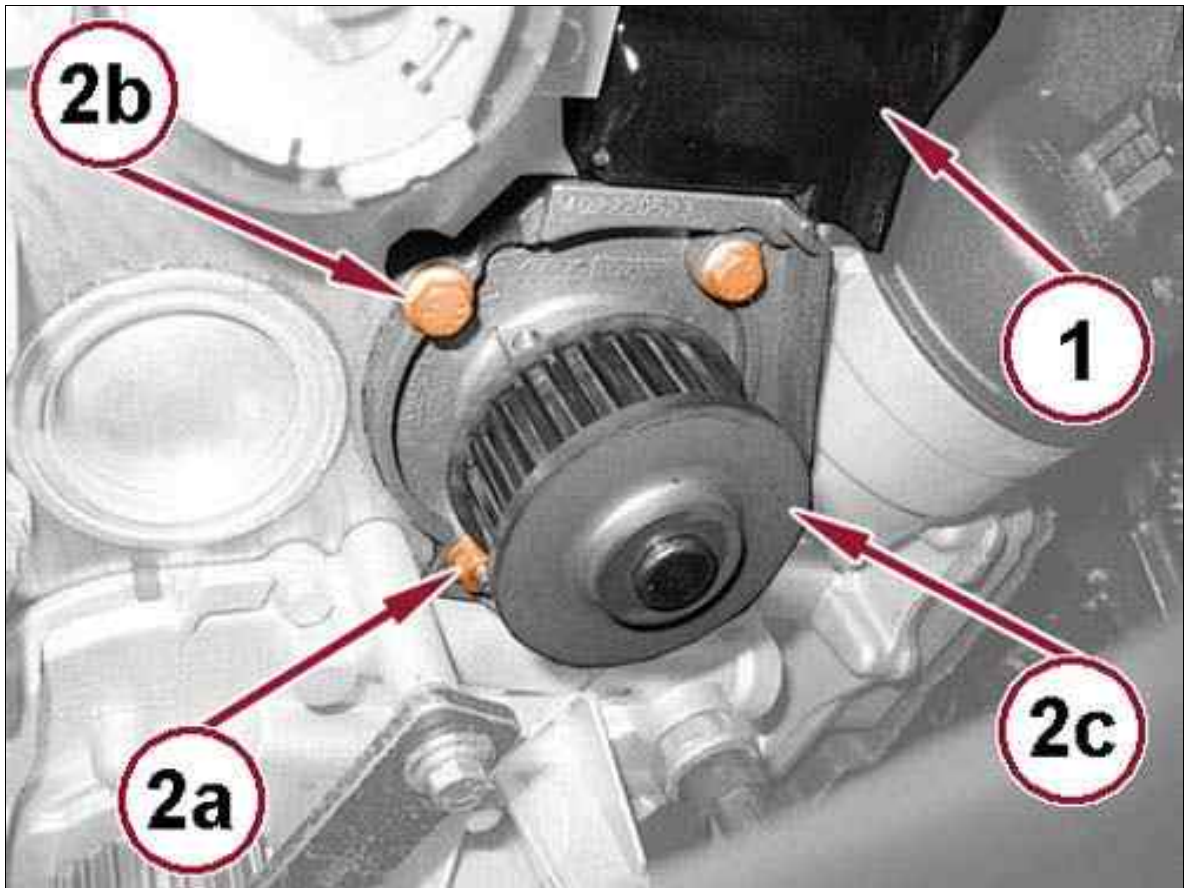
Fig 2: Inlet Air Hose To The Turbocharger, Solenoid Hose, Retainer & Clamp



Courtesy of CHRYSLER GROUP, LLC

13. Open the clip retainer (1a) Loosen the clamp and disconnect the Waste-Gate air control solenoid hose (1b).
14. Loosen the clamp (2a) and remove the inlet air hose to the turbocharger (2b).

Fig 3: Inner Timing Belt Cover, Water Pump, Nuts & Bolts



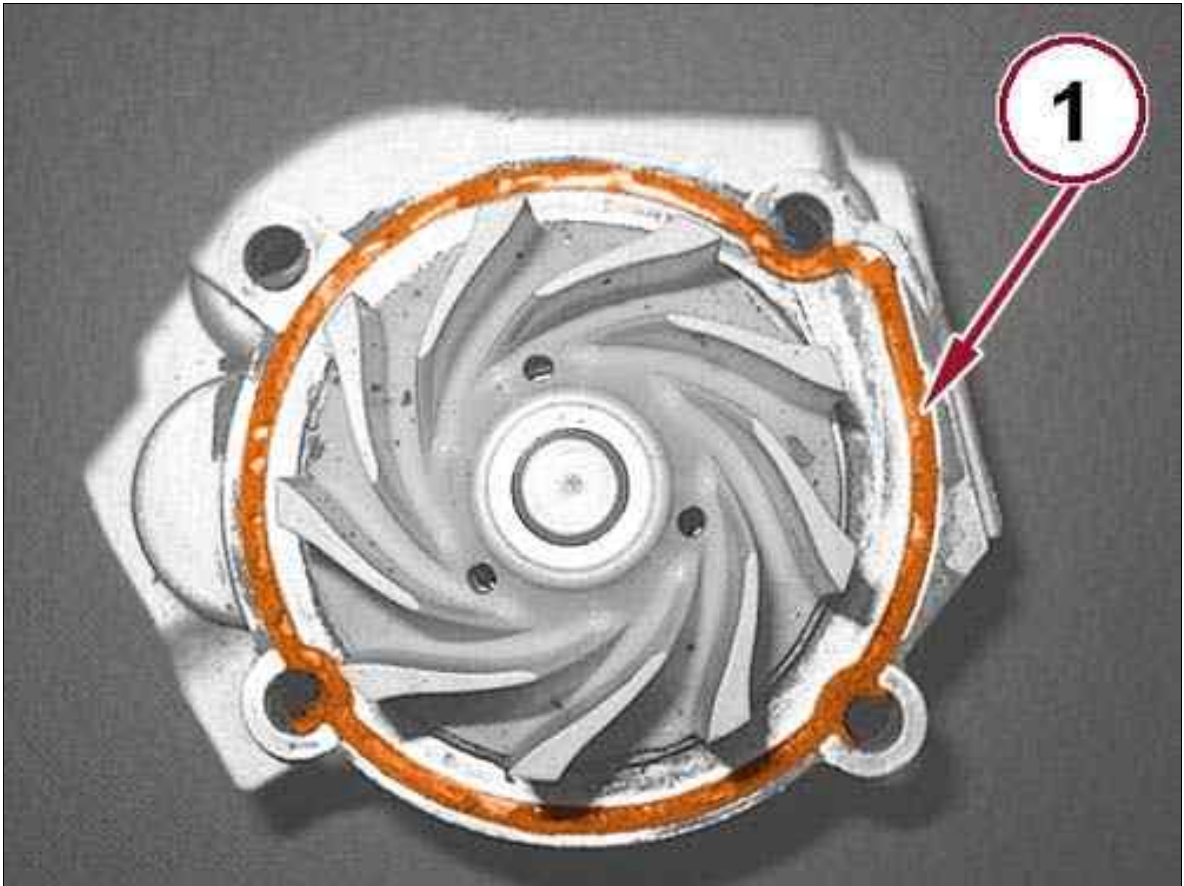
Courtesy of CHRYSLER GROUP, LLC

15. Remove the bolt and the inner timing belt cover (1).
16. Remove the nut (2a) and the bolts (2b) and the water pump (2c).

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X4 PRIMARY > INSTALLATION

1. Clean the gasket mating surfaces.

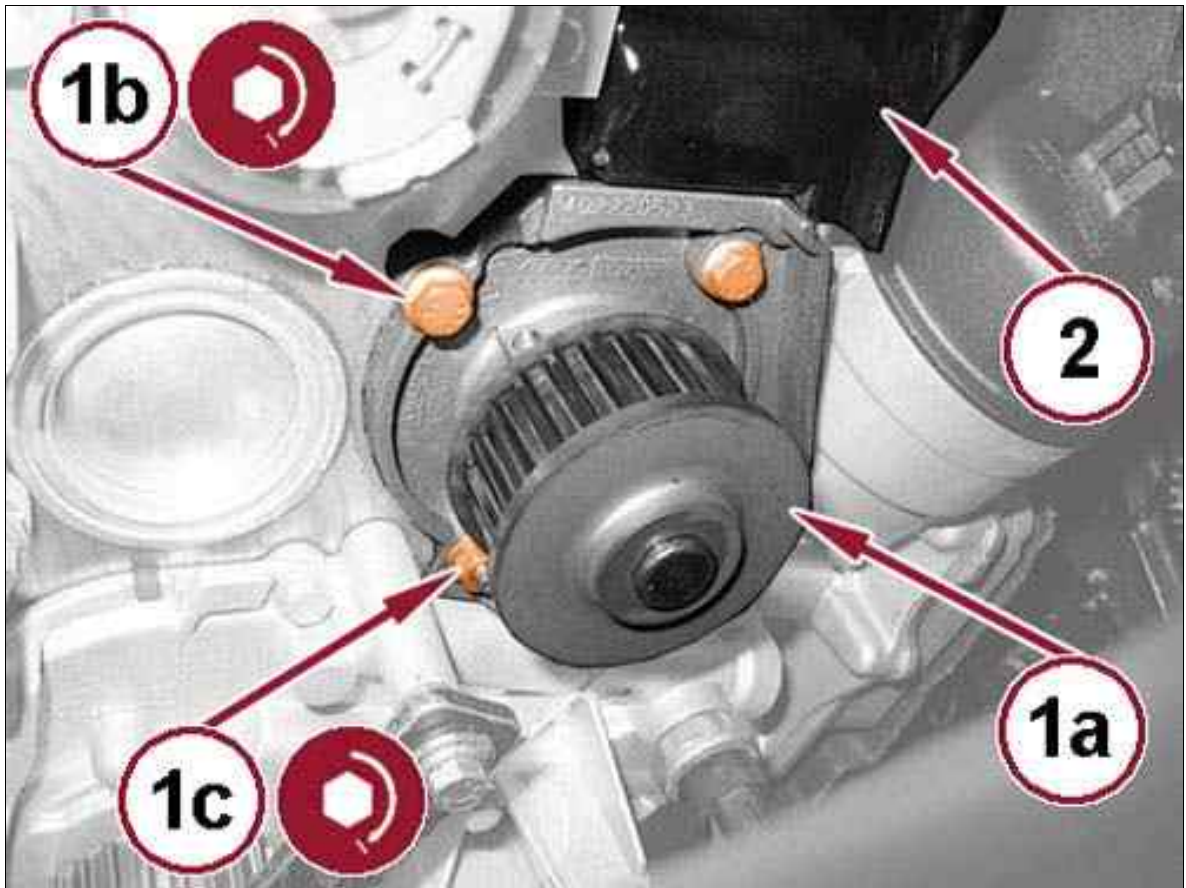
Fig 1: Sealant



Courtesy of CHRYSLER GROUP, LLC

2. Apply a bead of sealant (1) in the groove shown in the illustration of the new water pump.

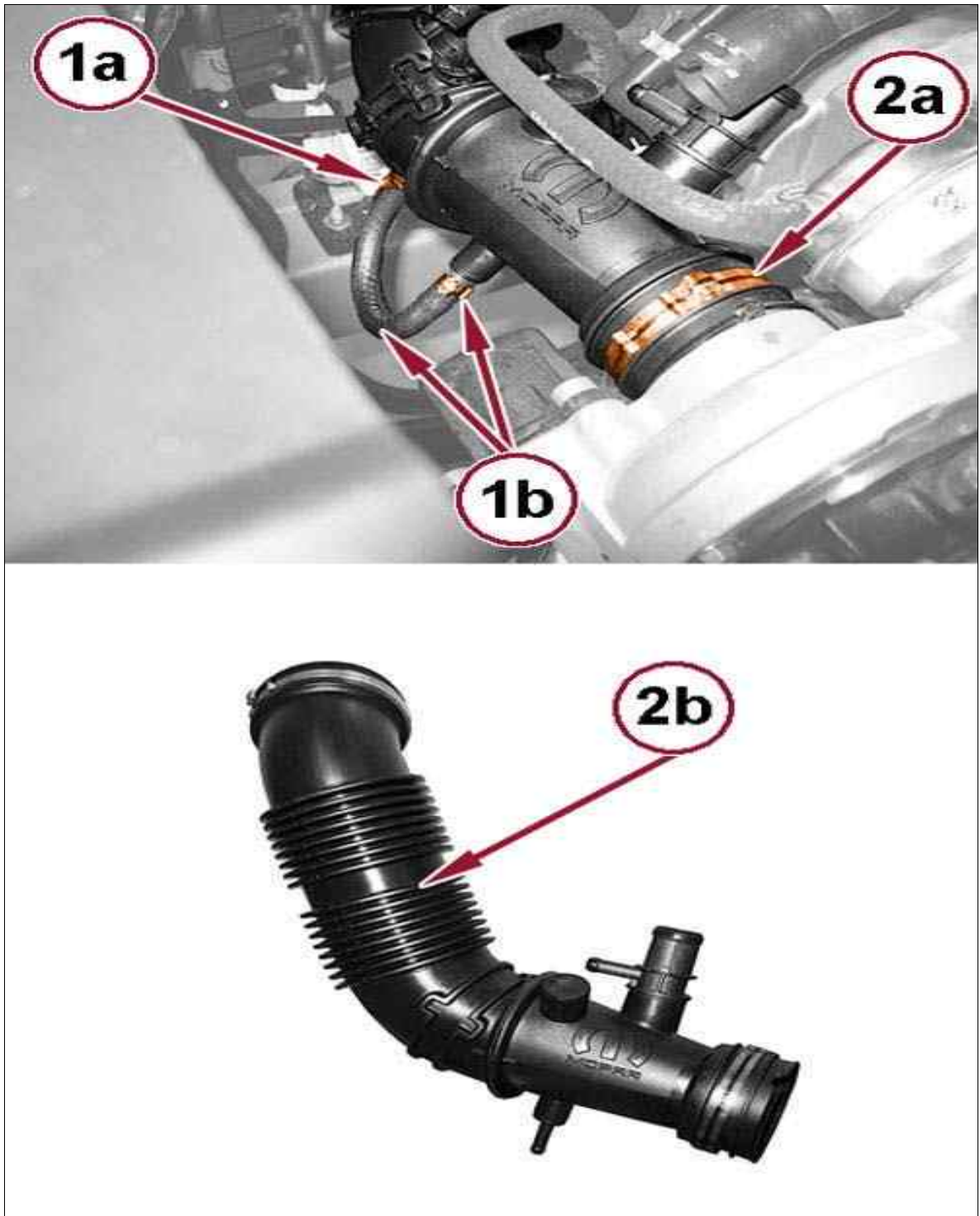
Fig 2: Inner Timing Belt Cover, Water Pump, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Install the water pump (1a). Tighten the bolts (1b) and nut (1c) to the proper specification. Refer to SPECIFICATIONS .

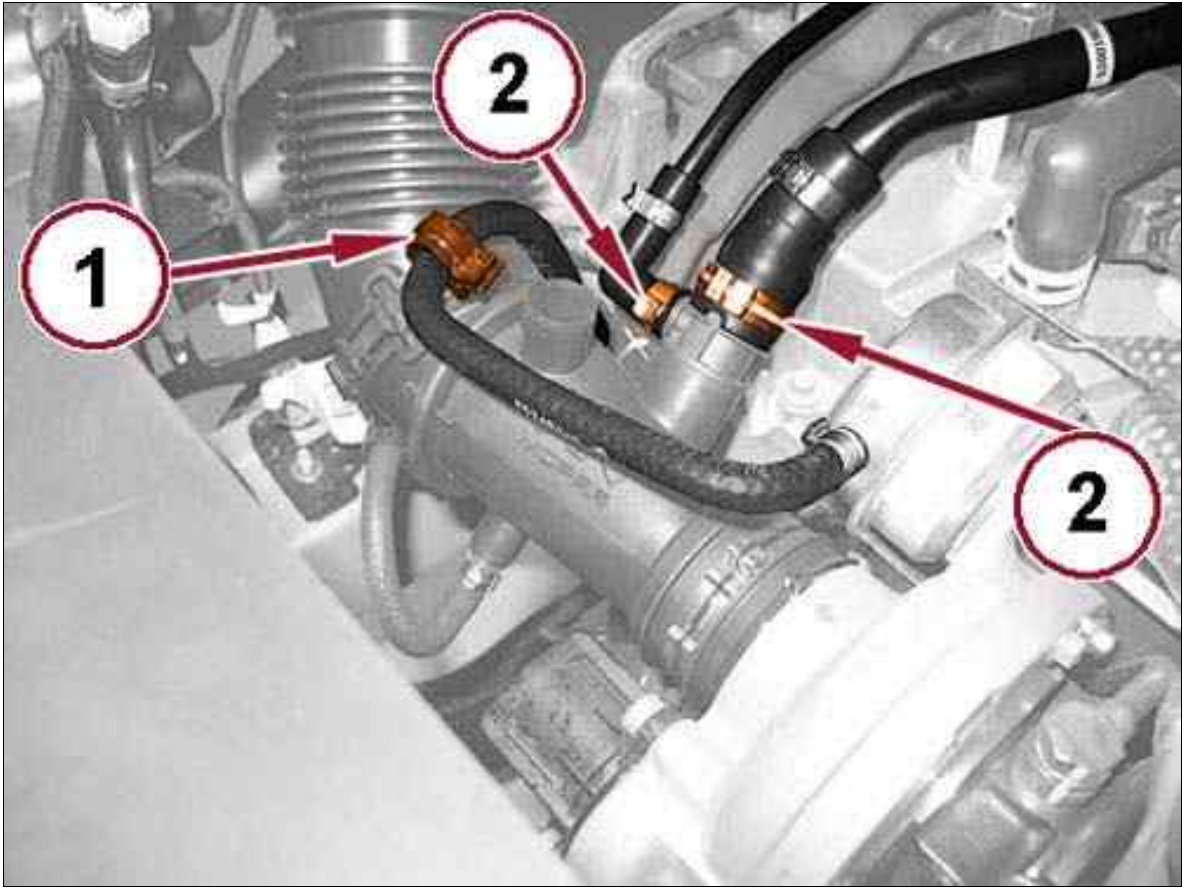
Fig 3: Inlet Air Hose To The Turbocharger, Solenoid Hose, Retainer & Clamp



Courtesy of CHRYSLER GROUP, LLC

4. Install the inlet air hose onto the turbocharger (2b) and securely tighten the clamp (2a).
5. Connect the wastegate air control solenoid hose (1b) and securely tighten the clamp and close the clip retainer (1a).

Fig 4: Waste-Gate Actuator Air Control Actuator Tube, Engine Oil Vapor Pipe Quick Coupling & Clip



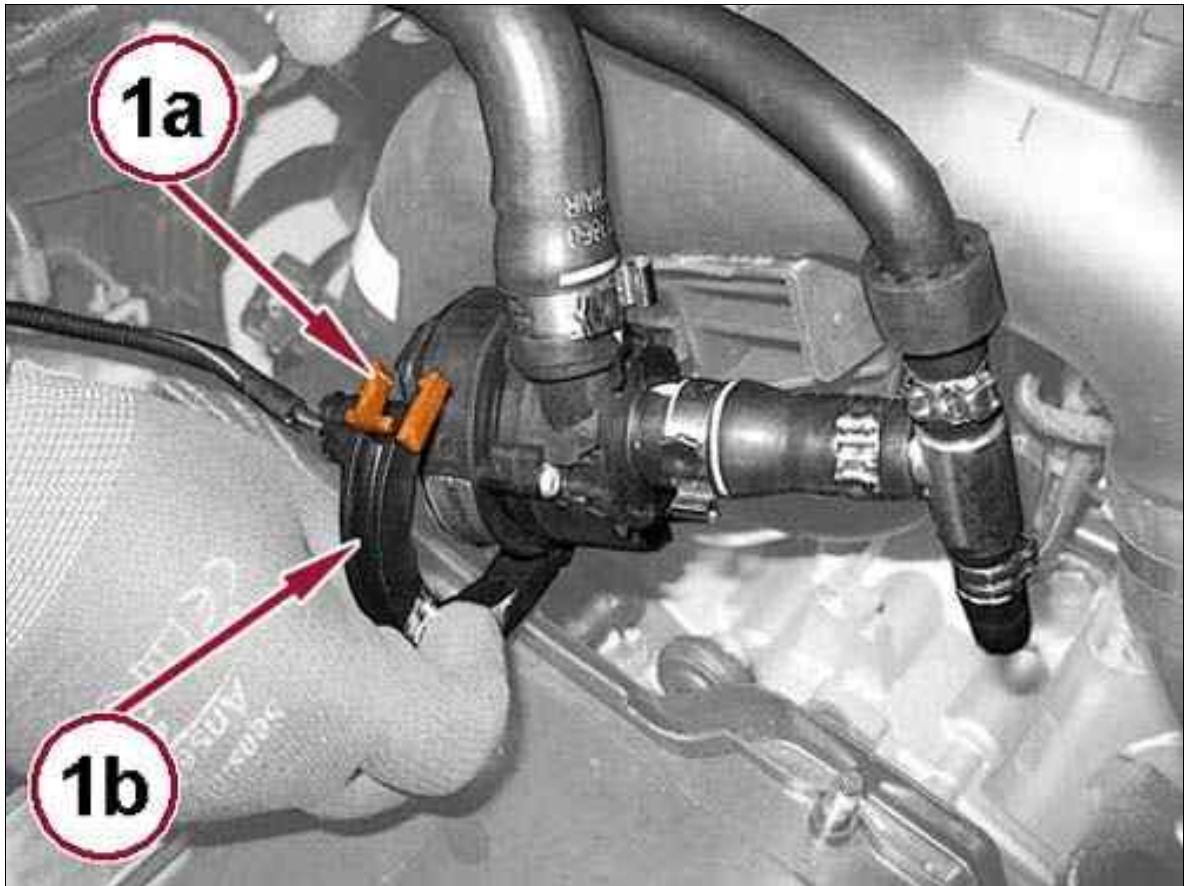
Courtesy of CHRYSLER GROUP, LLC

6. Connect the engine oil vapor pipe quick coupling (2).
7. Engage the Waste-Gate actuator air control actuator tube and close the retaining clip (1).
8. Install the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .
9. Install the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
10. Install the engine cover.
11. Install the vibration damper. Refer to DAMPER, VIBRATION, REMOVAL AND INSTALLATION .
12. Install the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .
13. Evacuate air and fill the cooling system. Refer to STANDARD PROCEDURE .
14. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
15. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
16. Install the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
17. Connect the negative battery cable.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X4 SECONDARY > REMOVAL

1. Remove the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Drain the cooling system. Refer to STANDARD PROCEDURE .

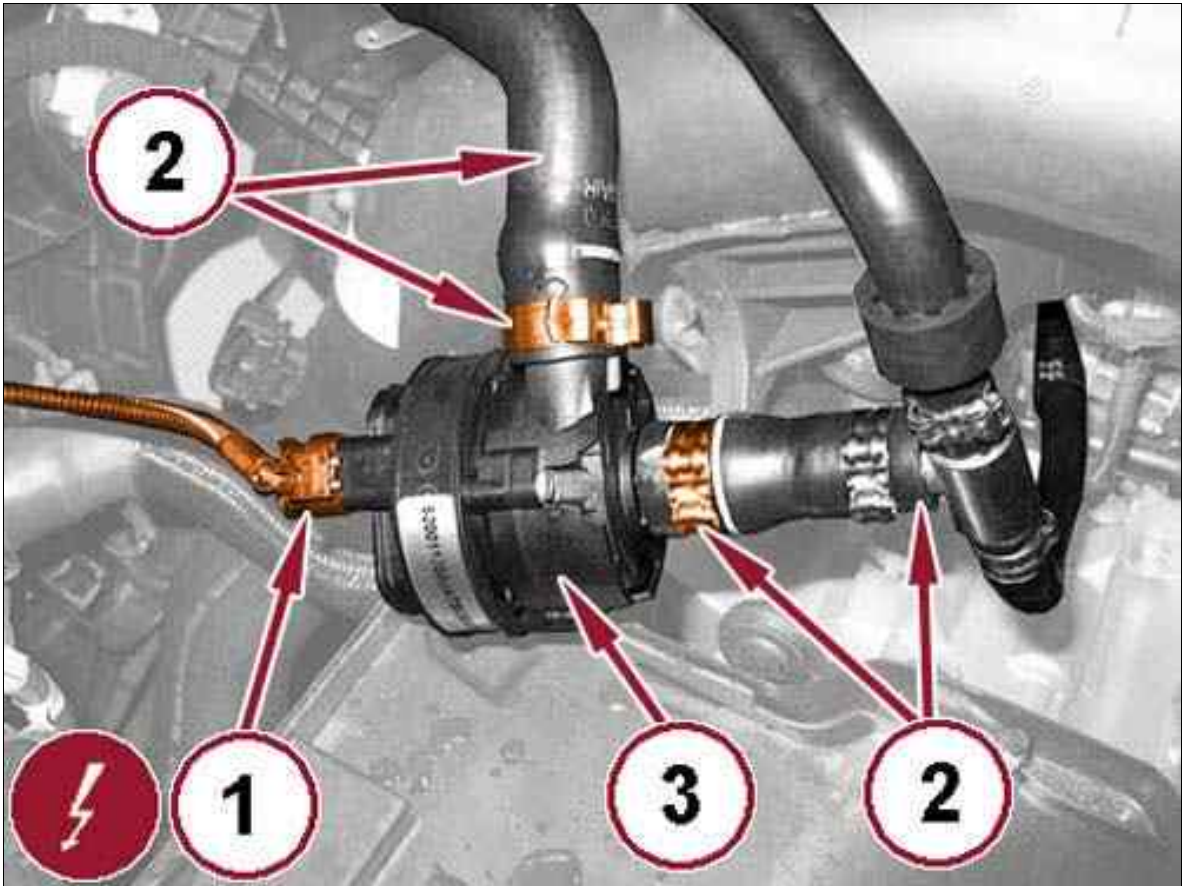
Fig 1: Water Pump Retaining Collar & Clip



Courtesy of CHRYSLER GROUP, LLC

4. Release the clip (1a) and remove the water pump retaining collar (1b).

Fig 2: Secondary Water Pump, Wire Harness Connector, Hoses & Clamps

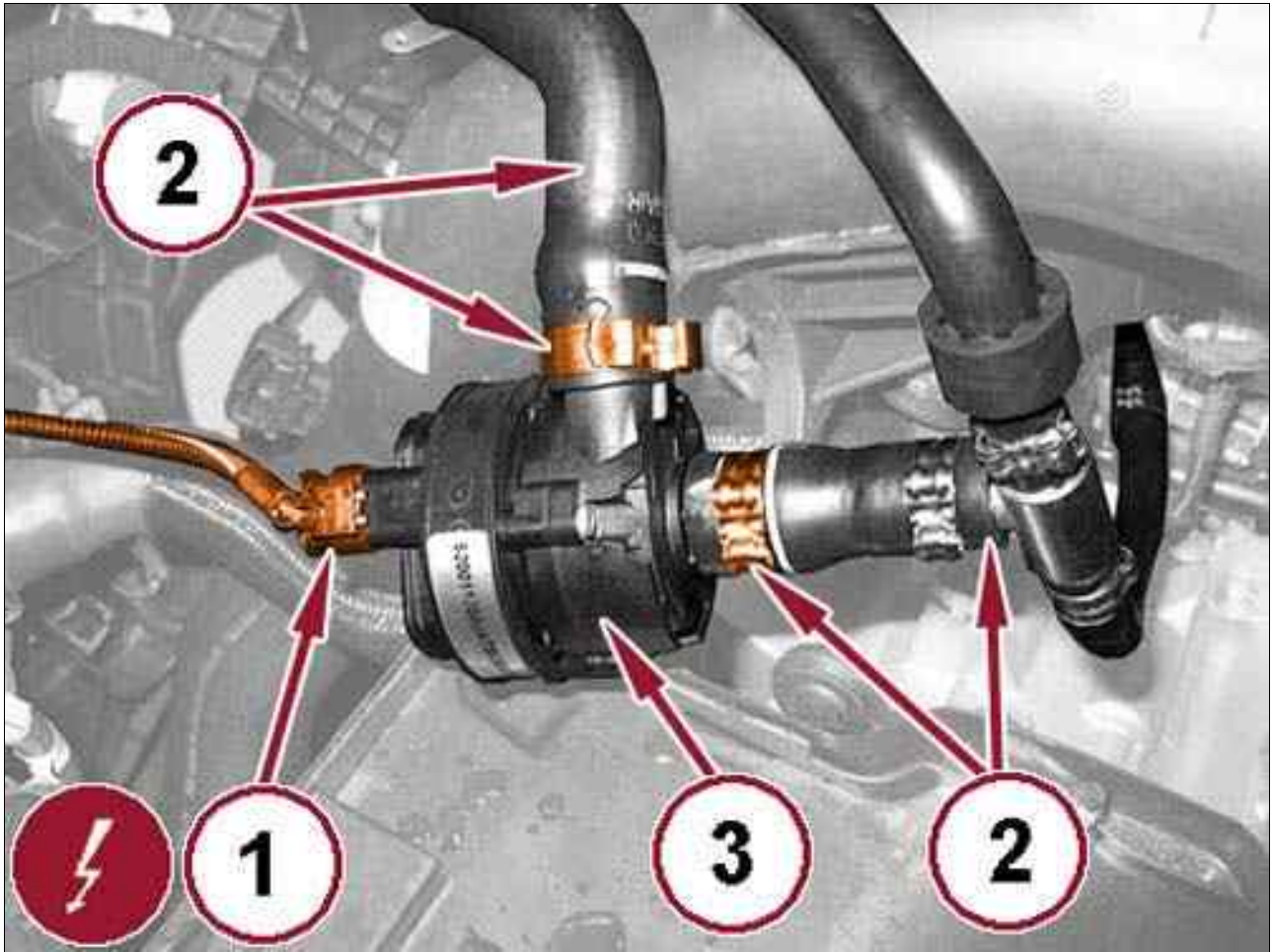


Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the secondary water pump wire harness connector (1).
6. Undo the clamps and remove the coolant hoses (2) from the secondary water pump (3) and remove the secondary water pump (3).

**ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.4L MULTI AIR 4X4
SECONDARY > INSTALLATION**

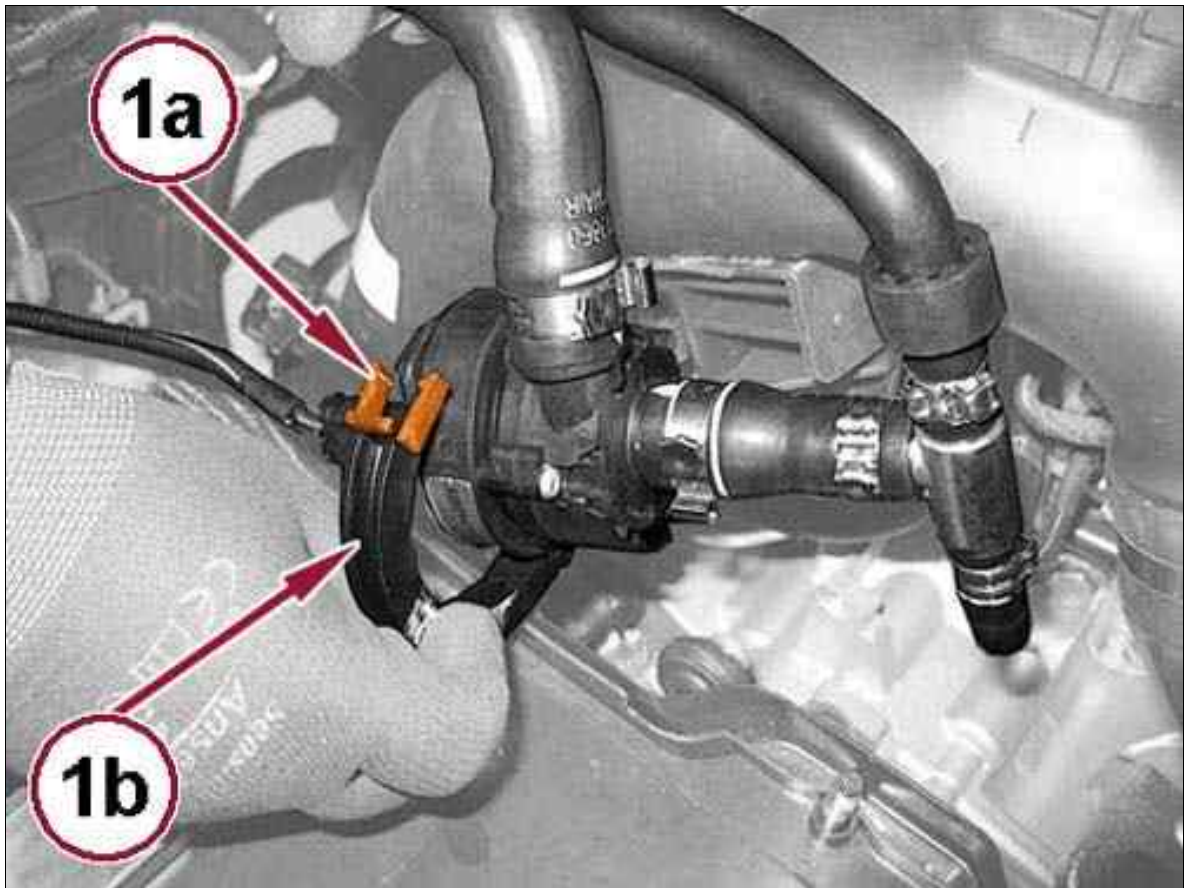
Fig 1: Secondary Water Pump, Wire Harness Connector, Hoses & Clamps



Courtesy of CHRYSLER GROUP, LLC

1. Install the coolant hoses (2) to the secondary water pump (3) and tighten the clamps.
2. Connect the secondary water pump wire harness connector (1).

Fig 2: Water Pump Retaining Collar & Clip



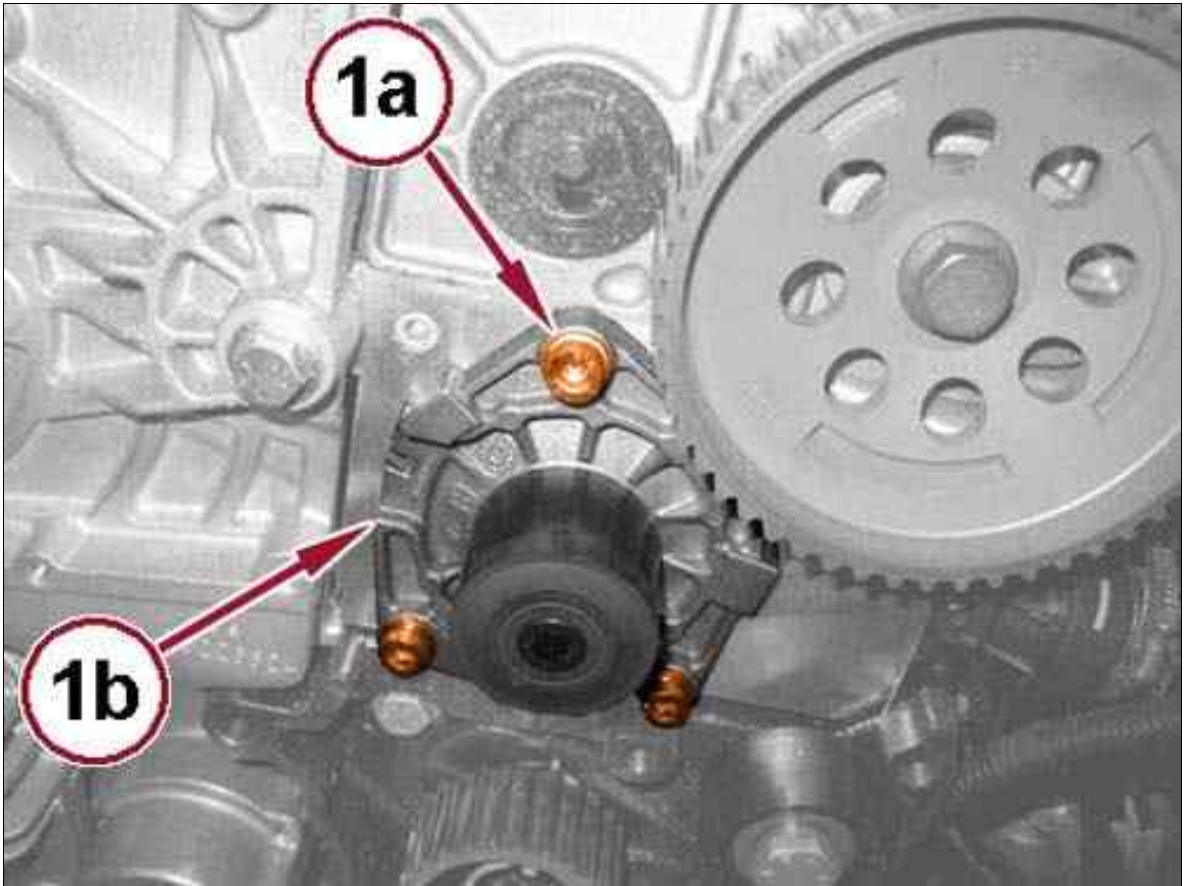
Courtesy of CHRYSLER GROUP, LLC

3. Install the water pump retaining collar (1b) and engage the spring lock (1a).
4. Fill the cooling system. Refer to STANDARD PROCEDURE .
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Install the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.6L DIESEL > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .
5. Remove the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .

Fig 1: Water Pump & Bolts

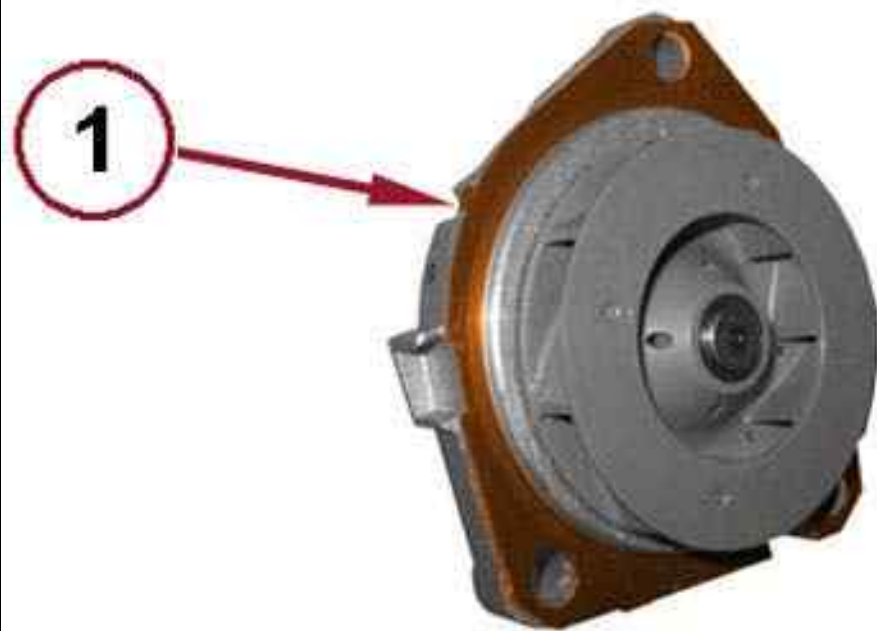


Courtesy of CHRYSLER GROUP, LLC

6. Remove the bolts (1a) and the water pump (1b).
7. Remove and discard the water pump gasket.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 1.6L DIESEL > INSTALLATION

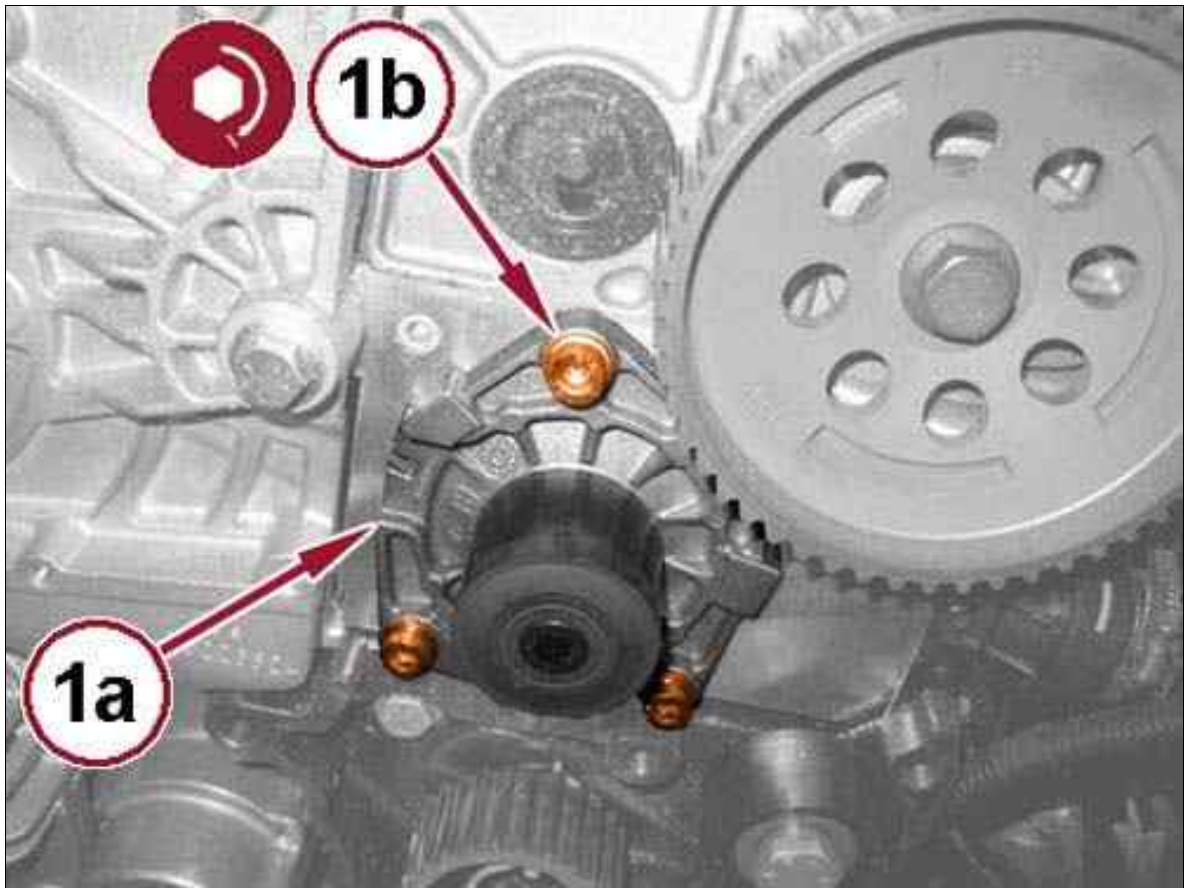
Fig 1: Retaining Tabs



Courtesy of CHRYSLER GROUP, LLC

1. Install a **NEW** gasket seal on the water pump by folding the retaining tabs (1).

Fig 2: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

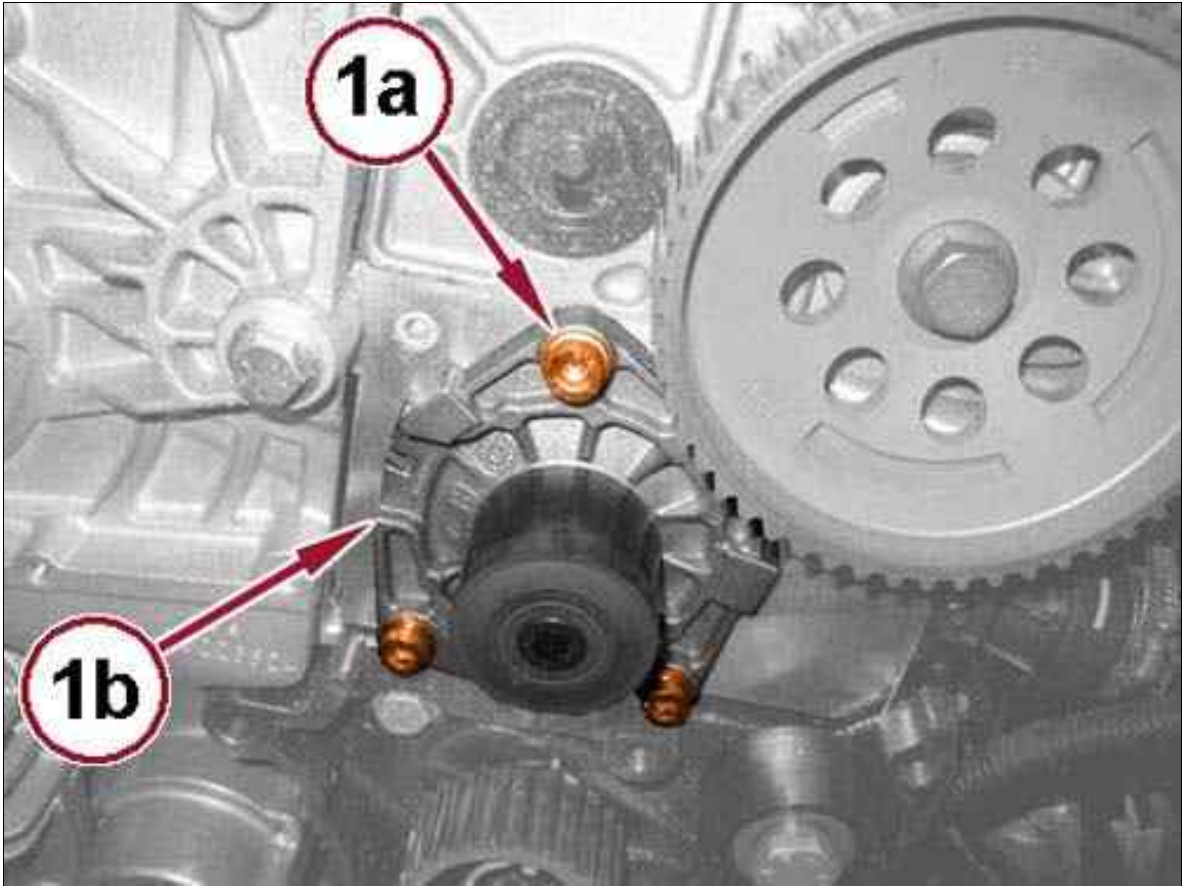
2. Install the water pump (1a). Tighten the bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
3. Install the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .
4. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
5. Remove support and lower the vehicle.
6. Evacuate the air and fill the cooling system. Refer to STANDARD PROCEDURE .
7. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.
8. Check cooling system for leaks. Refer to LEAK TESTING .

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.0L DIESEL > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .

3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .
5. Remove the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .

Fig 1: Water Pump & Bolts

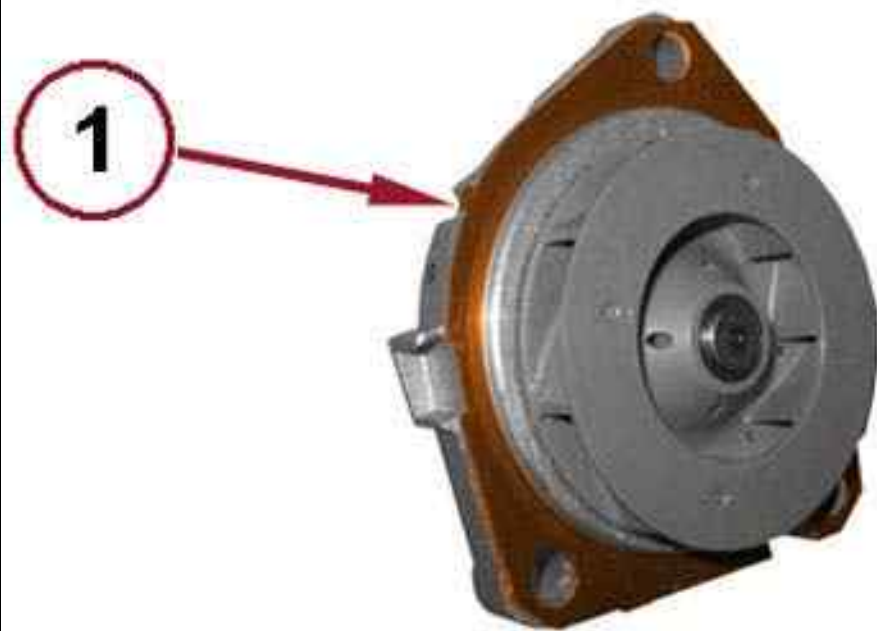


Courtesy of CHRYSLER GROUP, LLC

6. Remove the bolts (1a) and the water pump (1b).
7. Remove and discard the water pump gasket.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.0L DIESEL > INSTALLATION

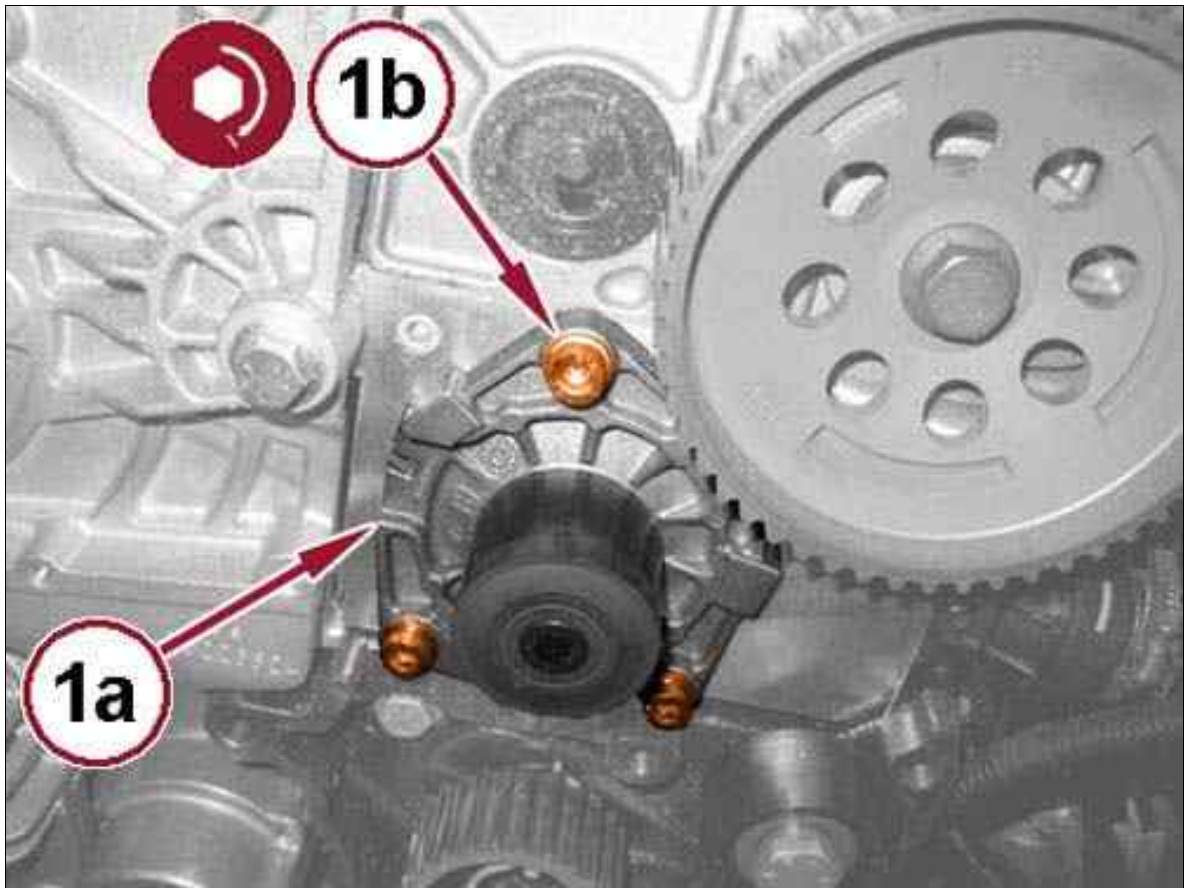
Fig 1: Retaining Tabs



Courtesy of CHRYSLER GROUP, LLC

1. Install a **NEW** gasket seal on the water pump by folding the retaining tabs (1).

Fig 2: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

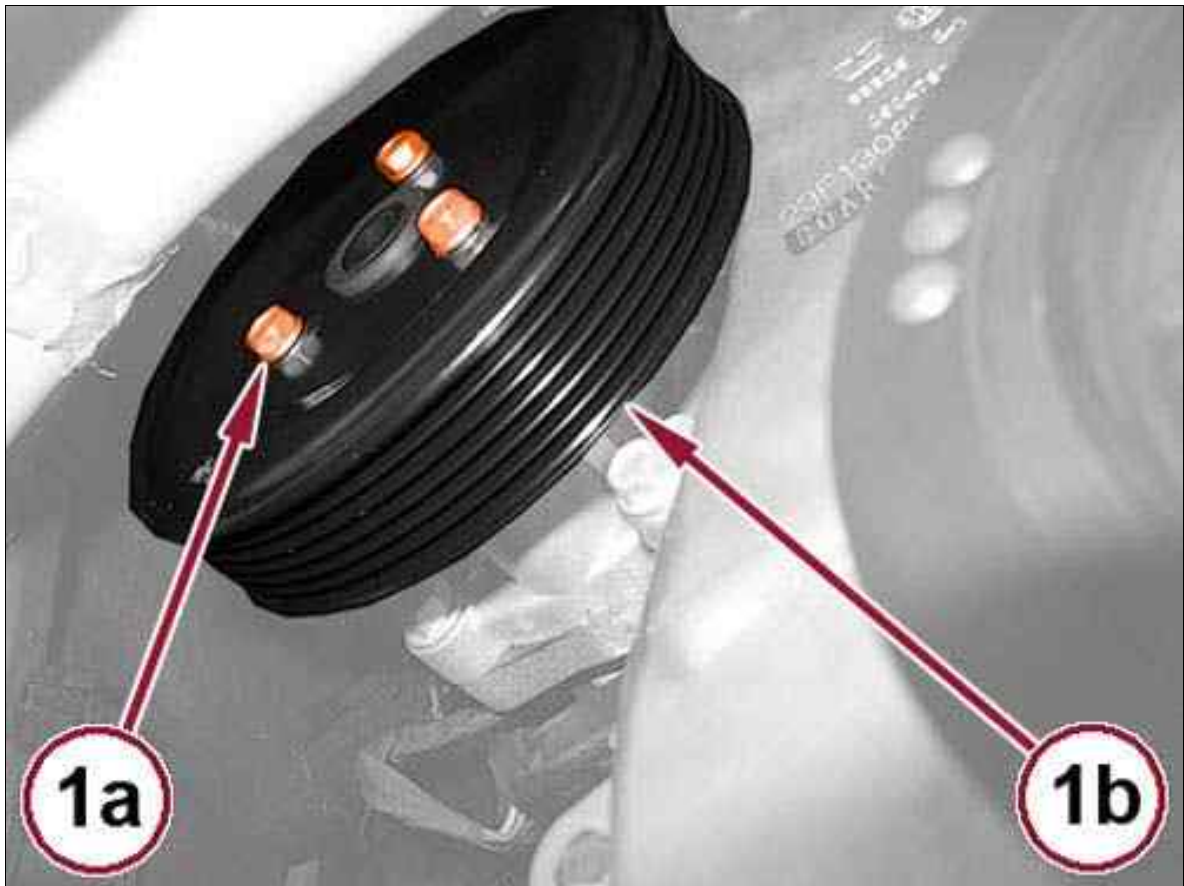
2. Install the water pump (1a). Tighten the bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
3. Install the timing belt. Refer to BELT, TIMING, REMOVAL AND INSTALLATION .
4. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
5. Remove the support and lower the vehicle.
6. Evacuate the air and fill the cooling system. Refer to STANDARD PROCEDURE .
7. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.
8. Check cooling system for leaks. Refer to LEAK TESTING .

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > REMOVAL

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
4. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
5. Drain the cooling system. Refer to STANDARD PROCEDURE .
6. Remove the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .

Fig 1: Water Pump Pulley & Bolts



Courtesy of CHRYSLER GROUP, LLC

7. Remove the bolts (1a) and the water pump pulley (1b).

Fig 2: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

8. Remove the bolts (1a) and the water pump (1b) and the gasket.
9. Clean the water pump mounting surface (1).

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > INSTALLATION

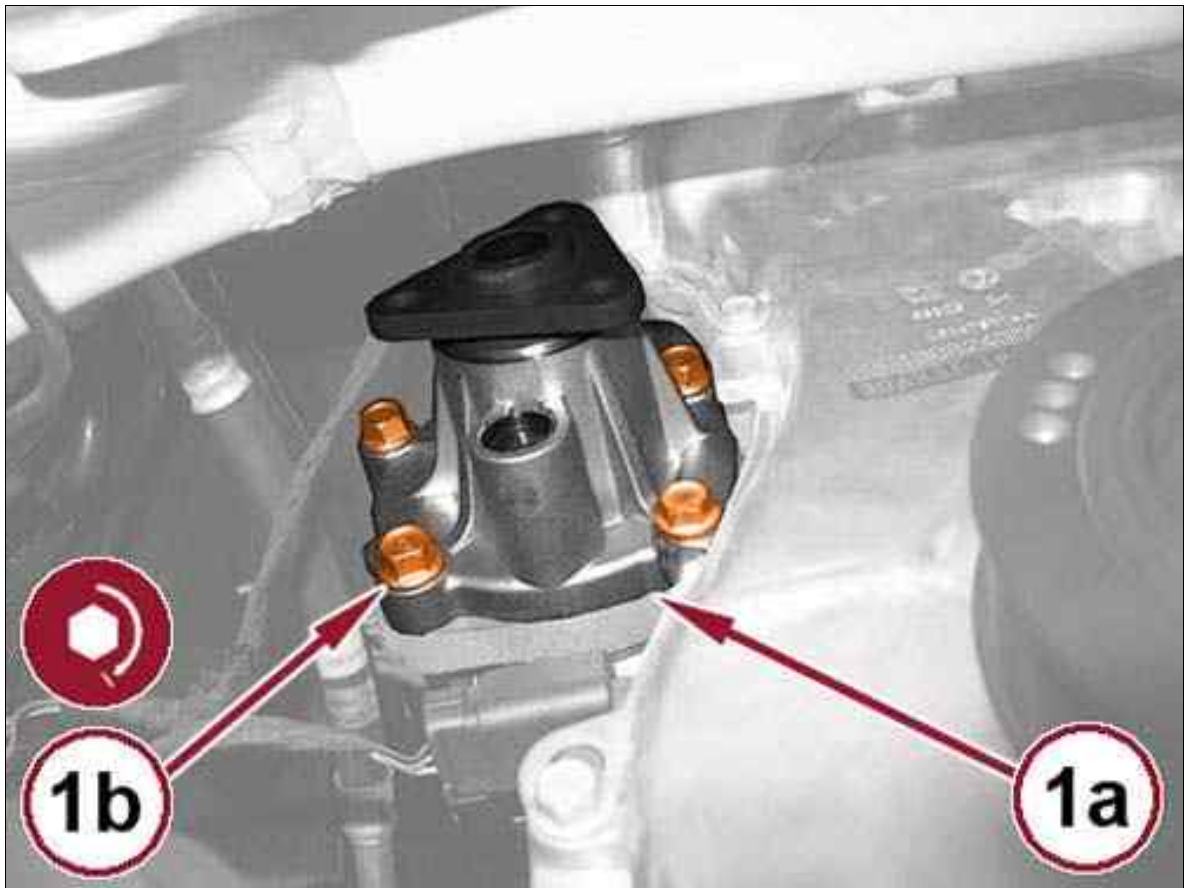
Fig 1: Water Pump Gasket



Courtesy of CHRYSLER GROUP, LLC

1. Install a **NEW** gasket (1) onto the water pump.

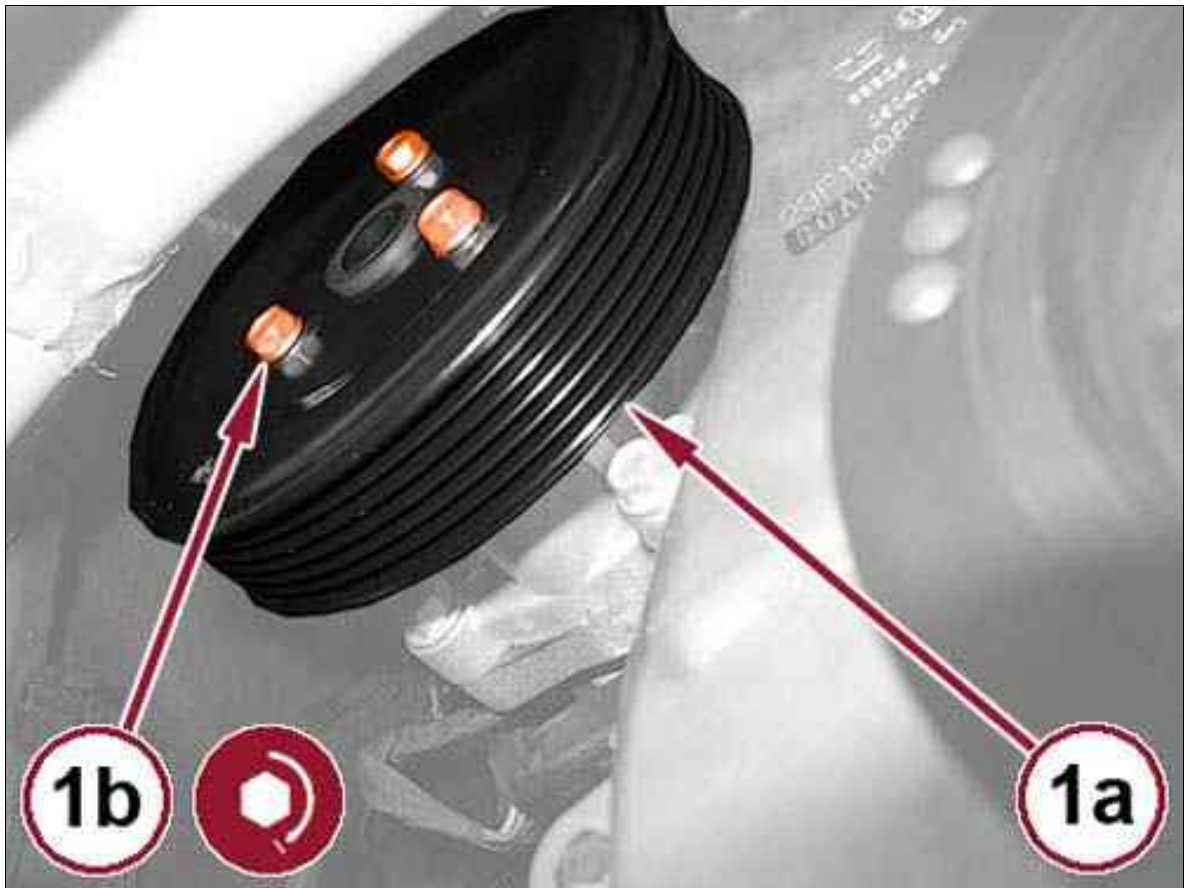
Fig 2: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

2. Install the water pump (1a). Tightened the five bolts (1b) in a criss-cross pattern to the proper specification. Refer to SPECIFICATIONS .

Fig 3: Water Pump Pulley & Bolts



Courtesy of CHRYSLER GROUP, LLC

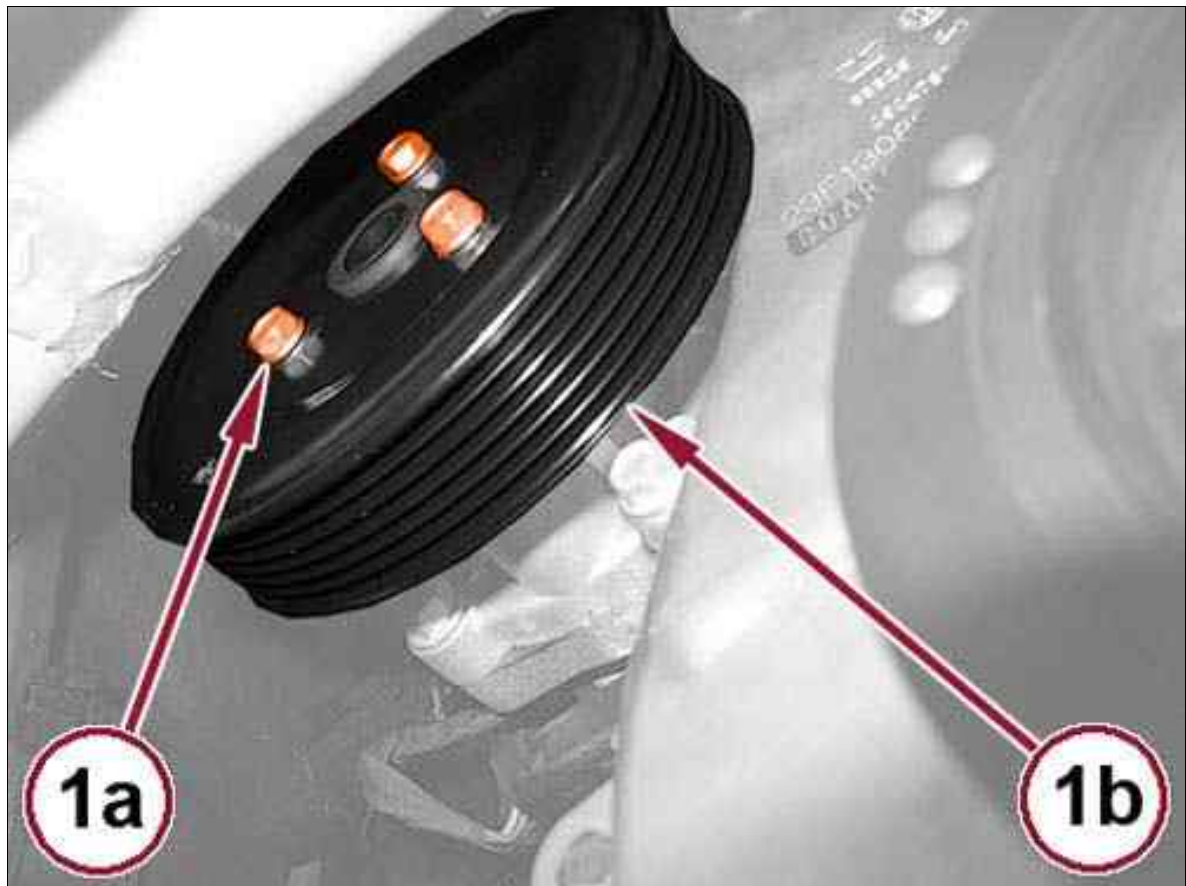
3. Install the water pump pulley (1a). Tighten the three bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
4. Install the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .
5. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
6. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
7. Install the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
8. Fill the cooling system. Refer to STANDARD PROCEDURE .
9. Run the engine until it reaches normal operating temperature. Check the cooling system for correct fluid level or leaks. Refer to STANDARD PROCEDURE .
10. Remove the support and lower the vehicle.

ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.4L MULTI AIR WATER PUMP BODY > REMOVAL

1. Disconnect and isolate the negative battery cable.

2. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
3. Remove the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
4. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
5. Remove the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
6. Drain the cooling system. Refer to STANDARD PROCEDURE .
7. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
8. Remove the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
9. Remove the throttle body. Refer to THROTTLE BODY, REMOVAL AND INSTALLATION .
10. Remove the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .

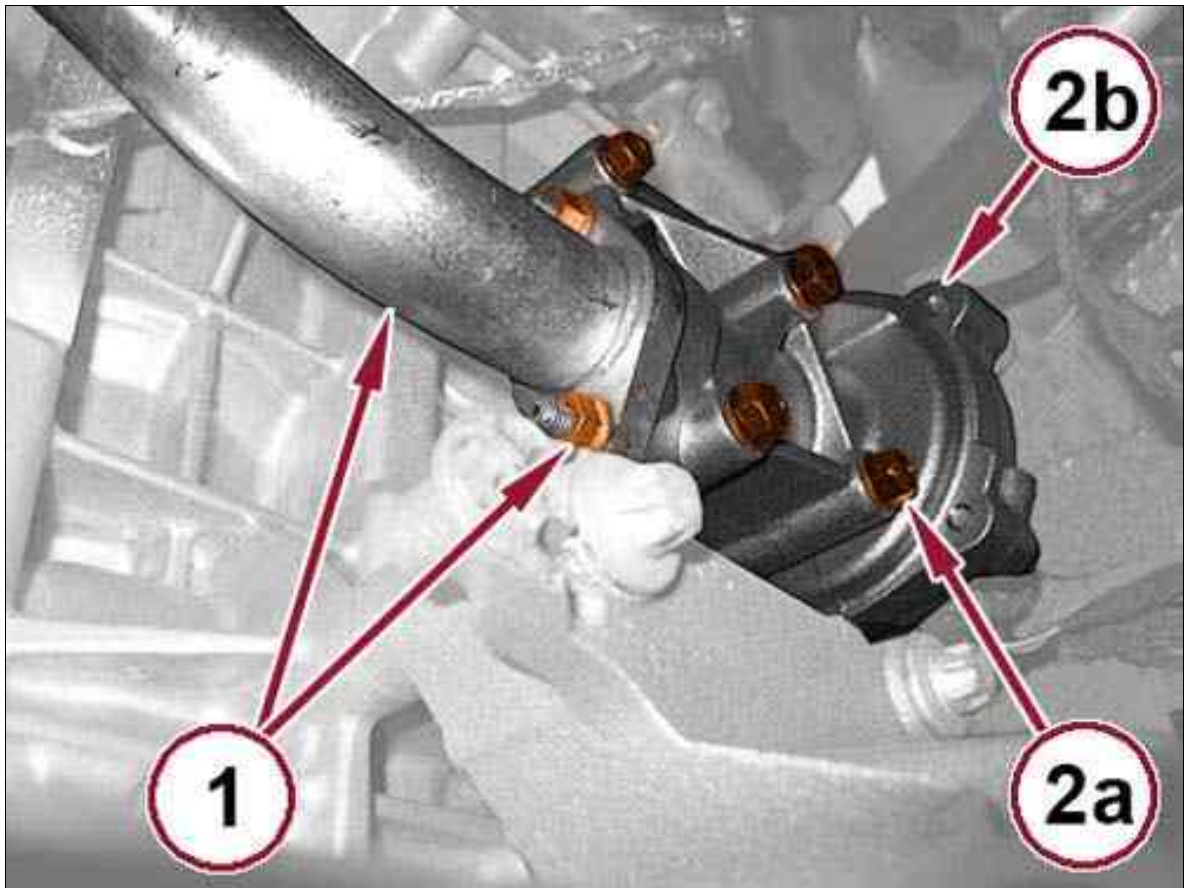
Fig 1: Water Pump Pulley & Bolts



Courtesy of CHRYSLER GROUP, LLC

11. Remove the bolts (1a) and the water pump pulley (1b).

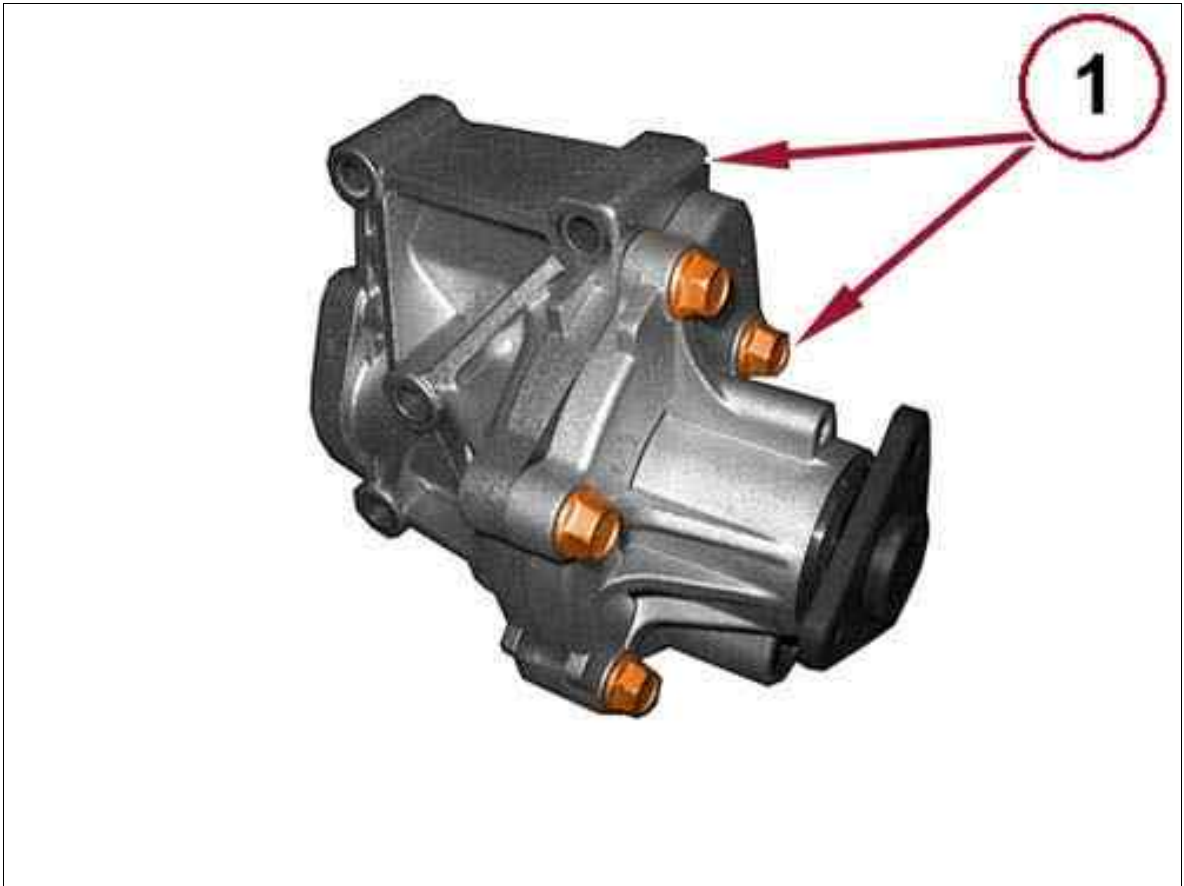
Fig 2: Water Pump Body, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Remove the nuts (1) securing the coolant tube to the water pump body (2b).
13. Remove the bolts (2a) and the water pump body (2b).
14. Remove and discard the gasket.

Fig 3: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

15. If necessary, remove the bolts (1) and the water pump.

**ENGINE > PUMP, WATER > REMOVAL AND INSTALLATION > 2.4L MULTI AIR WATER
PUMP BODY > INSTALLATION**

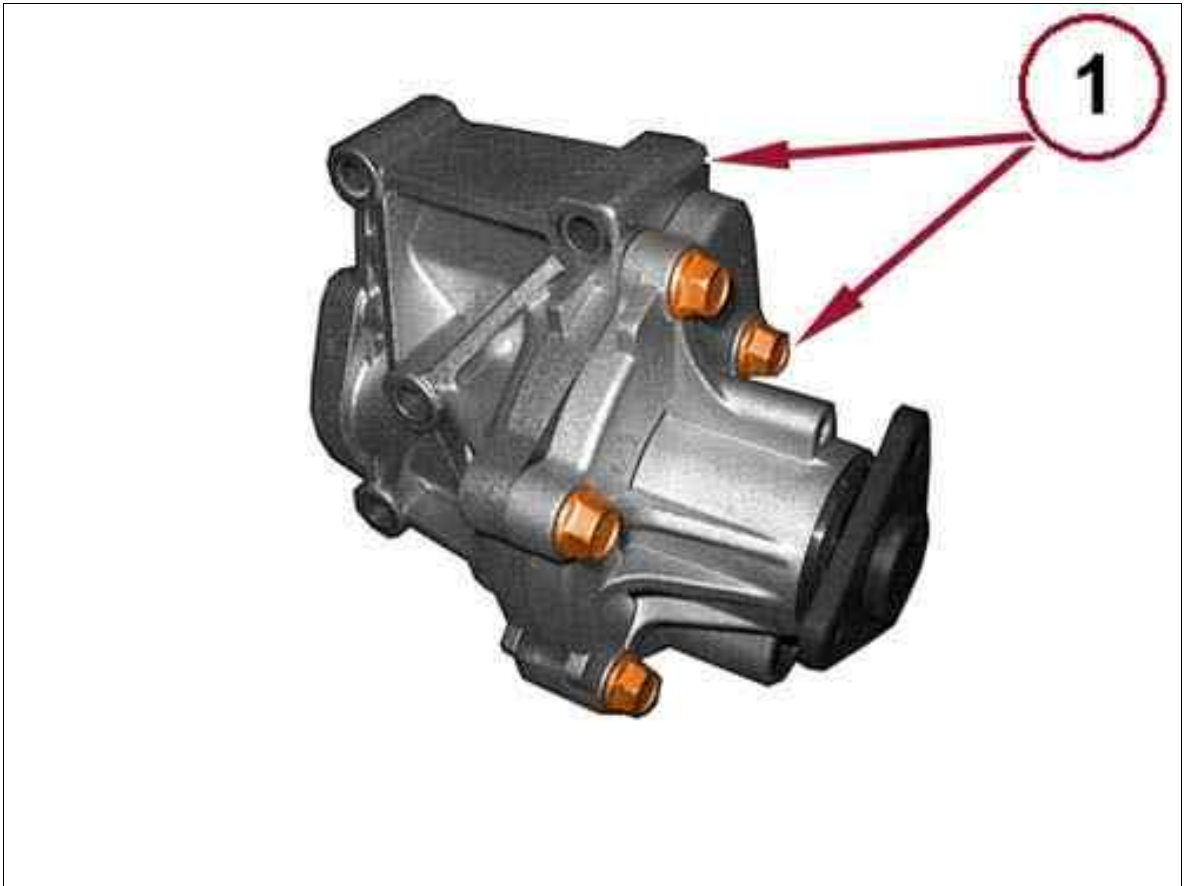
Fig 1: Water Pump Gasket



Courtesy of CHRYSLER GROUP, LLC

1. If removed, install a **NEW** gasket (1) onto the water pump.

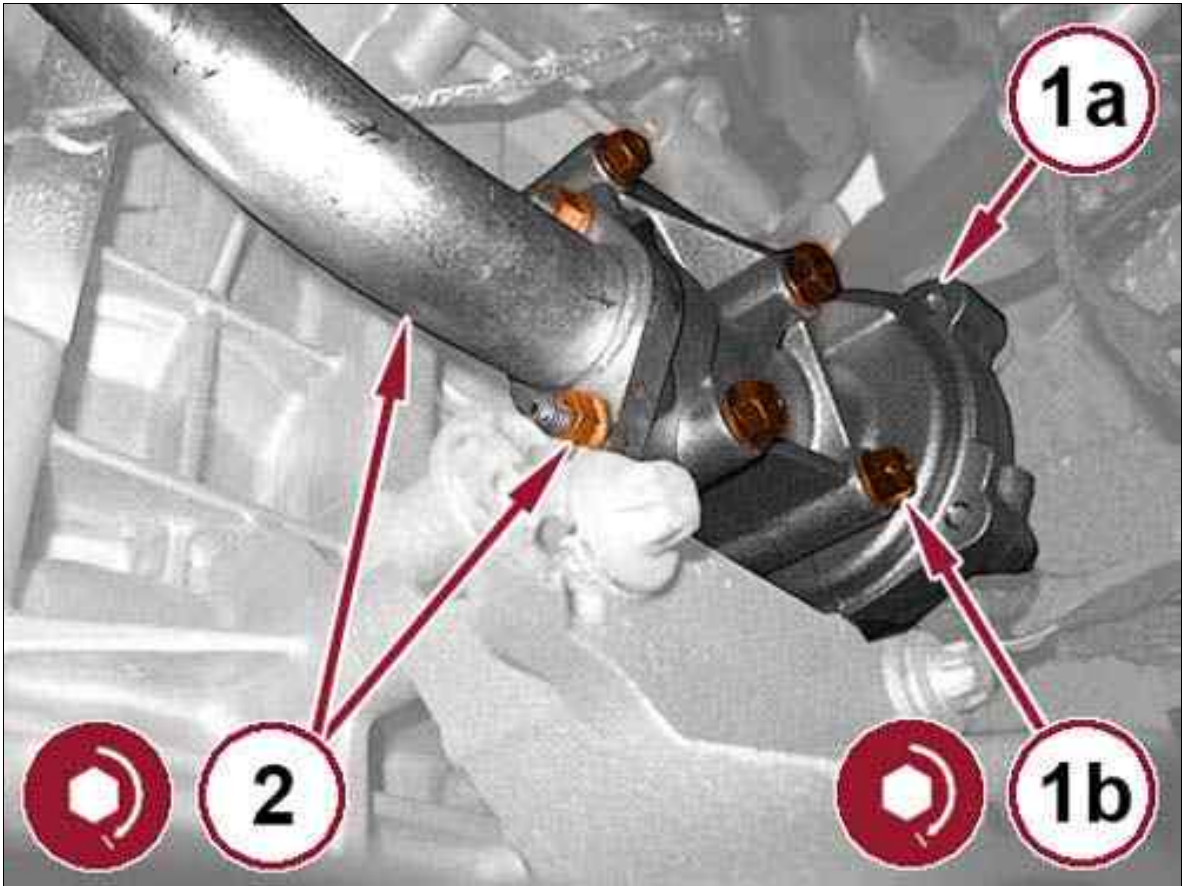
Fig 2: Water Pump & Bolts



Courtesy of CHRYSLER GROUP, LLC

2. If removed, install the water pump. Tightened the five bolts (1) in a criss-cross pattern to the proper specification. Refer to SPECIFICATIONS .

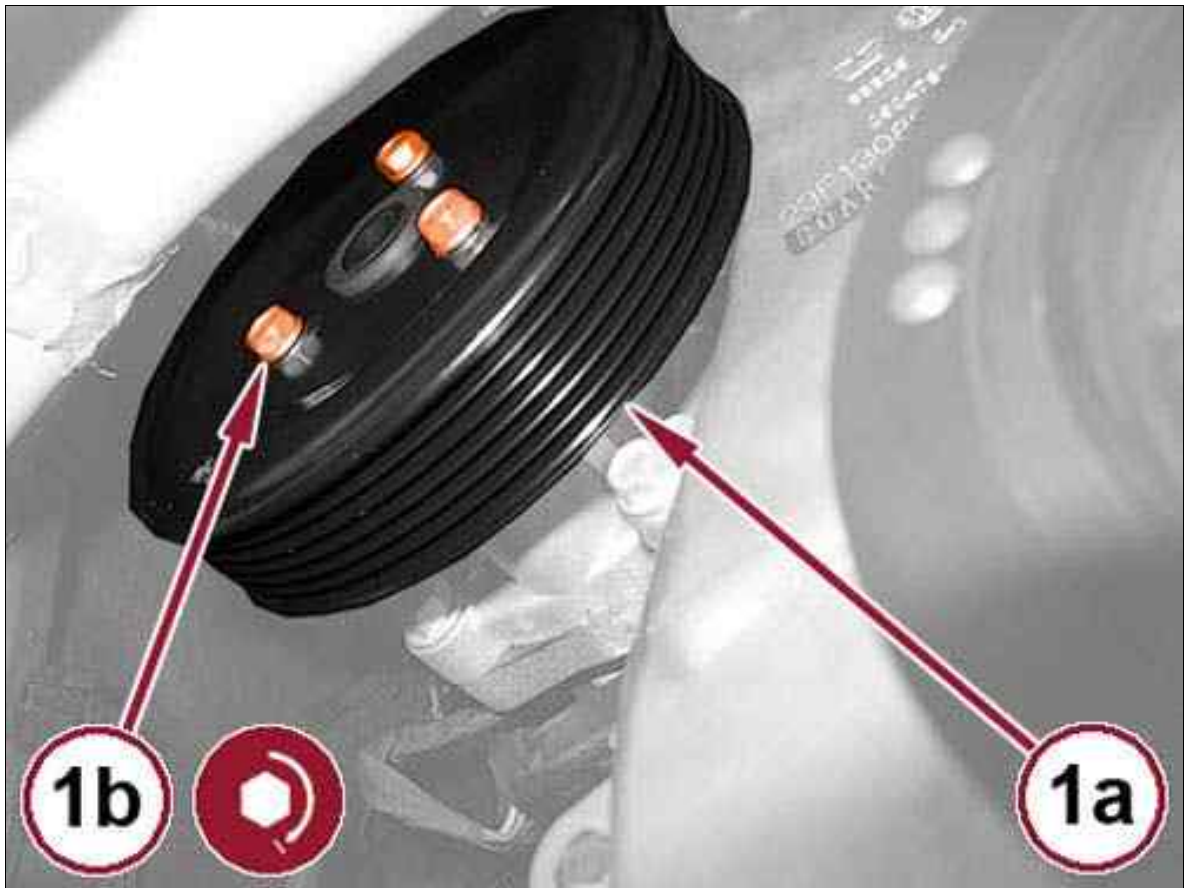
Fig 3: Water Pump Body, Nuts & Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Using a **NEW** gasket, install the water pump body (1a). Tighten the bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
4. Install the nuts (2) securing the coolant tube to the water pump body (1b) and tighten to the proper specification. Refer to SPECIFICATIONS .

Fig 4: Water Pump Pulley & Bolts



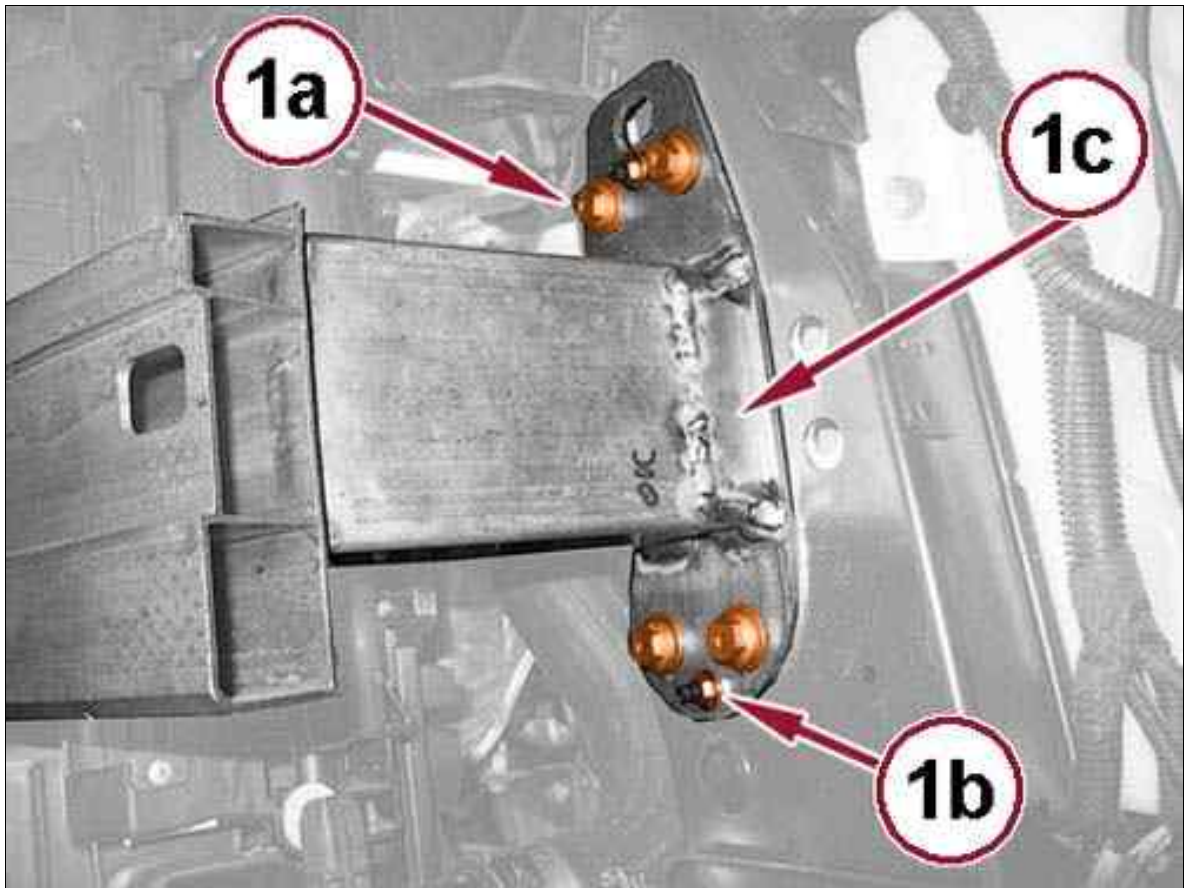
Courtesy of CHRYSLER GROUP, LLC

5. Install the water pump pulley (1a). Tighten the three bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
6. Install the serpentine belt. Refer to BELT, SERPENTINE, REMOVAL AND INSTALLATION .
7. Install the throttle body. Refer to THROTTLE BODY, REMOVAL AND INSTALLATION .
8. Install the air cleaner body. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
9. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
10. Install the right front wheelhouse splash shield. Refer to SHIELD, SPLASH, FRONT WHEELHOUSE, REMOVAL AND INSTALLATION .
11. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
12. Install the right front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
13. Fill the cooling system. Refer to STANDARD PROCEDURE .
14. Connect the negative battery cable.
15. Run the engine until it reaches normal operating temperature. Check the cooling system for correct fluid level or leaks. Refer to STANDARD PROCEDURE .
16. Remove the support and lower the vehicle.

ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 1.4L MULTIAIR TURBO > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .
5. Remove the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

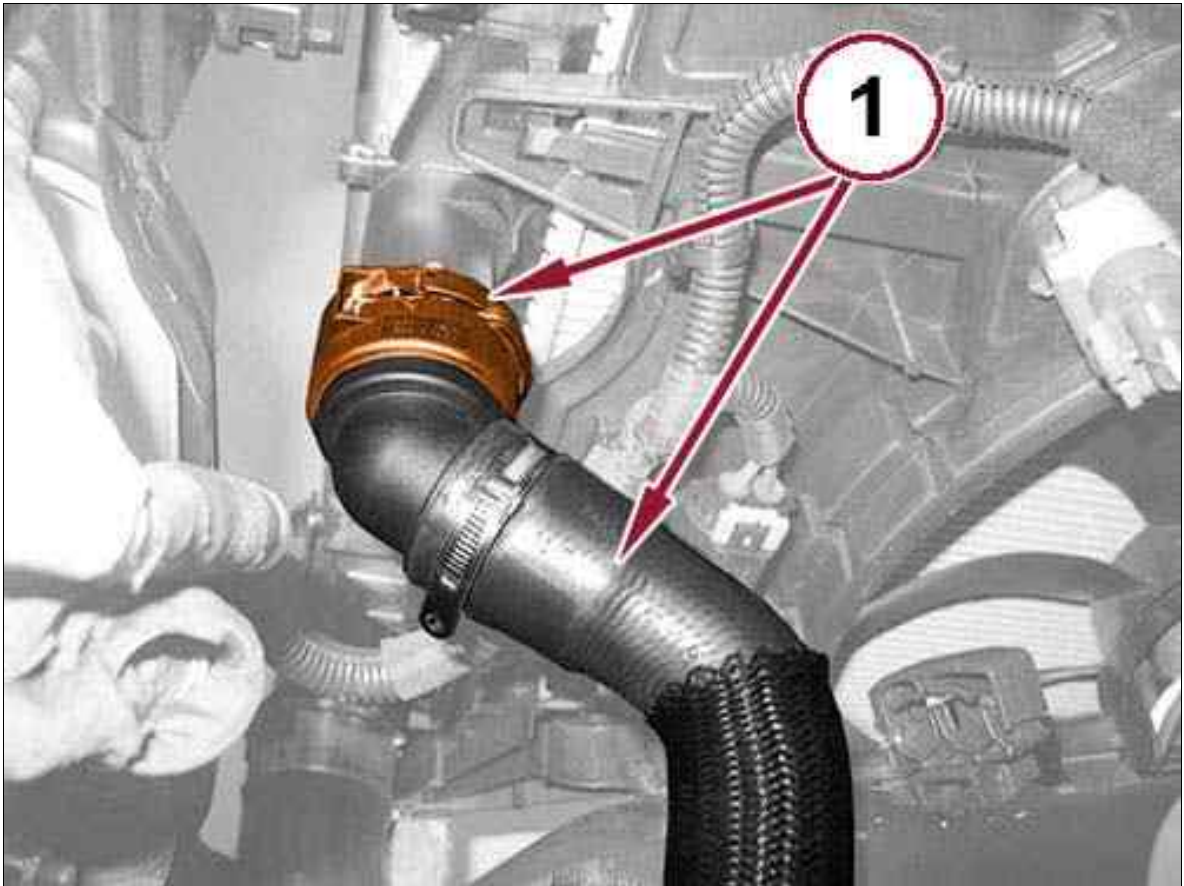
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

6. Working on both sides, Remove the bolts (1a), nuts (1b) and the front bumper reinforcement (1c).

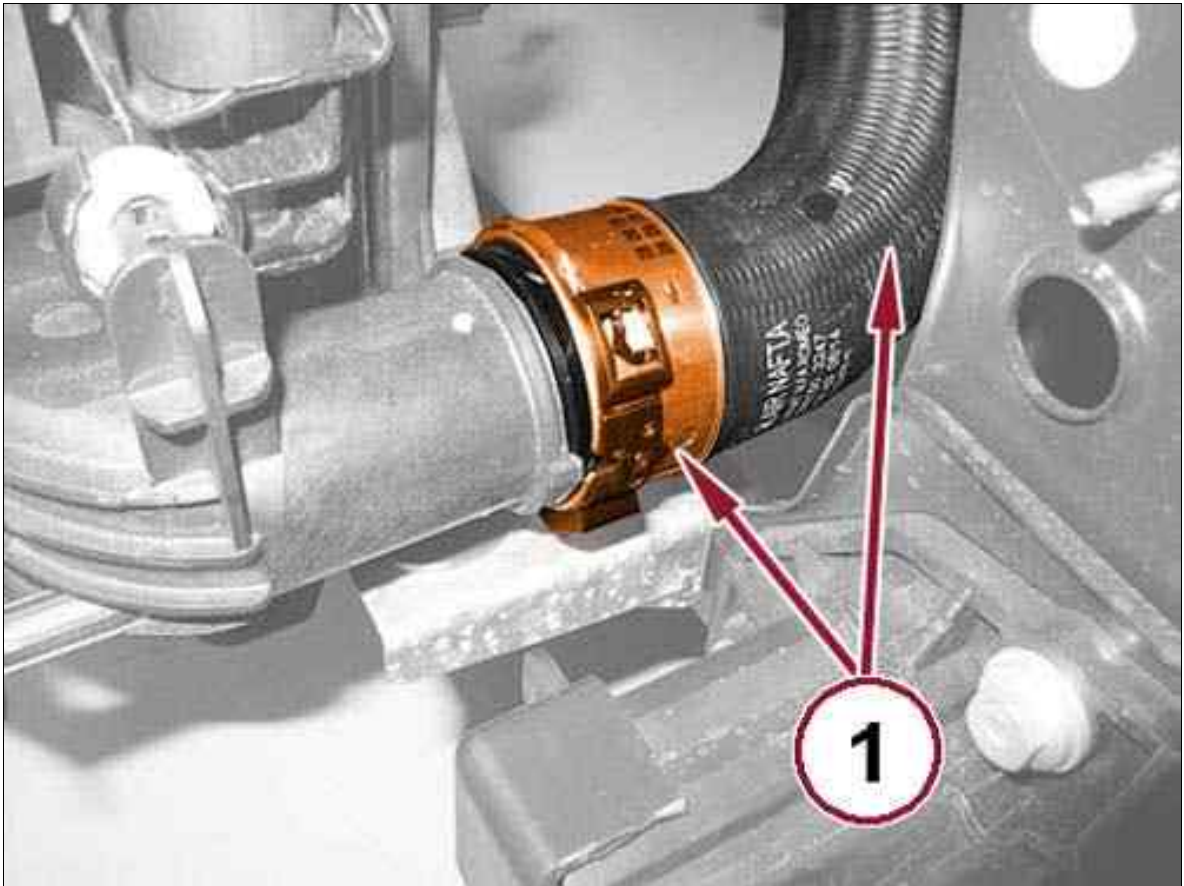
Fig 2: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

7. Release spring clip and remove the upper radiator hose (1).

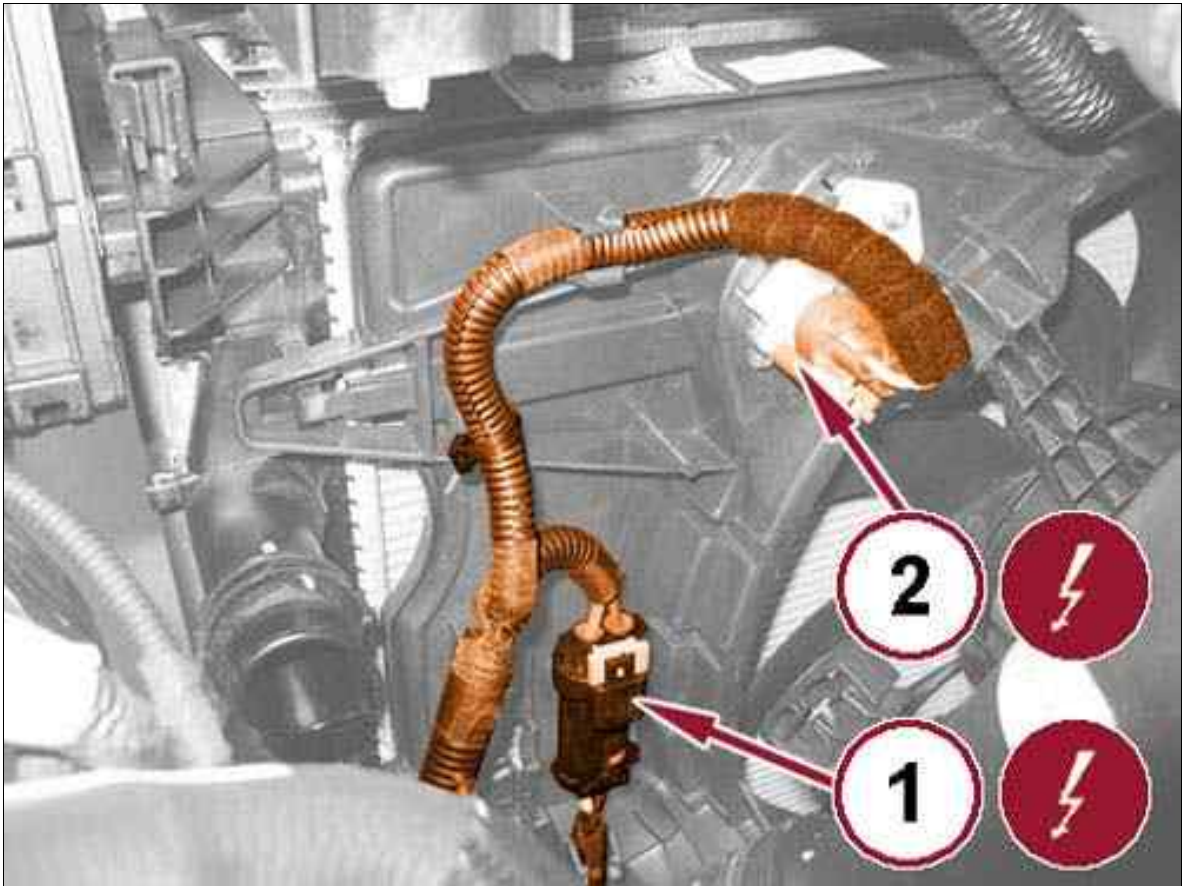
Fig 3: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

8. Release spring clip and remove the Charge Air Cooler (CAC) hose (1).

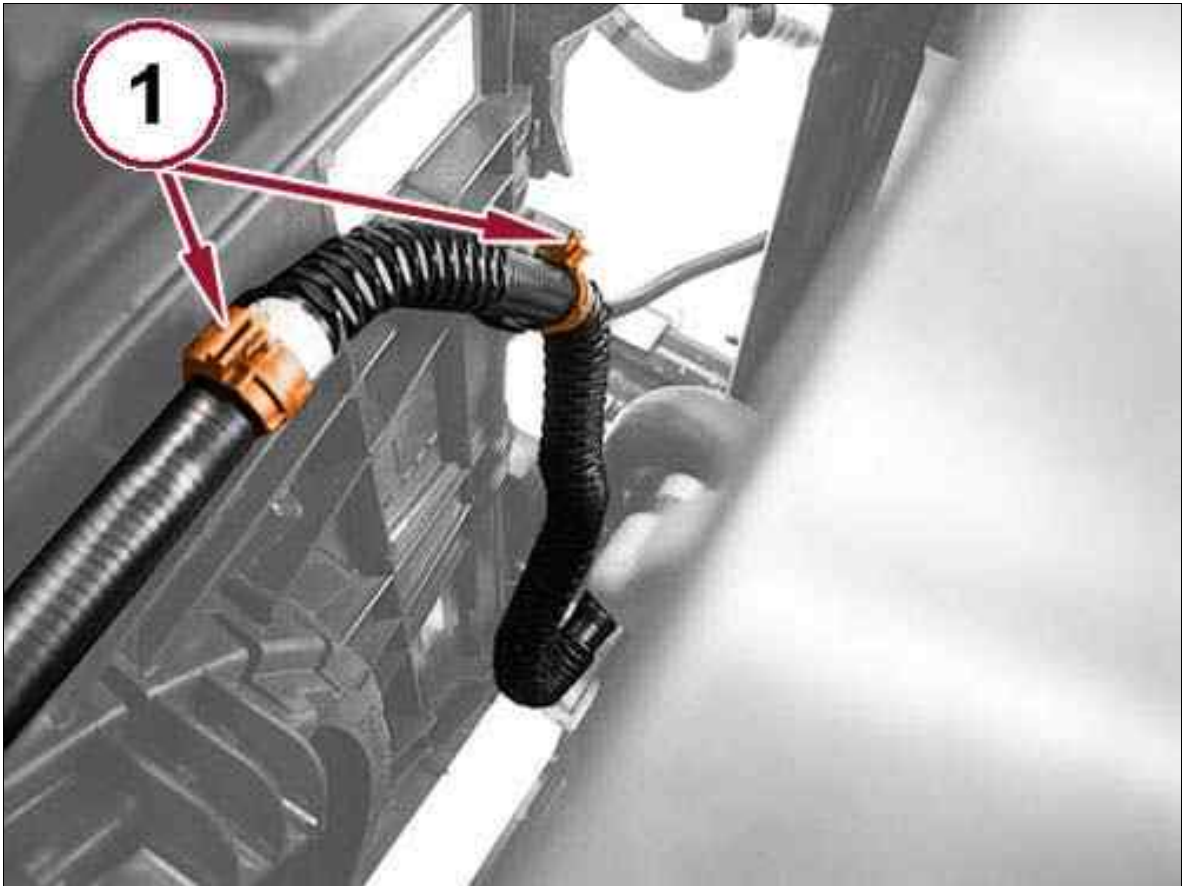
Fig 4: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

9. Disconnect the cooling fan wire harness connector (1).
10. Disconnect the cooling fan resistor wire harness connector (2).

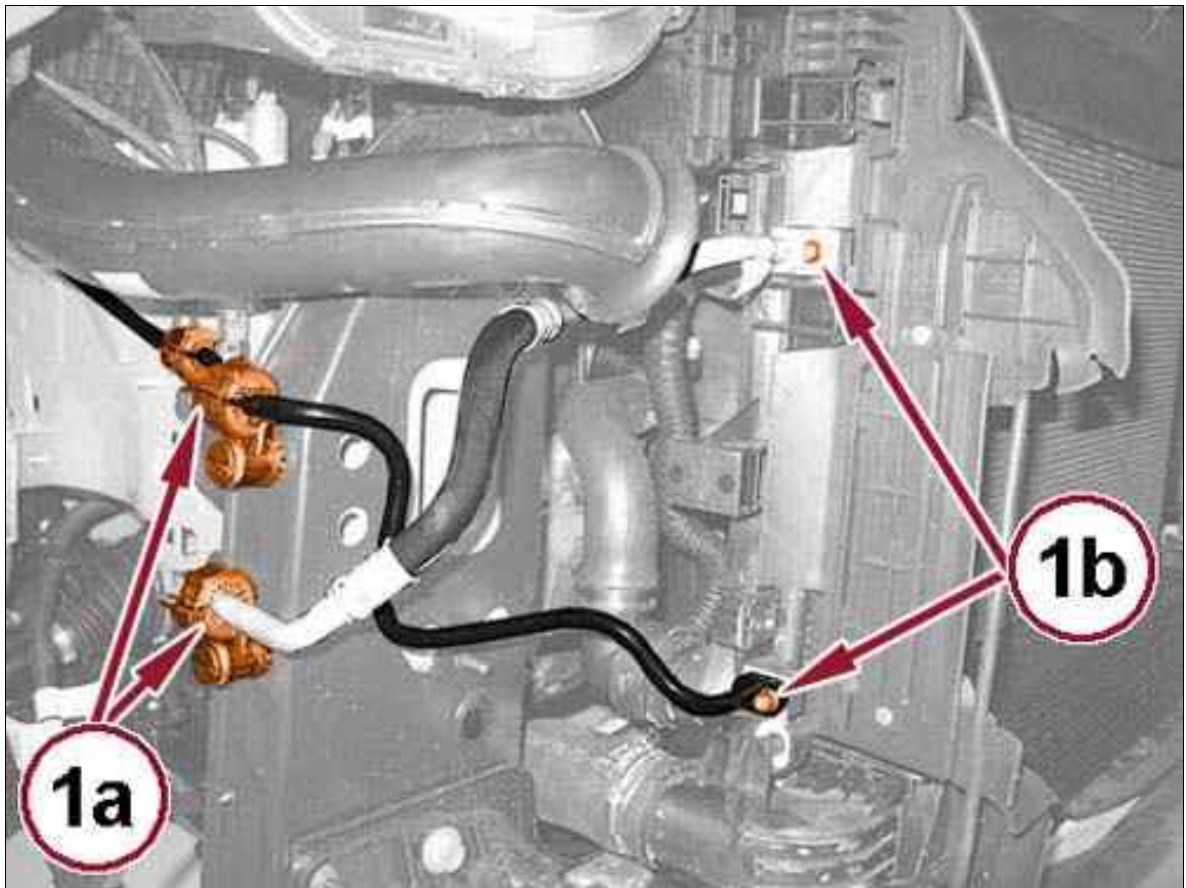
Fig 5: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

11. Open the retaining clips (1) and remove the coolant hose.

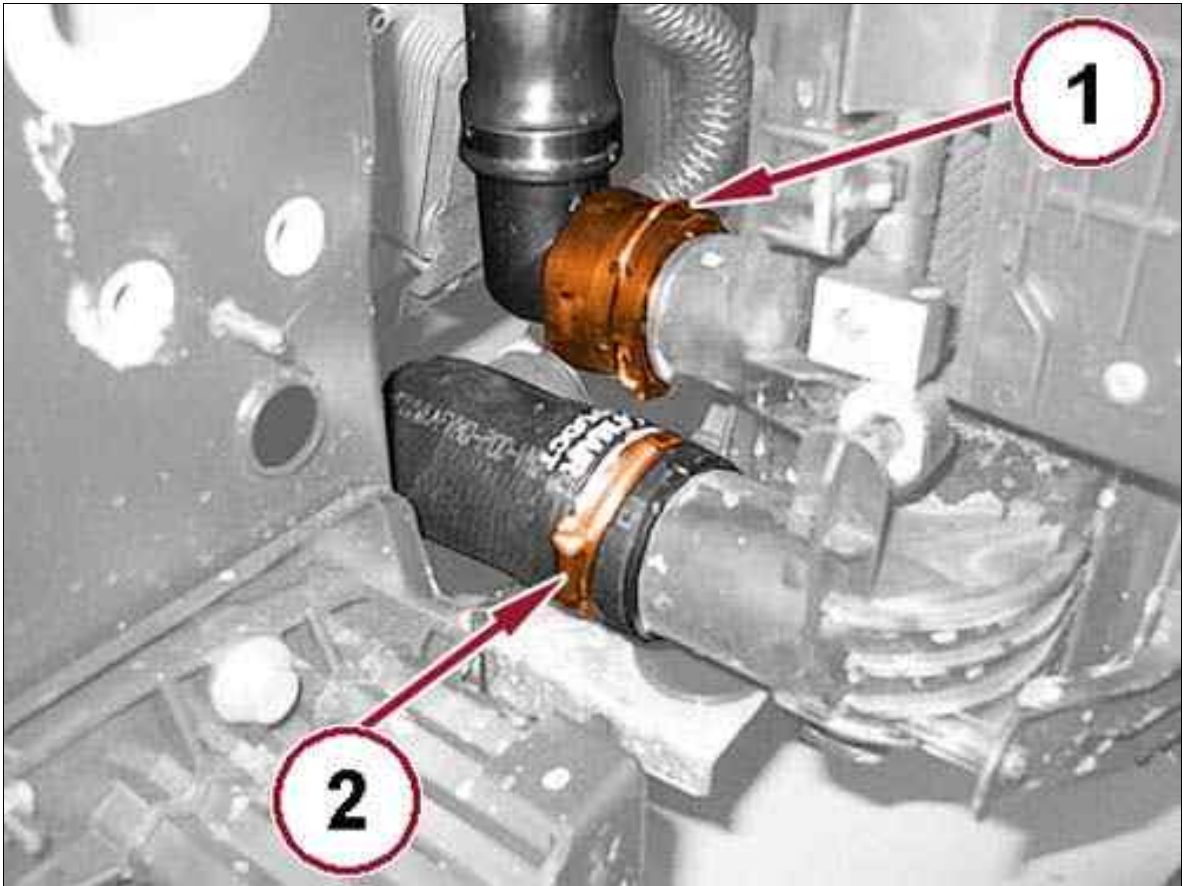
Fig 6: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Open the retaining clips (1a) then remove the bolts (1b) and the A/C lines from the condenser.

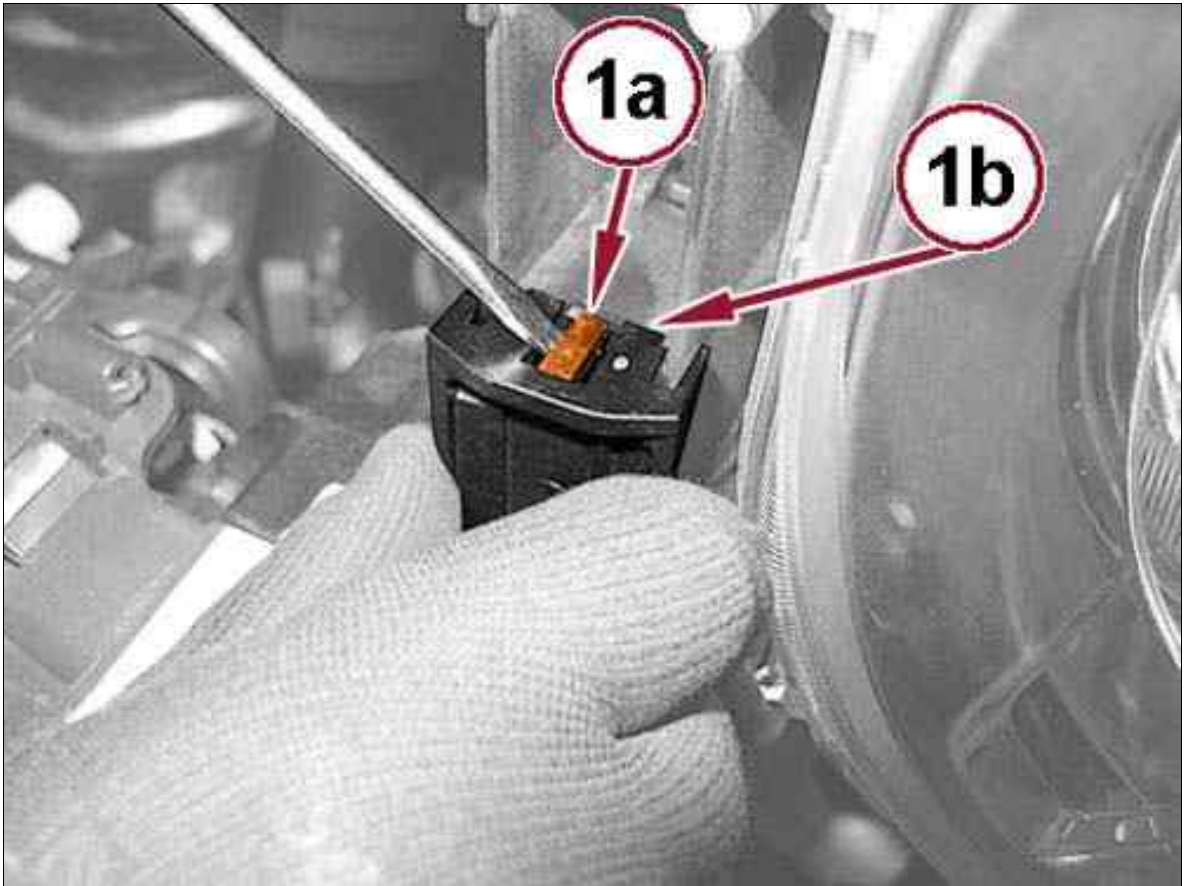
Fig 7: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

13. Release spring clip and remove the lower radiator hose (1).
14. Loosen the clamp (2) and remove the CAC hose.

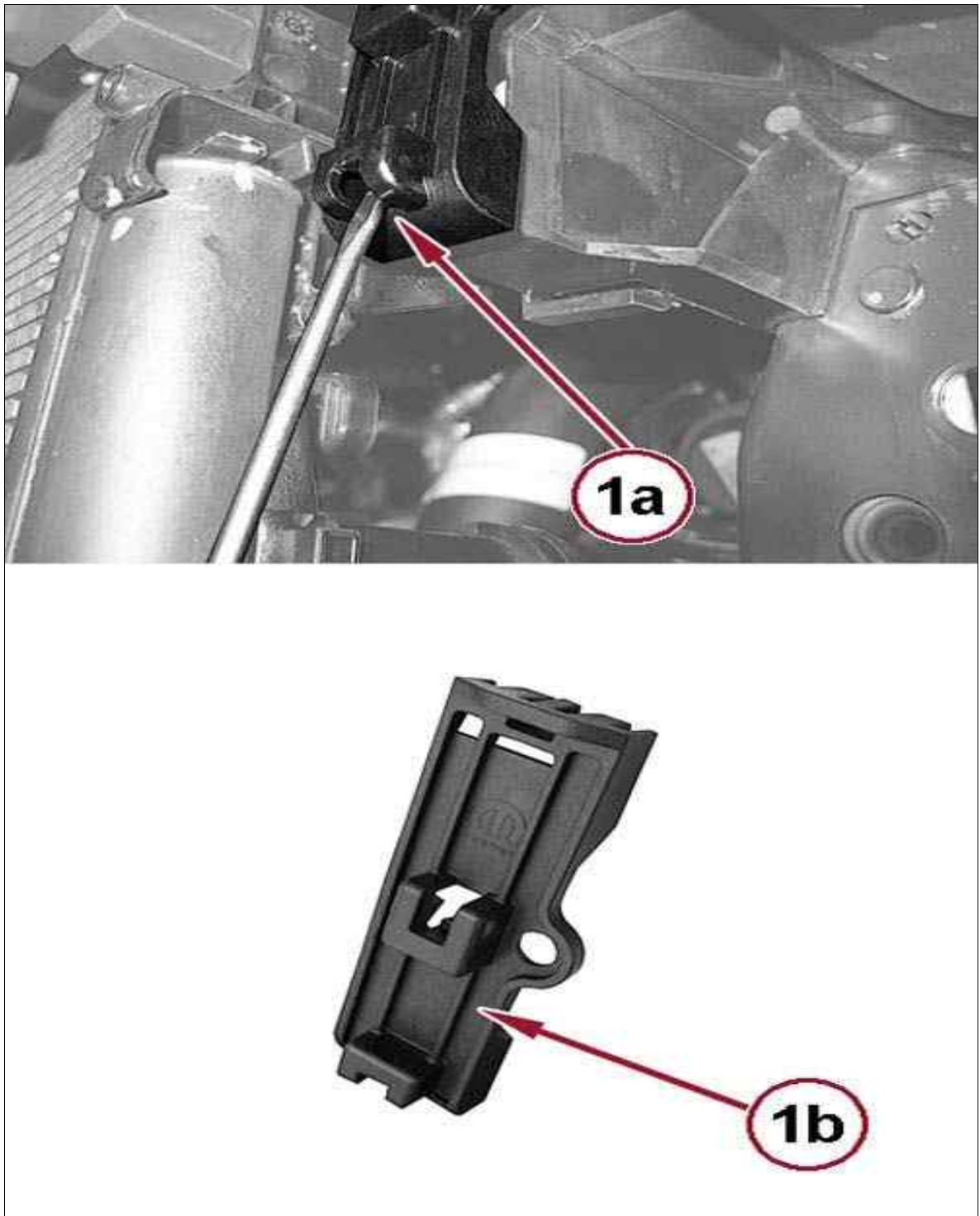
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

15. Lift the spring clip (1a) and disengage the clips (1b).

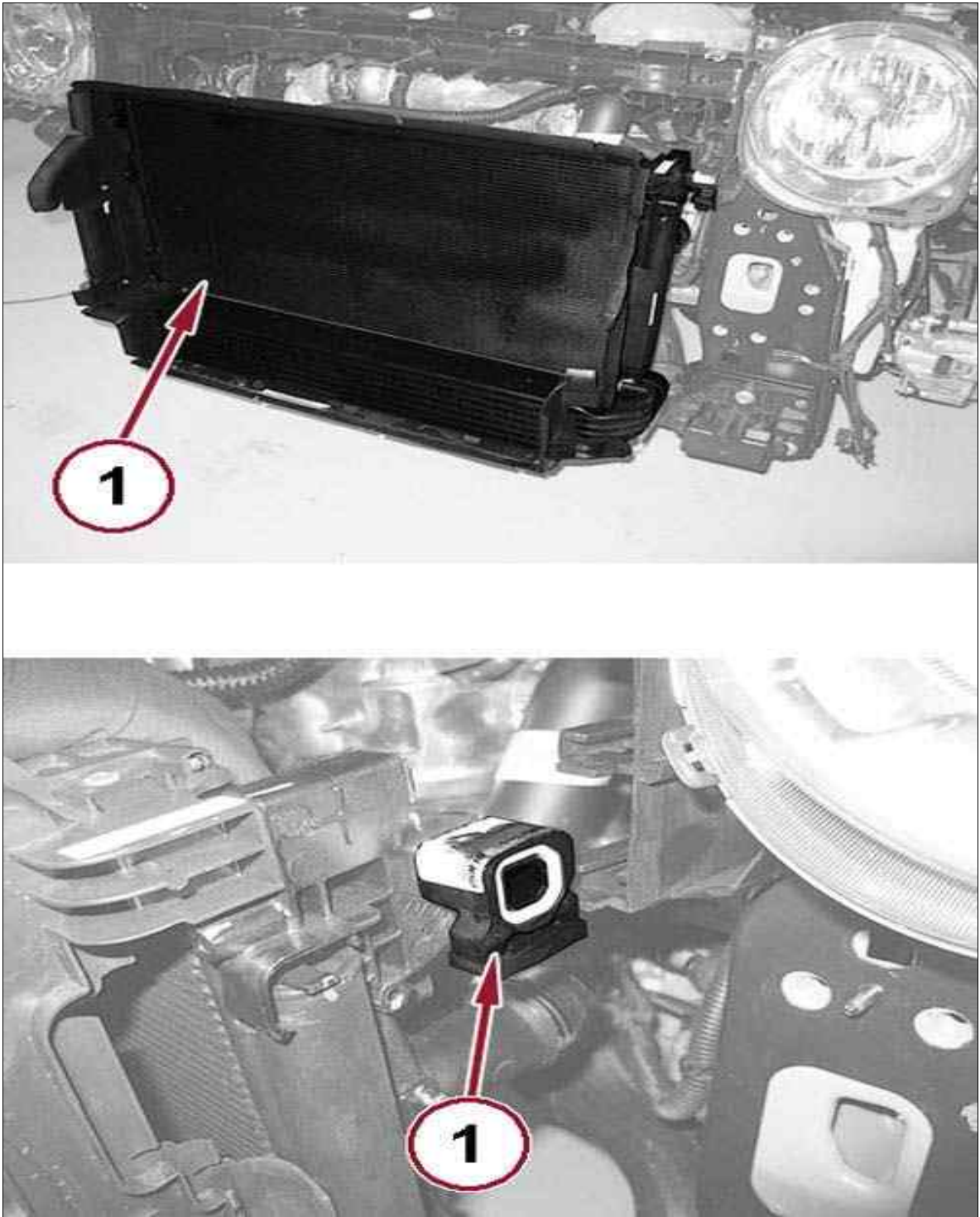
Fig 9: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

16. Working on both sides, to compress the spring (1a) to disengage and remove the radiator retaining block (1b).

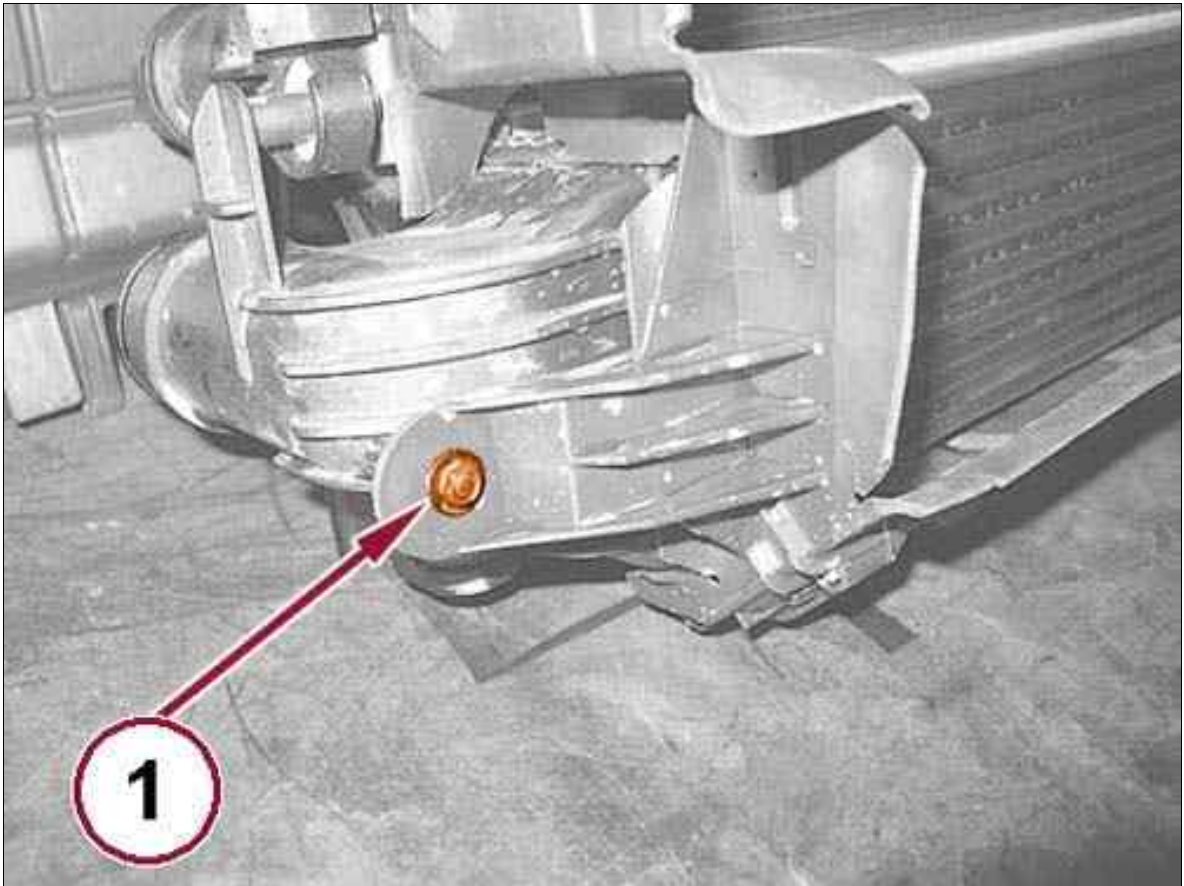
Fig 10: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

17. Working on both sides, disengage the upper tabs and remove the radiator assembly (1).

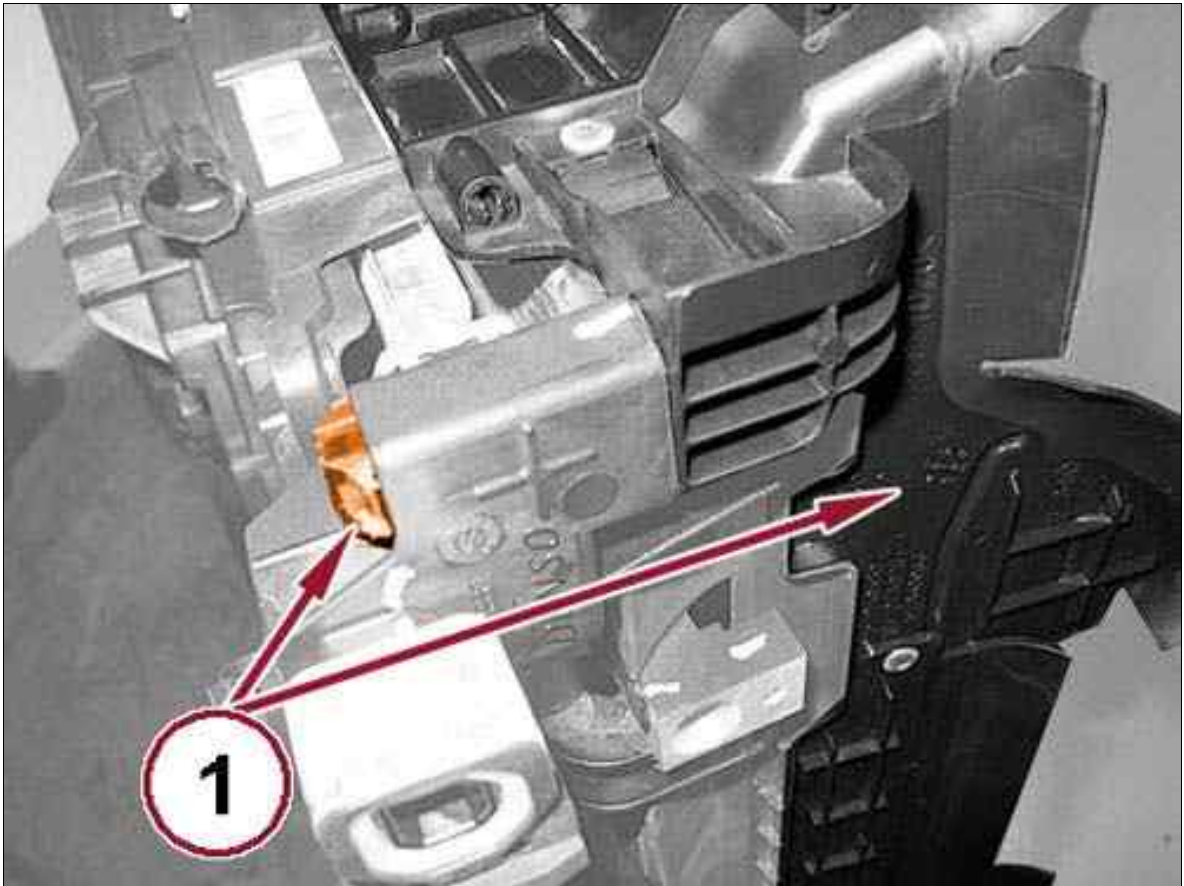
Fig 11: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

18. Remove the bolts (1) and the air deflector.

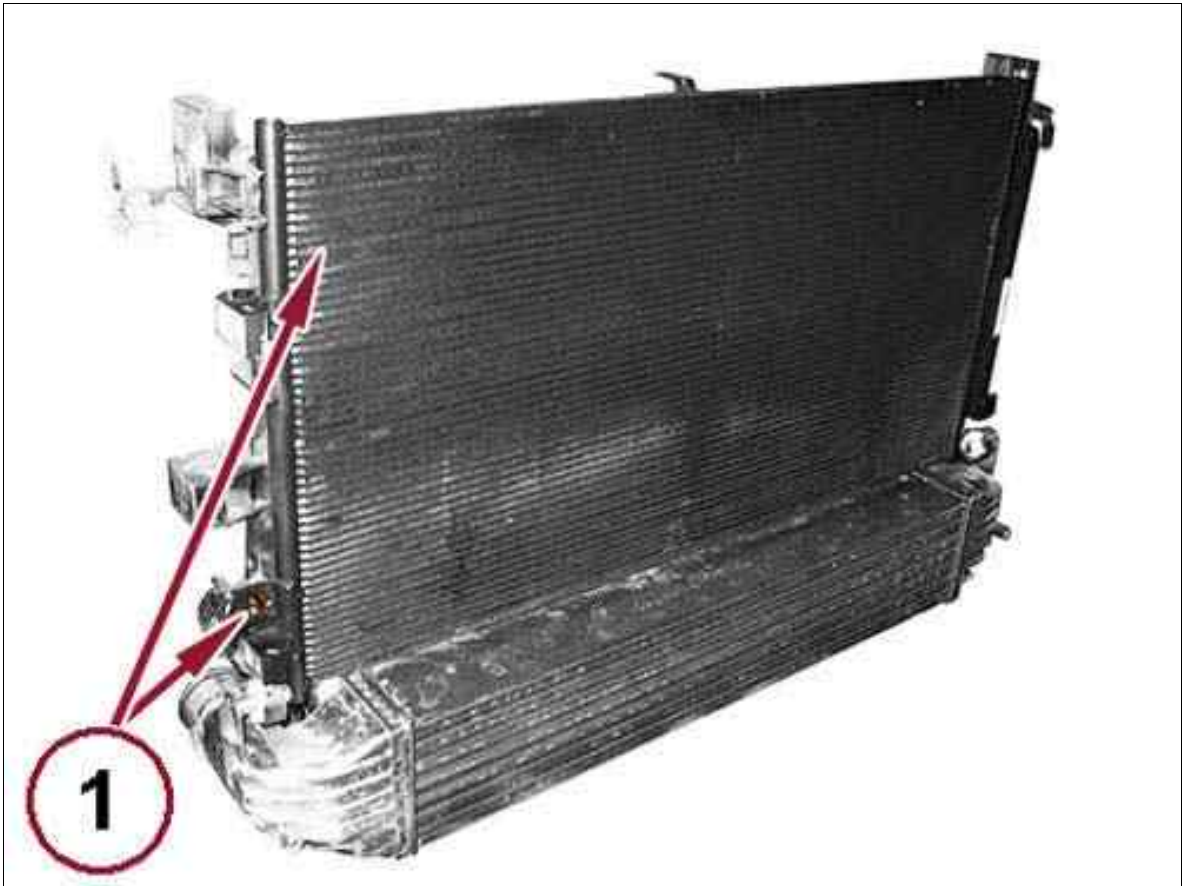
Fig 12: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

19. Detach the retaining clips and remove the air duct (1).

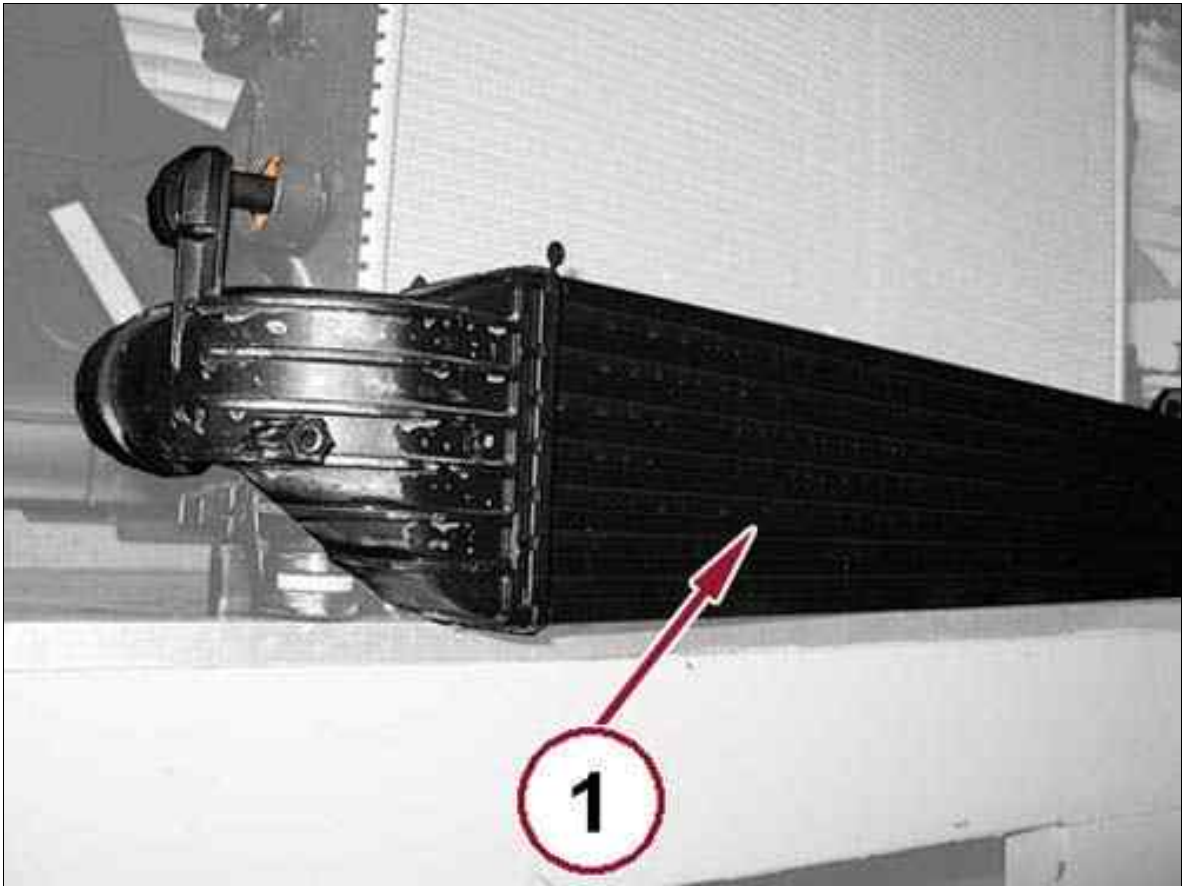
Fig 13: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

20. Compress the clips and remove the condenser (1).

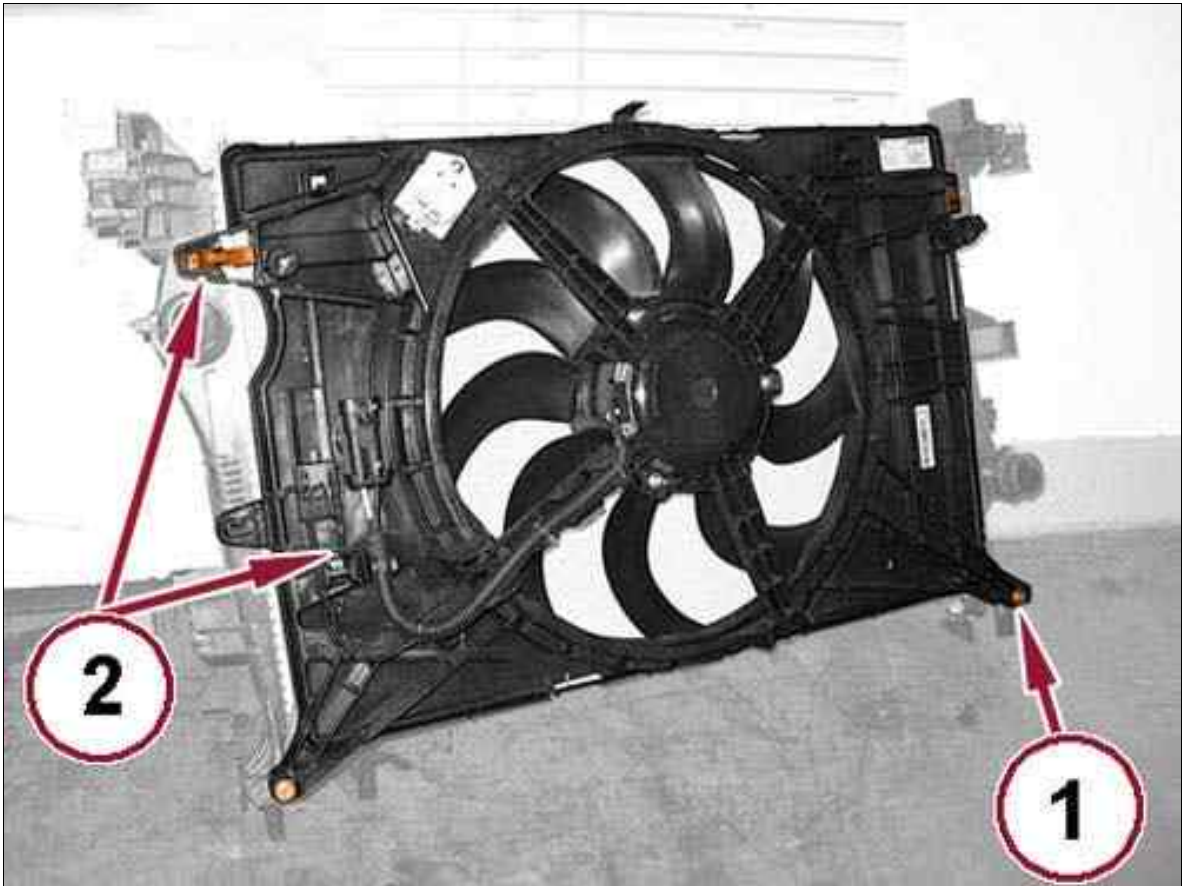
Fig 14: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

21. Unlock tabs and remove the CAC (1).

Fig 15: Cooling Fan, Clips & Bolts

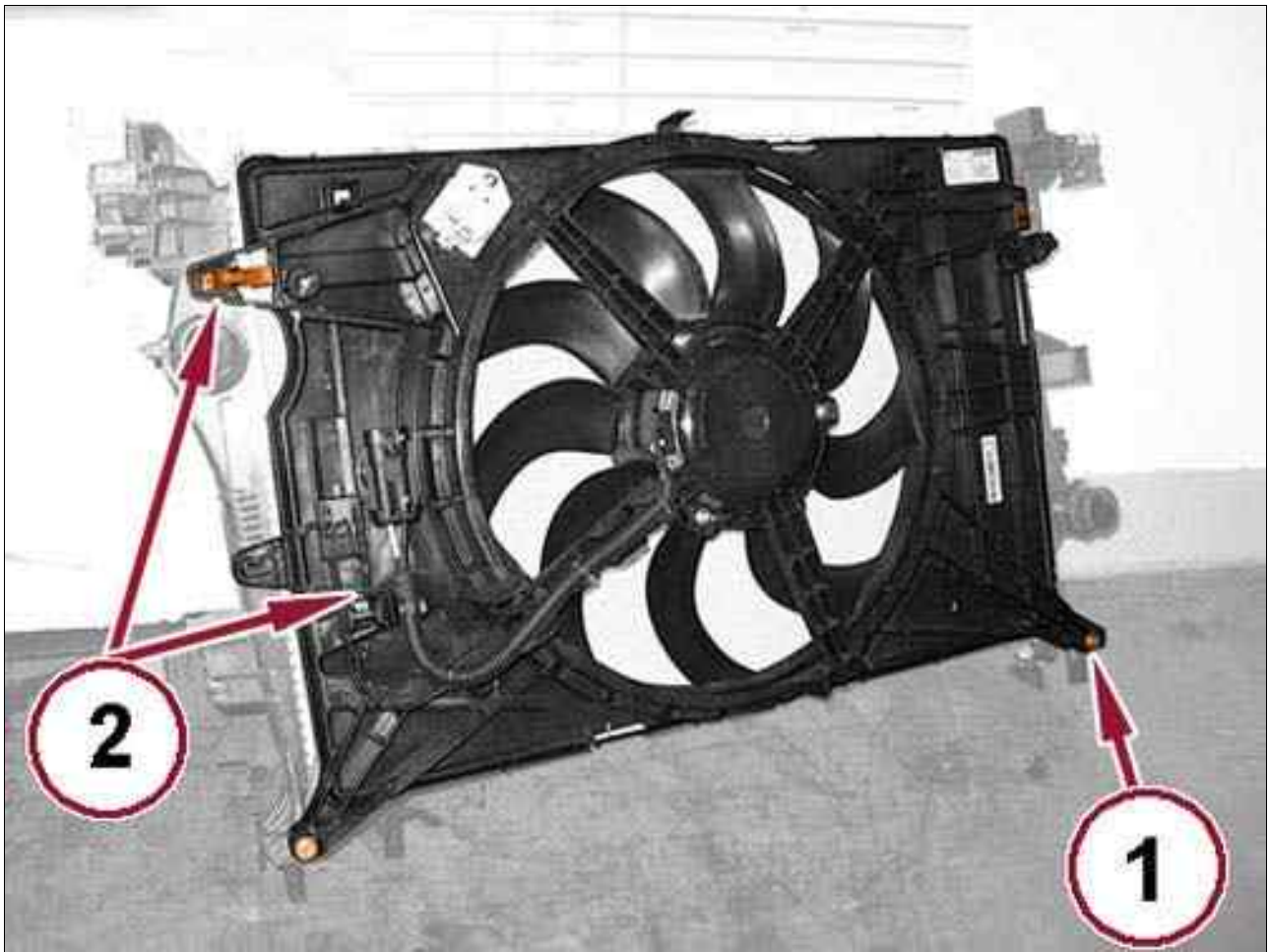


Courtesy of CHRYSLER GROUP, LLC

22. Remove the cooling fan bolts (1).
23. Unhook the clips and remove the cooling fan (2) from the radiator.

**ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 1.4L
MULTIAIR TURBO > INSTALLATION**

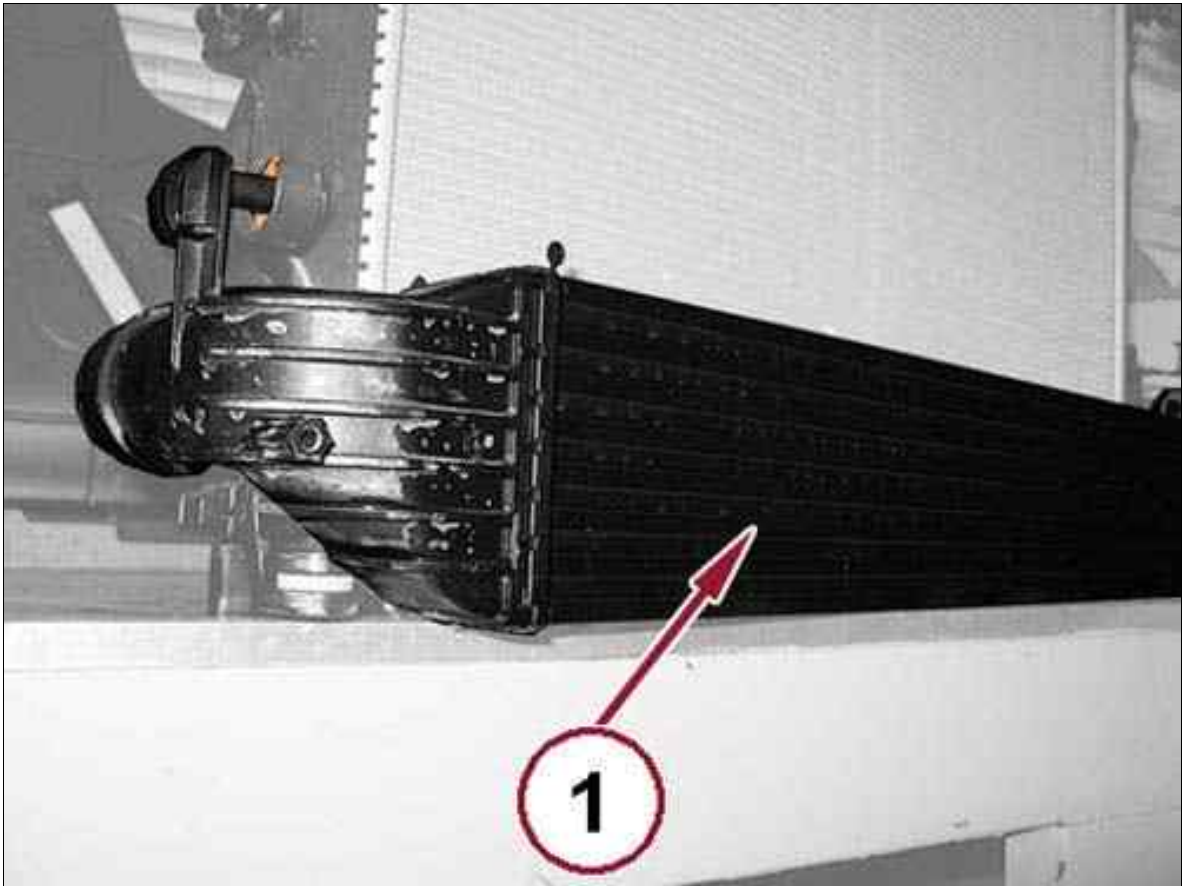
Fig 1: Cooling Fan, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan (2) onto the radiator and engage the retaining clips.
2. Install the cooling fan bolts (1) and securely tighten.

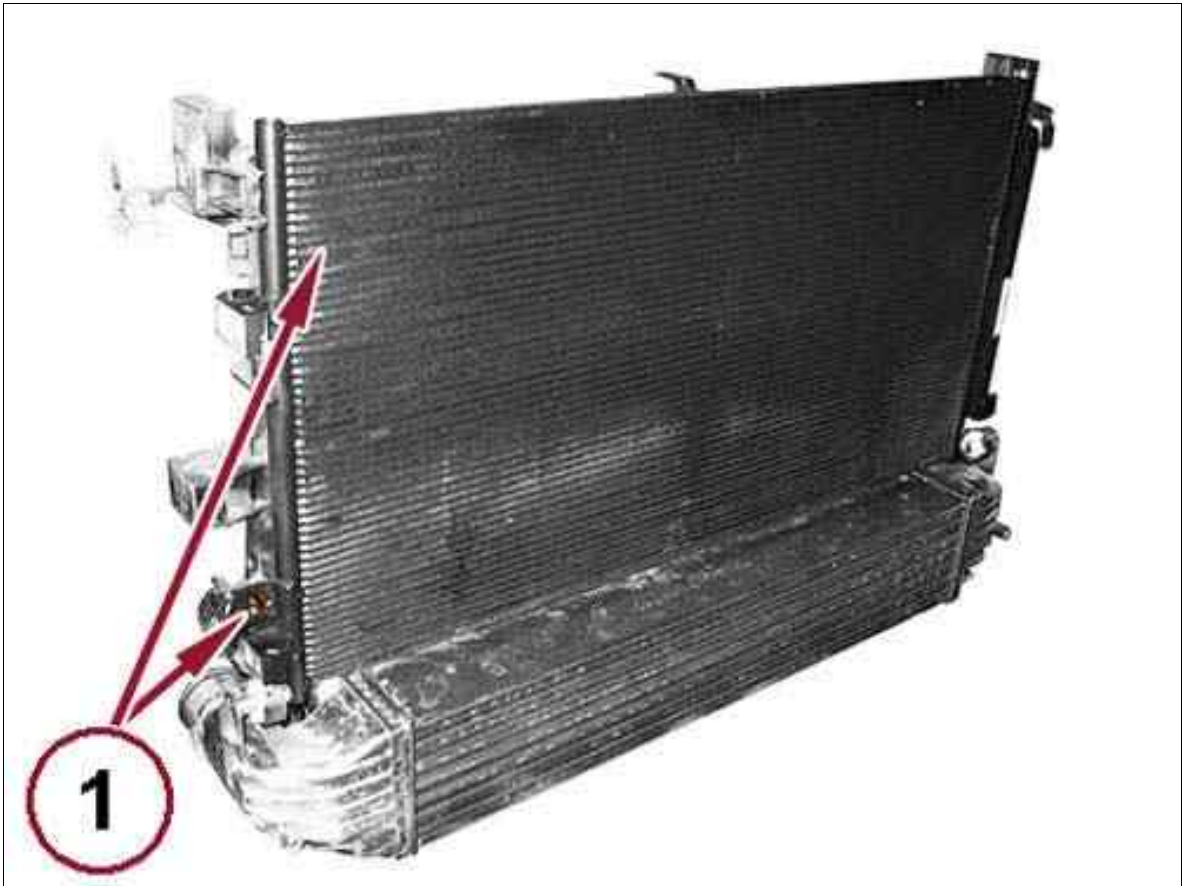
Fig 2: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

3. Install the Charge Air Cooler (1) and engage the retainers.

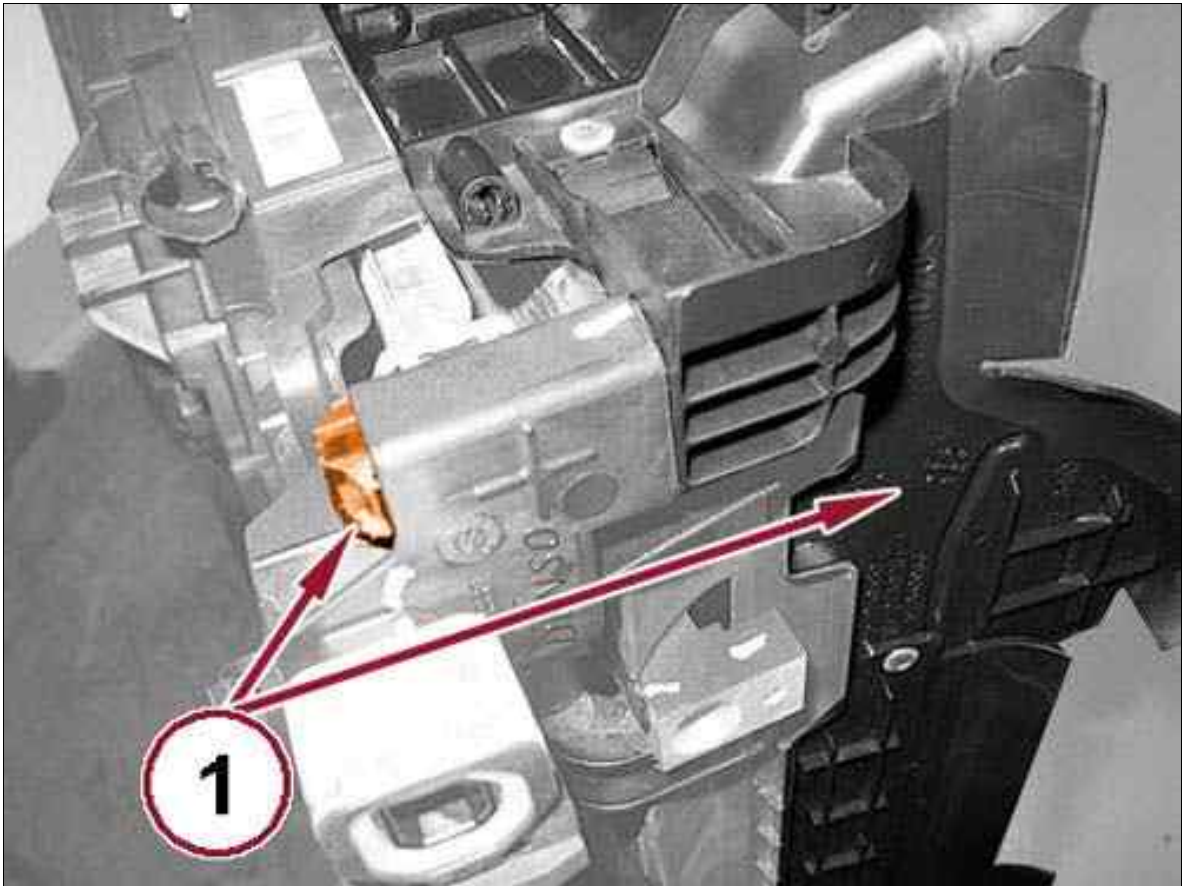
Fig 3: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

4. Install the condenser (1) to the radiator and engage the retaining clips.

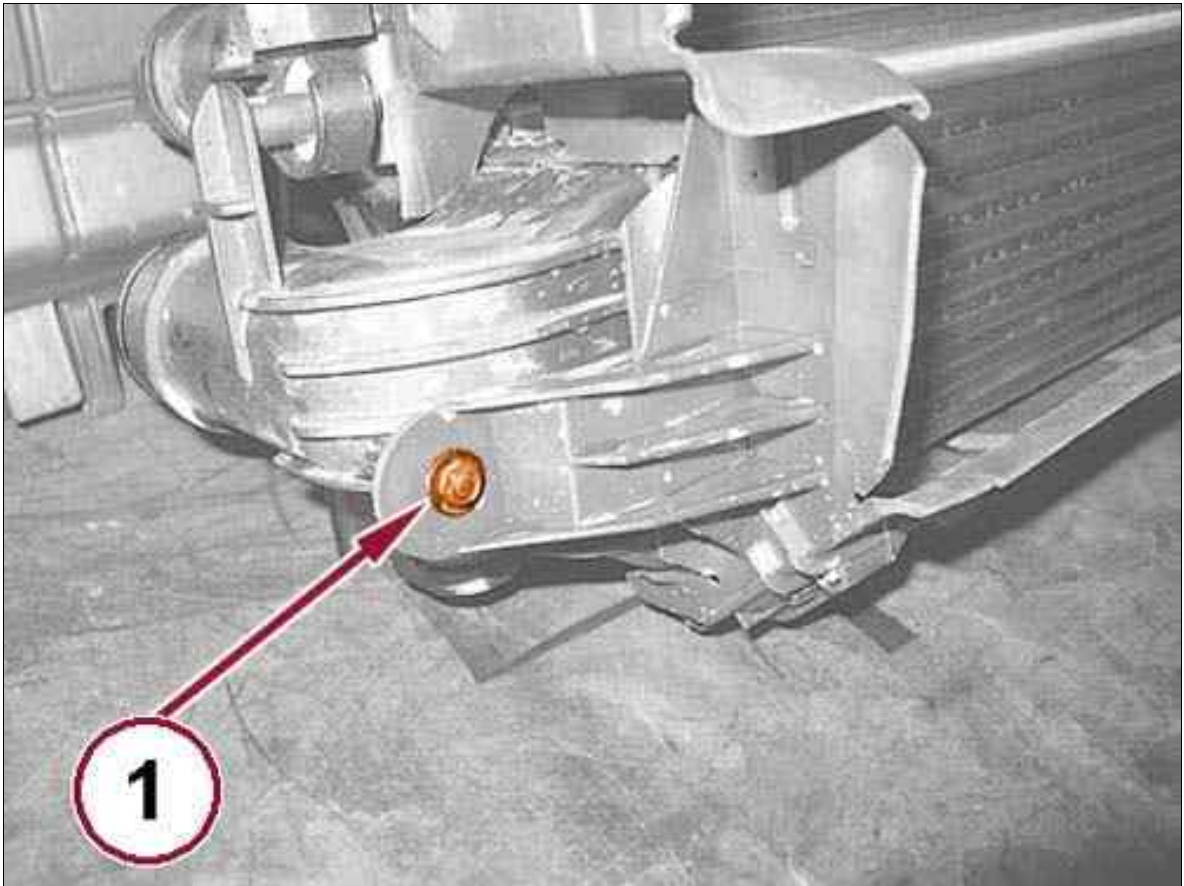
Fig 4: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

5. Install the air duct (1) and engage the retaining clips.

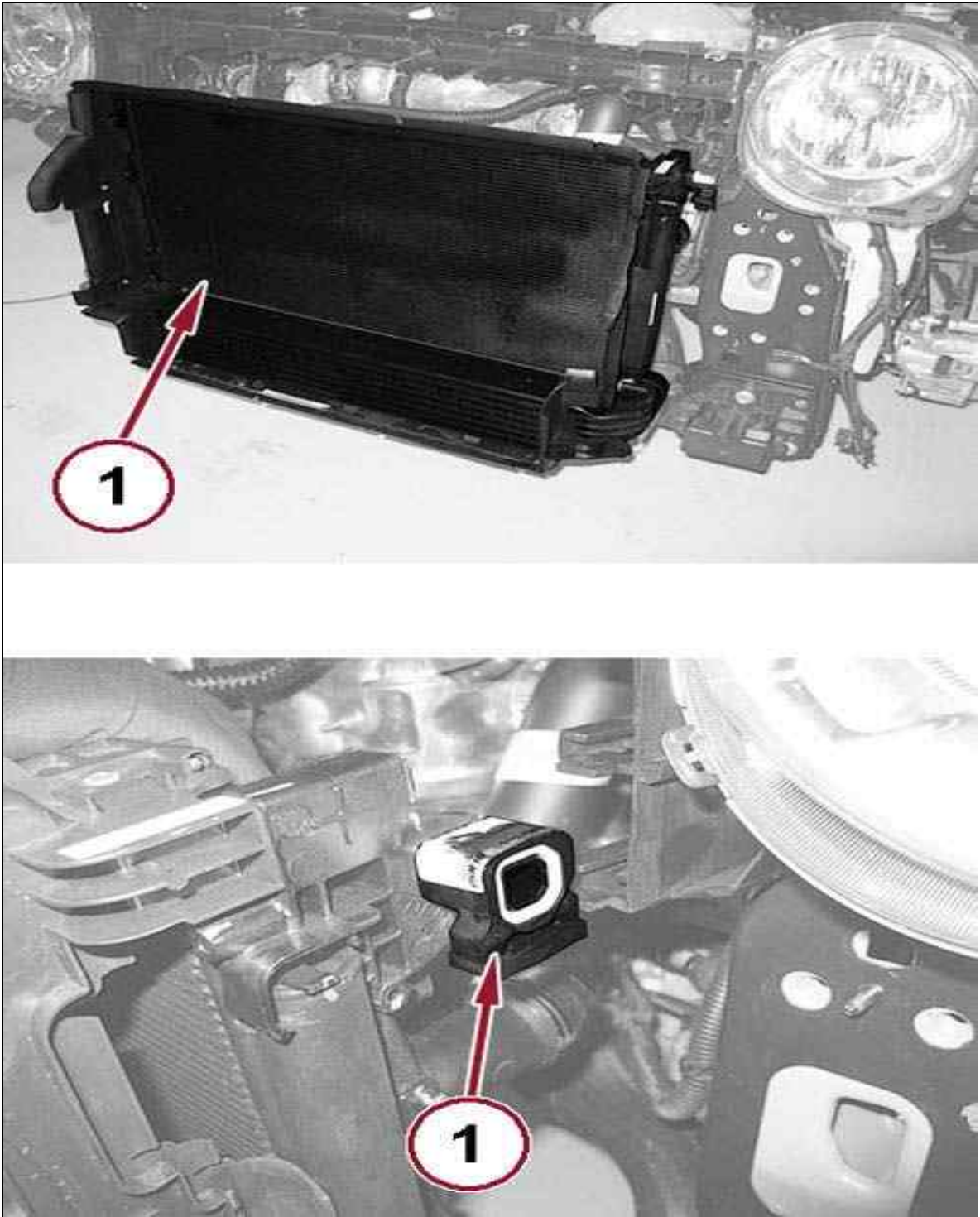
Fig 5: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

6. Install the CAC air deflector and securely tighten the bolts (1).

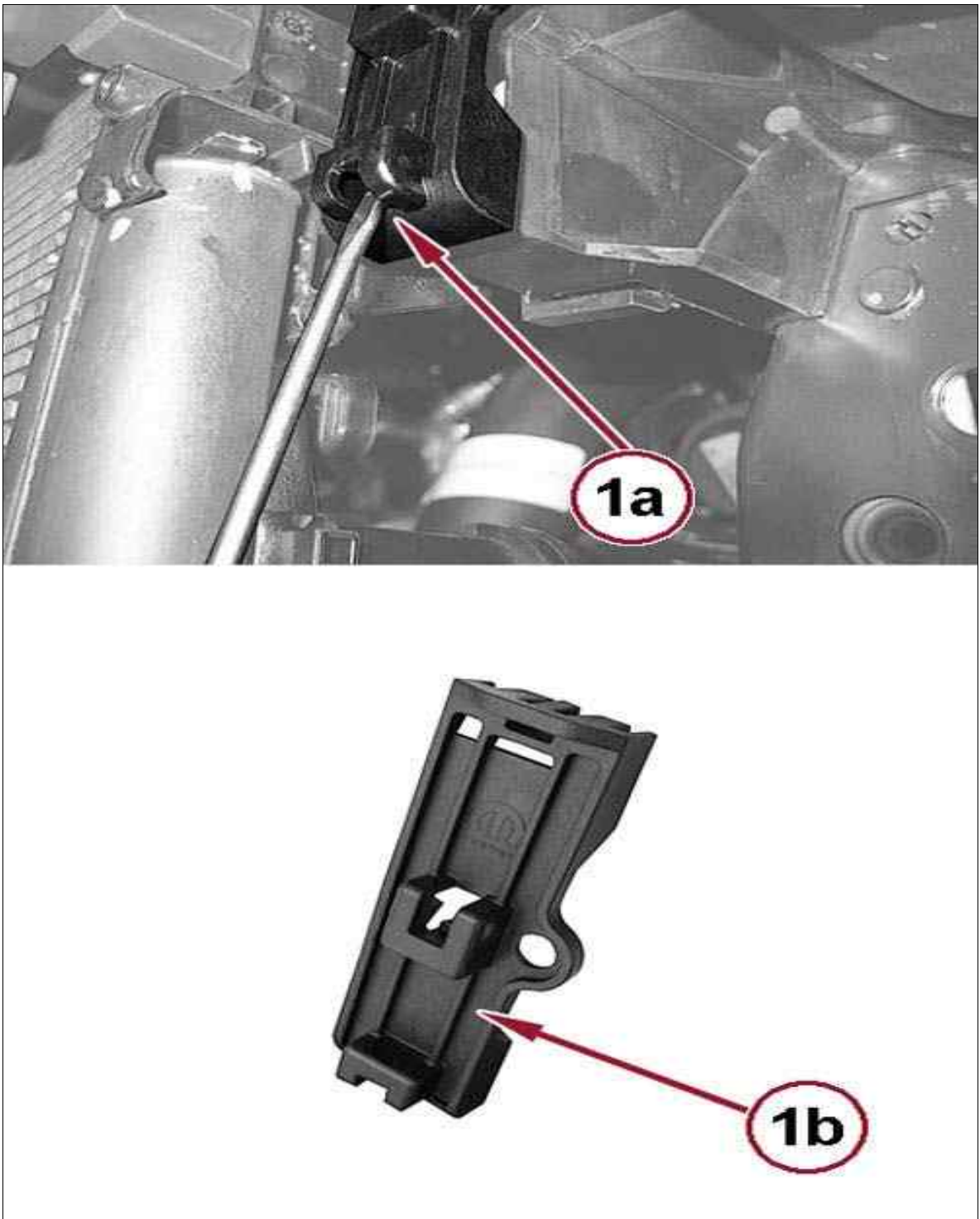
Fig 6: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

7. Install the radiator assembly (1) and engage the upper tabs on both sides.

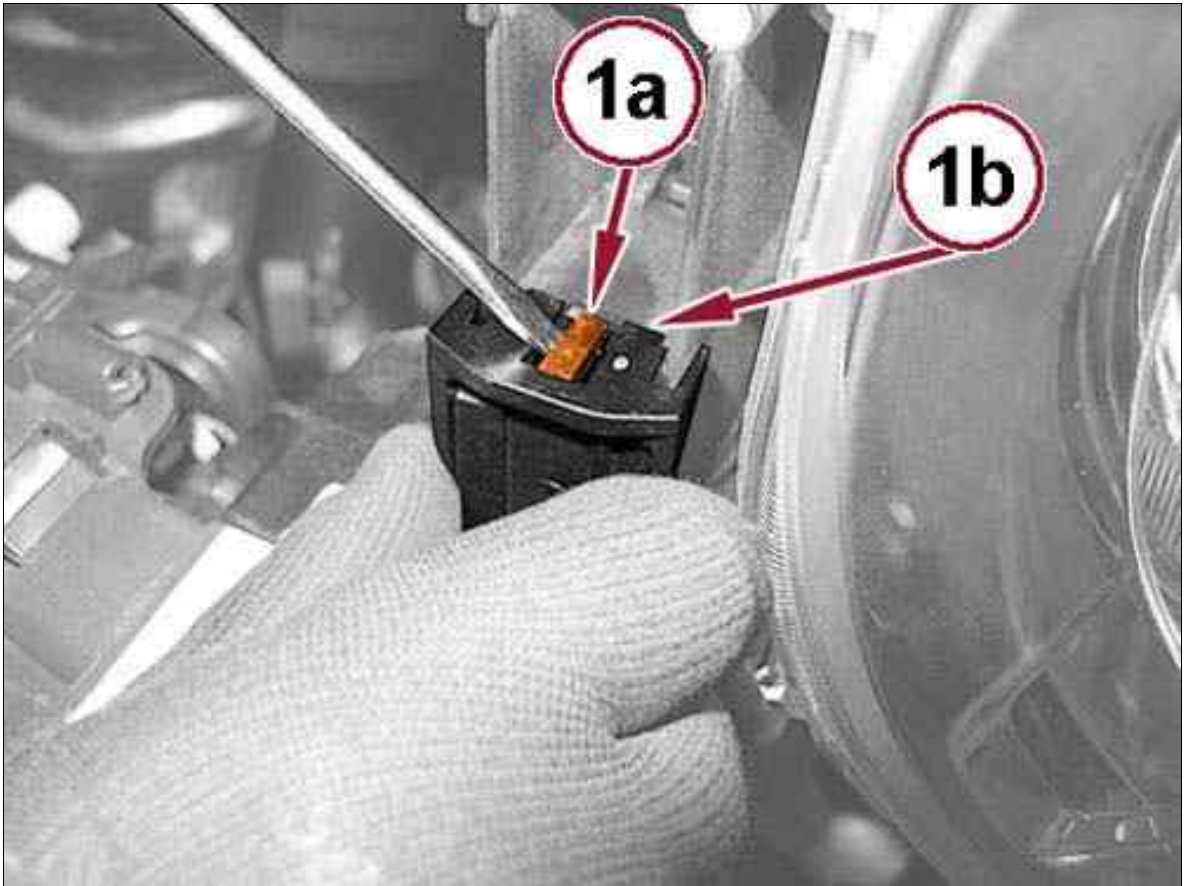
Fig 7: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

8. Install the radiator retaining block (1b) and engage the spring clips on both sides.

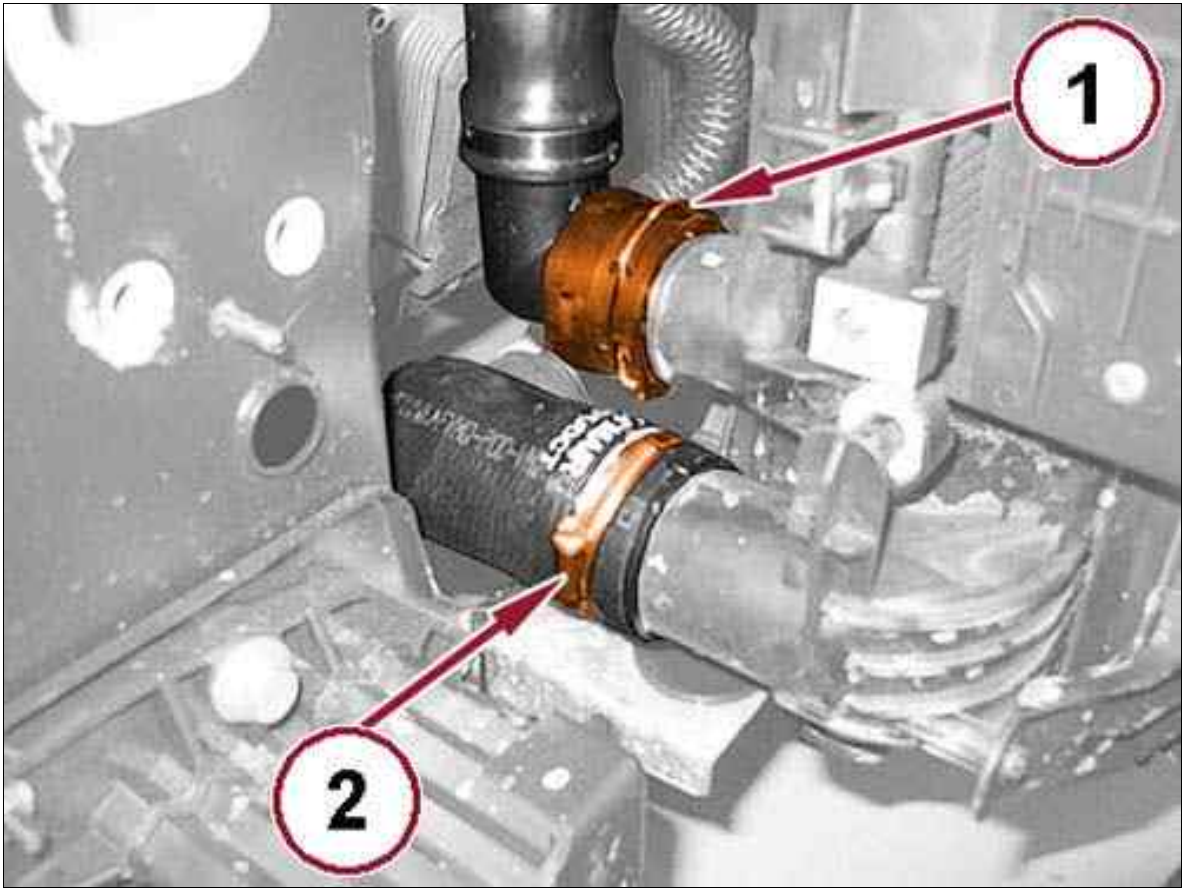
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

9. Engage the clips (1b) and lock the spring clip (1a).

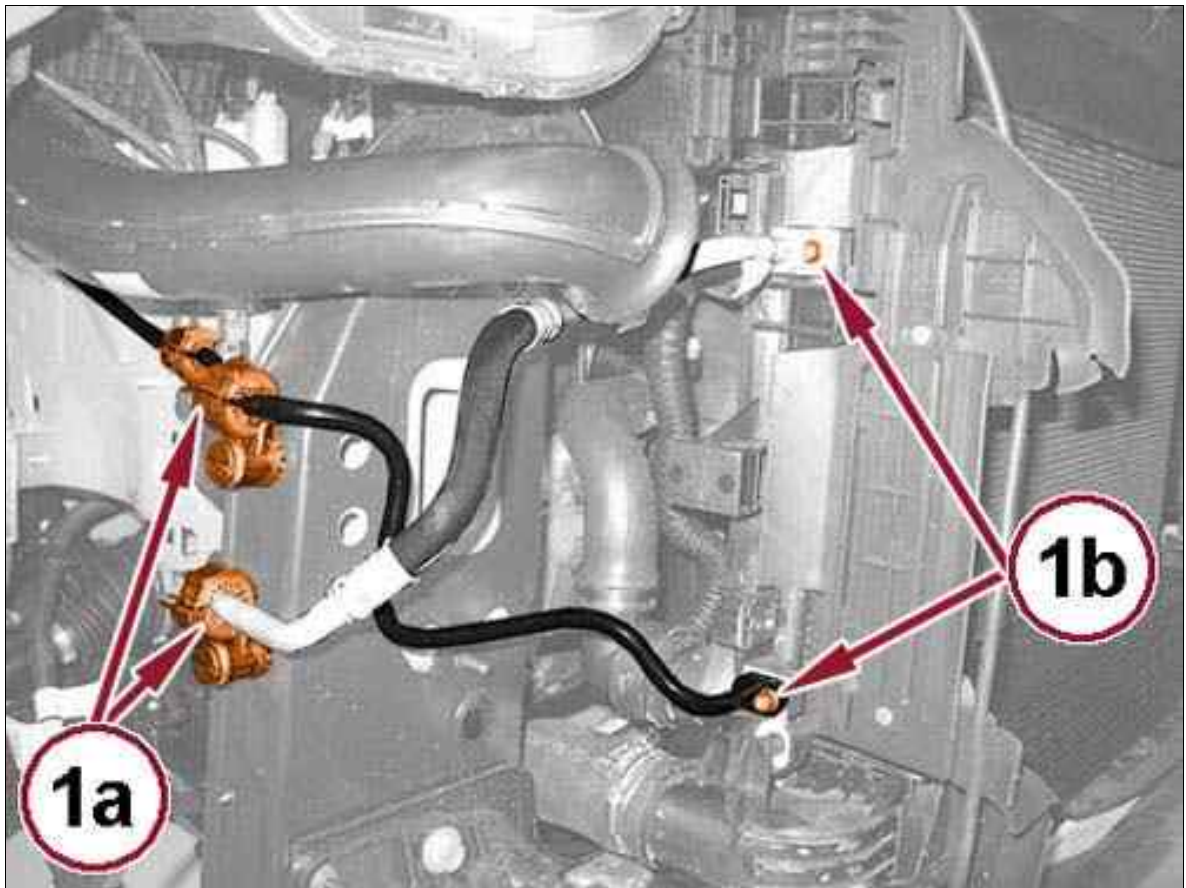
Fig 9: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

10. Install the CAC hose and securely tighten the clamp (2).
11. Install the lower radiator hose (1) and engage the spring clip.

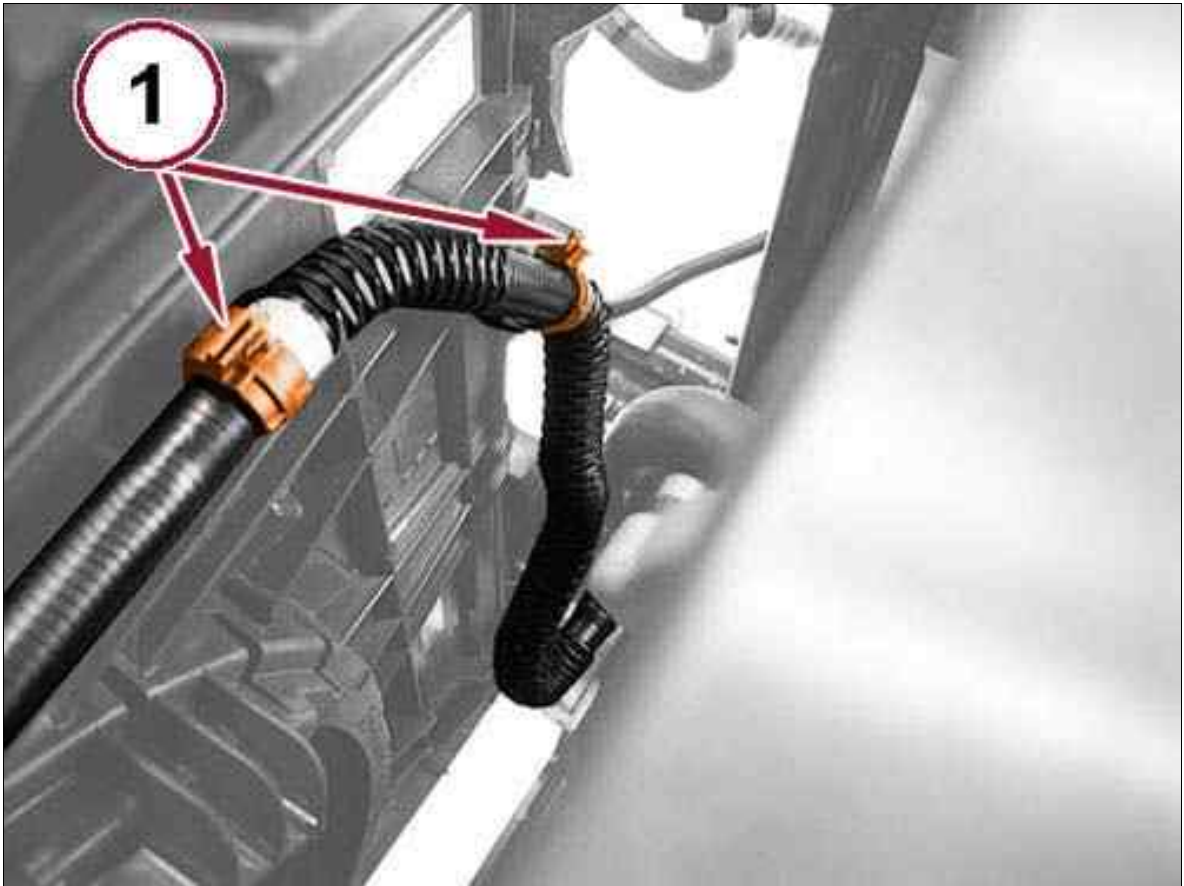
Fig 10: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Install the A/C lines to the condenser and securely tighten the bolts (1b) and close the retainer clips (1a).

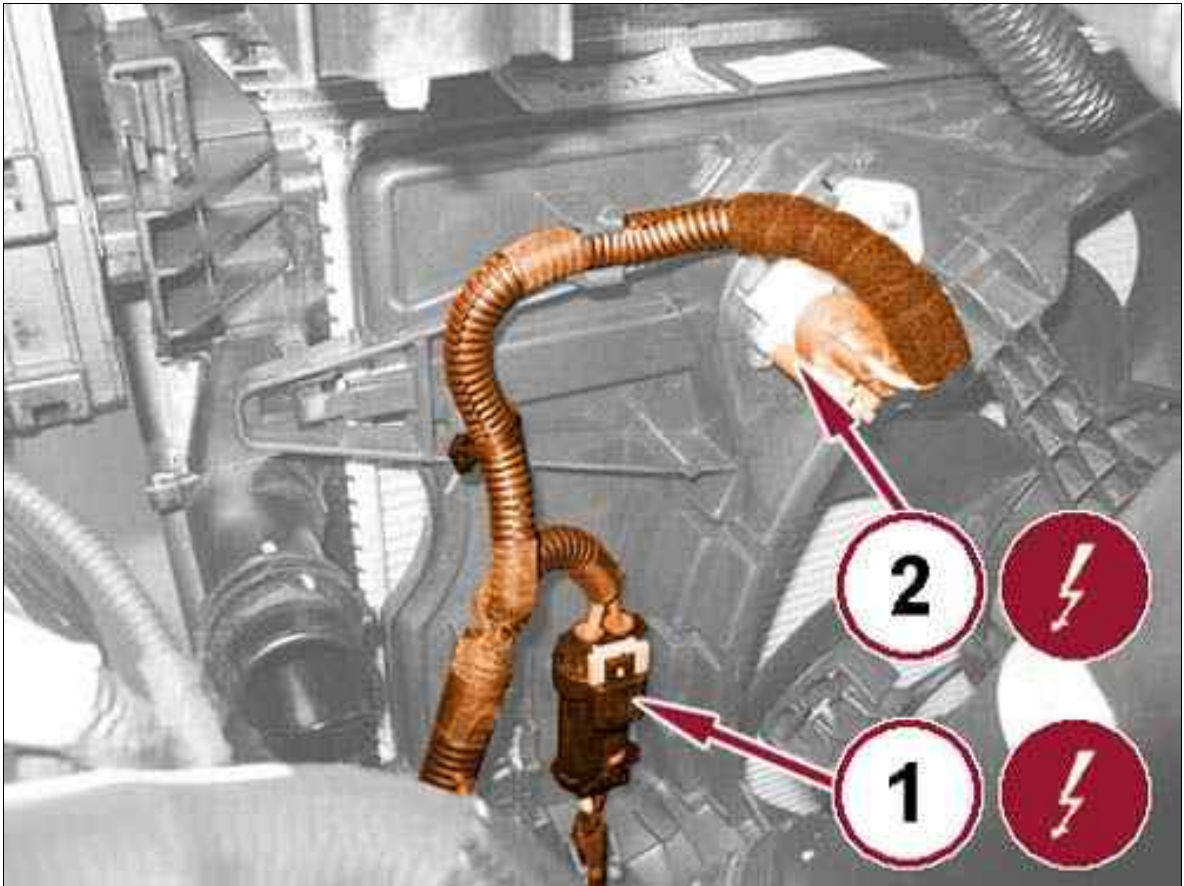
Fig 11: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

13. Install the coolant hose and close the retaining clips (1).

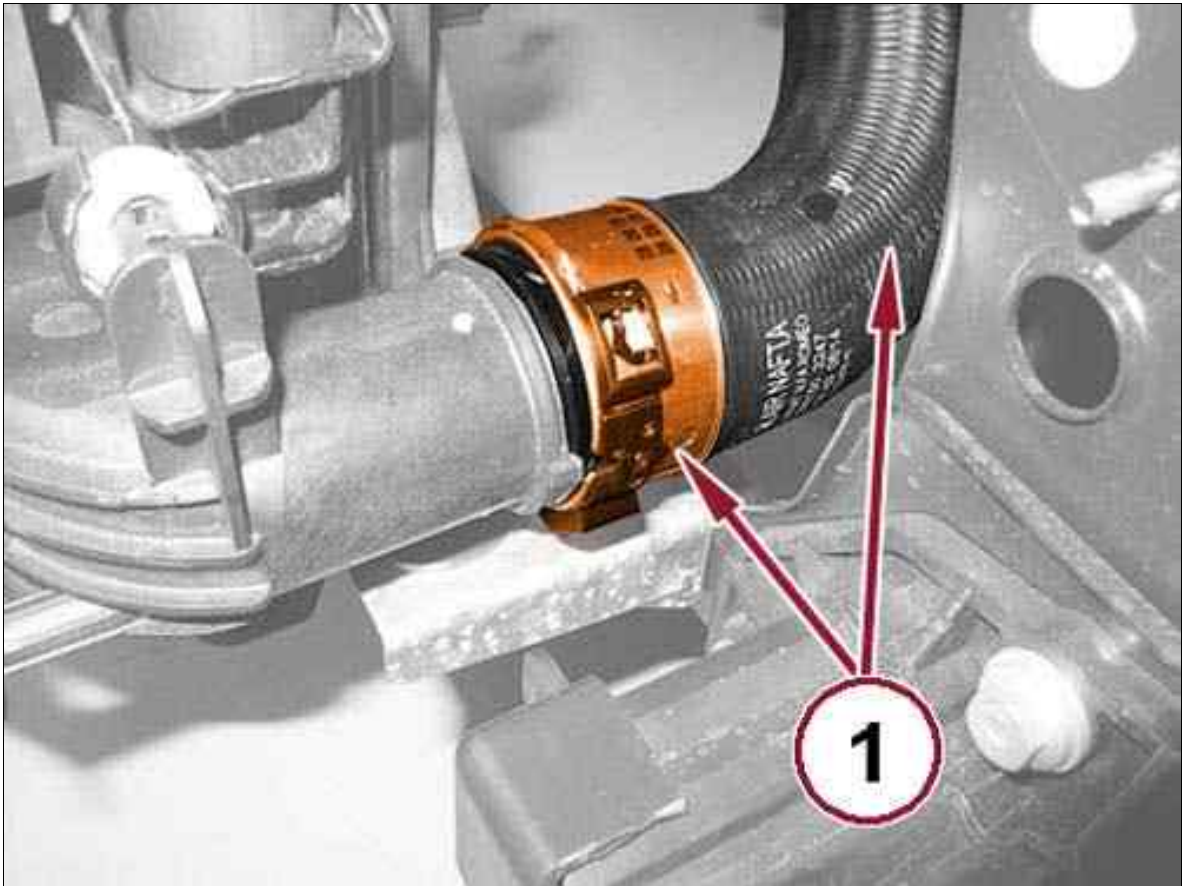
Fig 12: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

14. Connect the cooling fan resistor wire harness connector (2).
15. Connect the cooling fan wire harness connector (1).

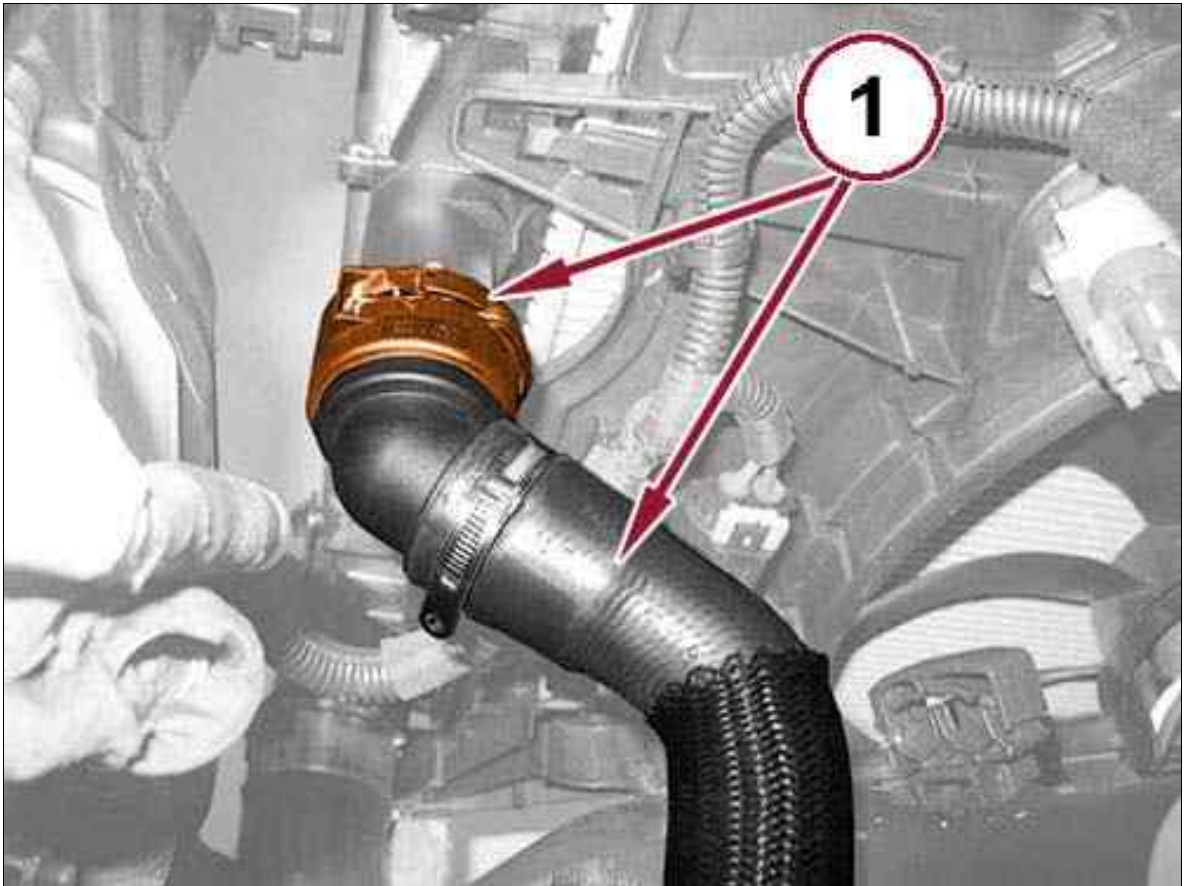
Fig 13: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

16. Install the CAC hose (1) and engage the spring clip.

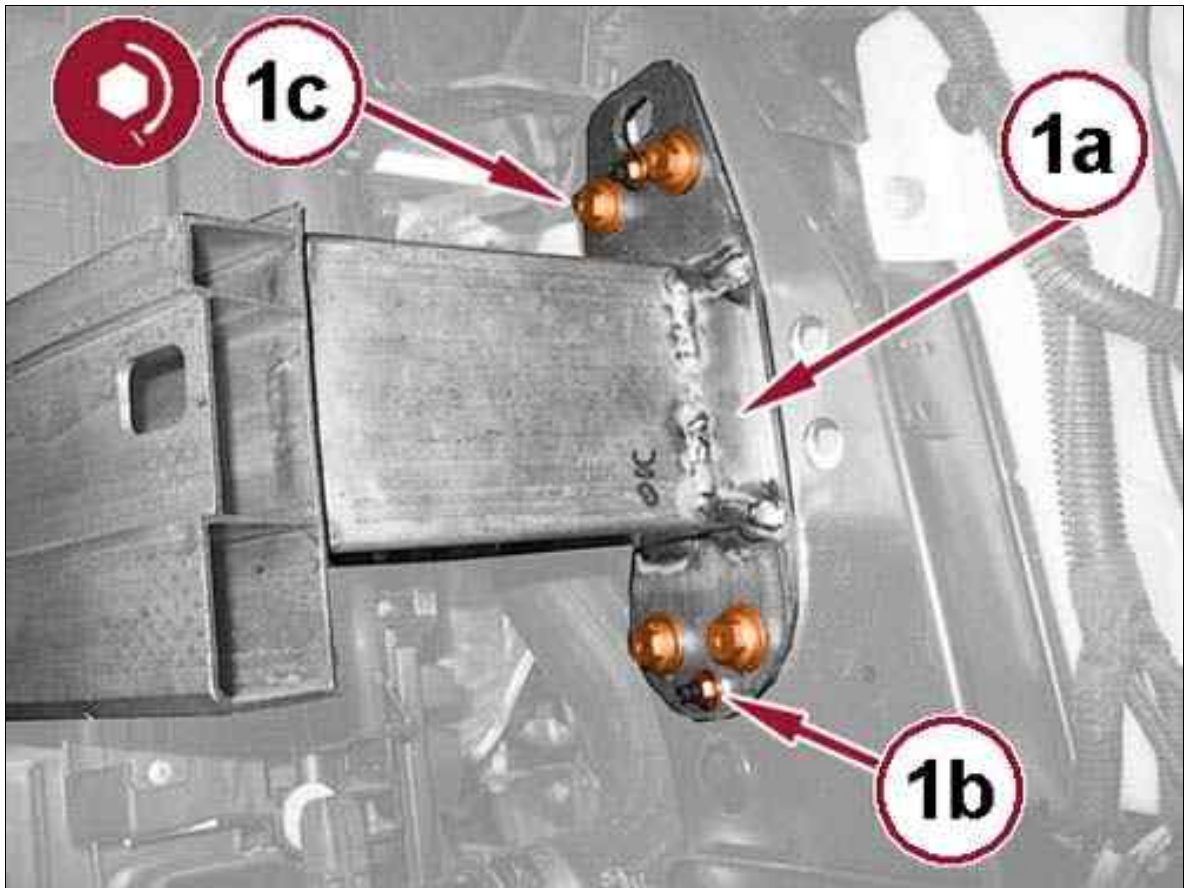
Fig 14: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

17. Install the upper radiator hose (1) and engage the spring clip.

Fig 15: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

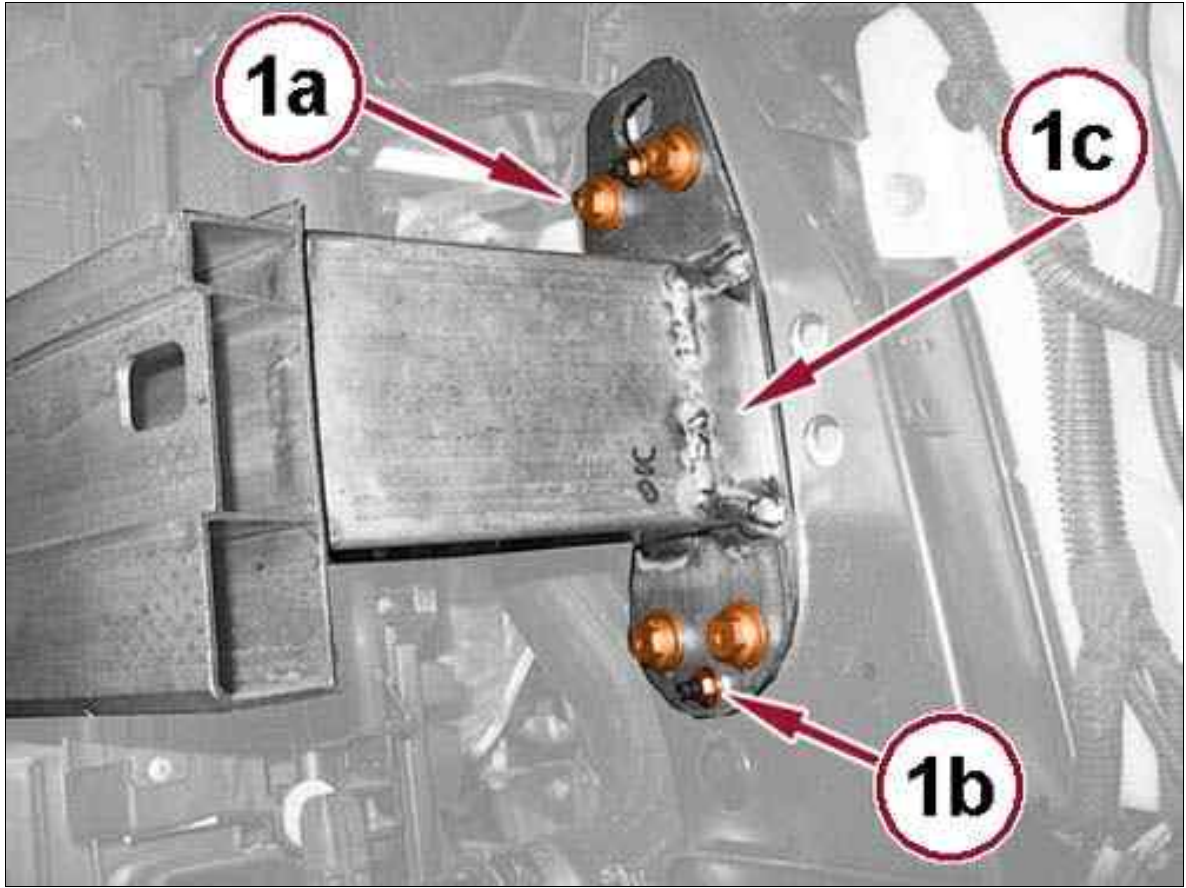
18. Install the front bumper crossbar (1a) and working from both sides, tighten the bolts (1c) and the nuts (1b) to the proper specification. Refer to SPECIFICATIONS .
19. Install the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
20. Fill the cooling system. Refer to STANDARD PROCEDURE .
21. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
22. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
23. Connect the negative battery cable.

ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 1.6L DIESEL > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
3. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

5. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

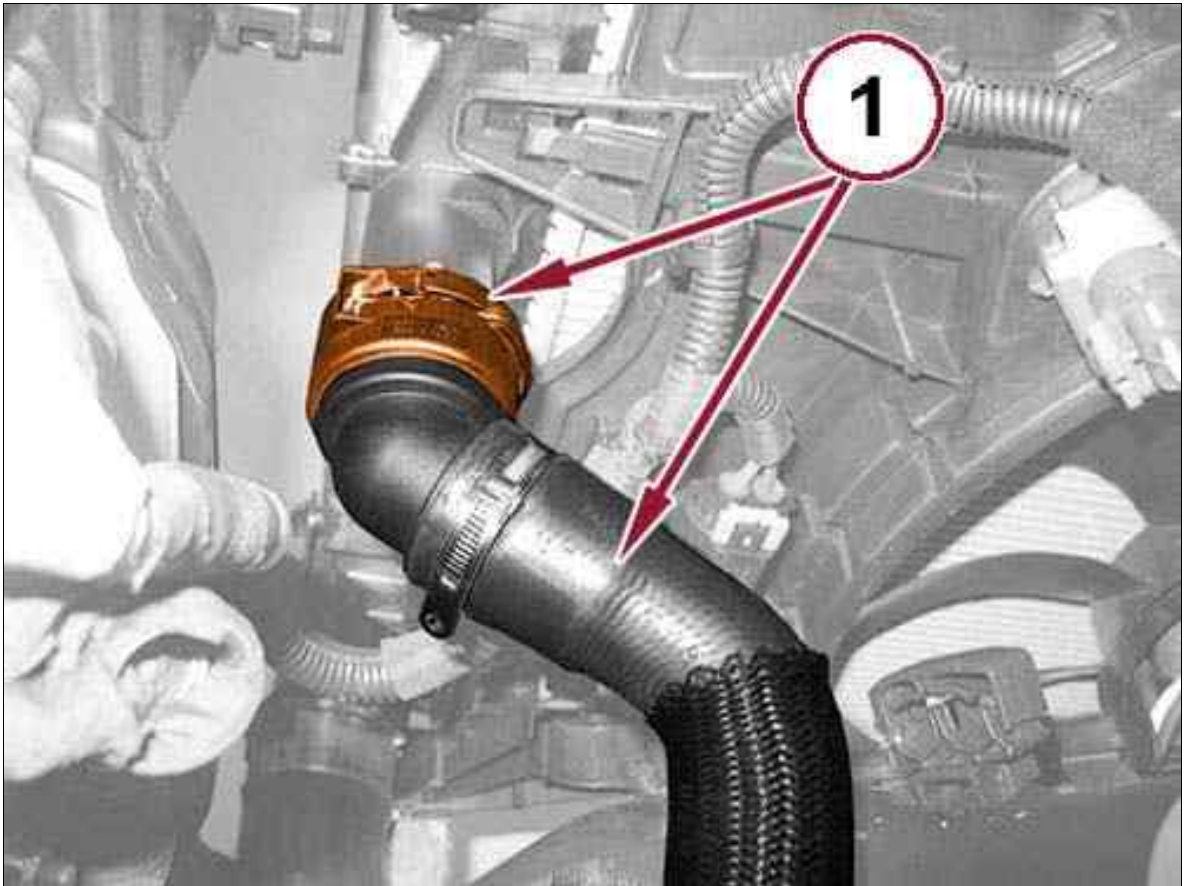
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

6. Working on both sides, remove the bolts (1a), nuts (1b) and the front bumper reinforcement (1c).

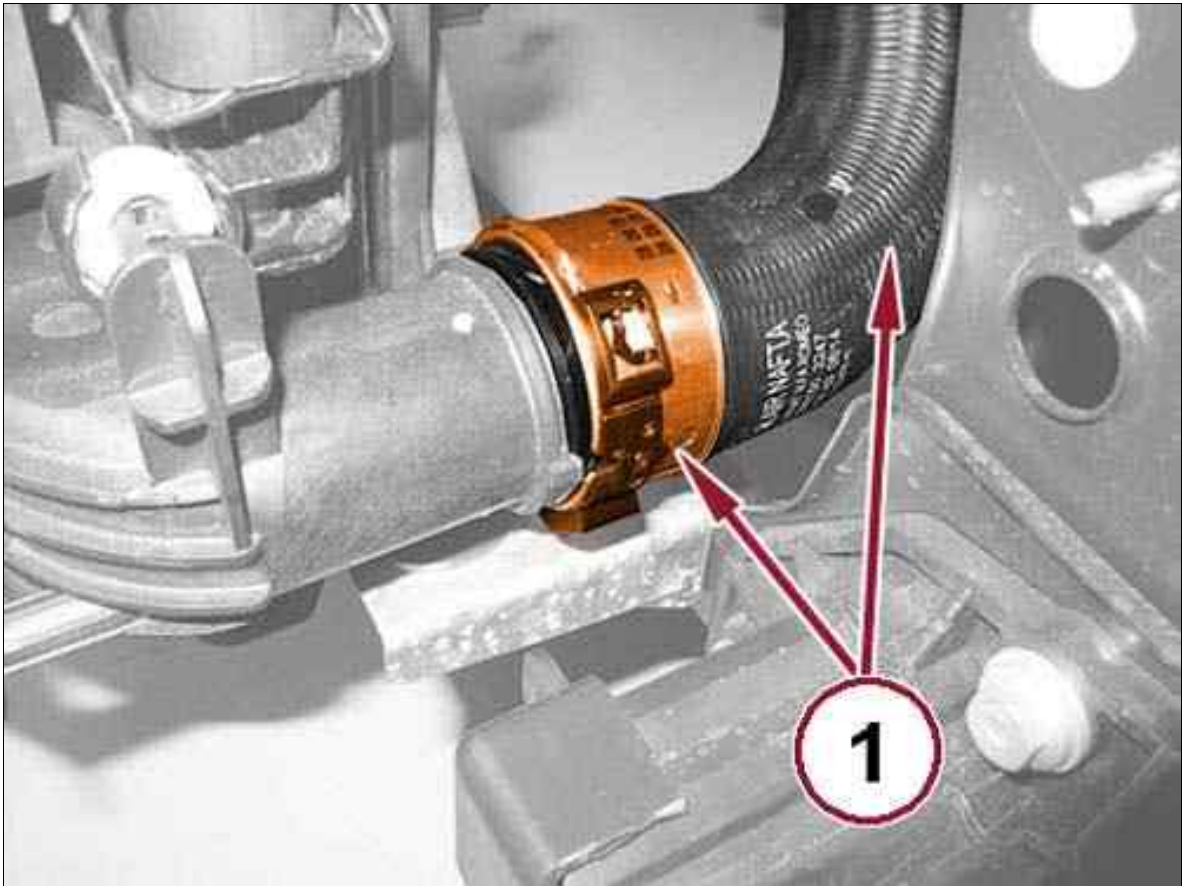
Fig 2: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

7. Remove the upper radiator hose (1).

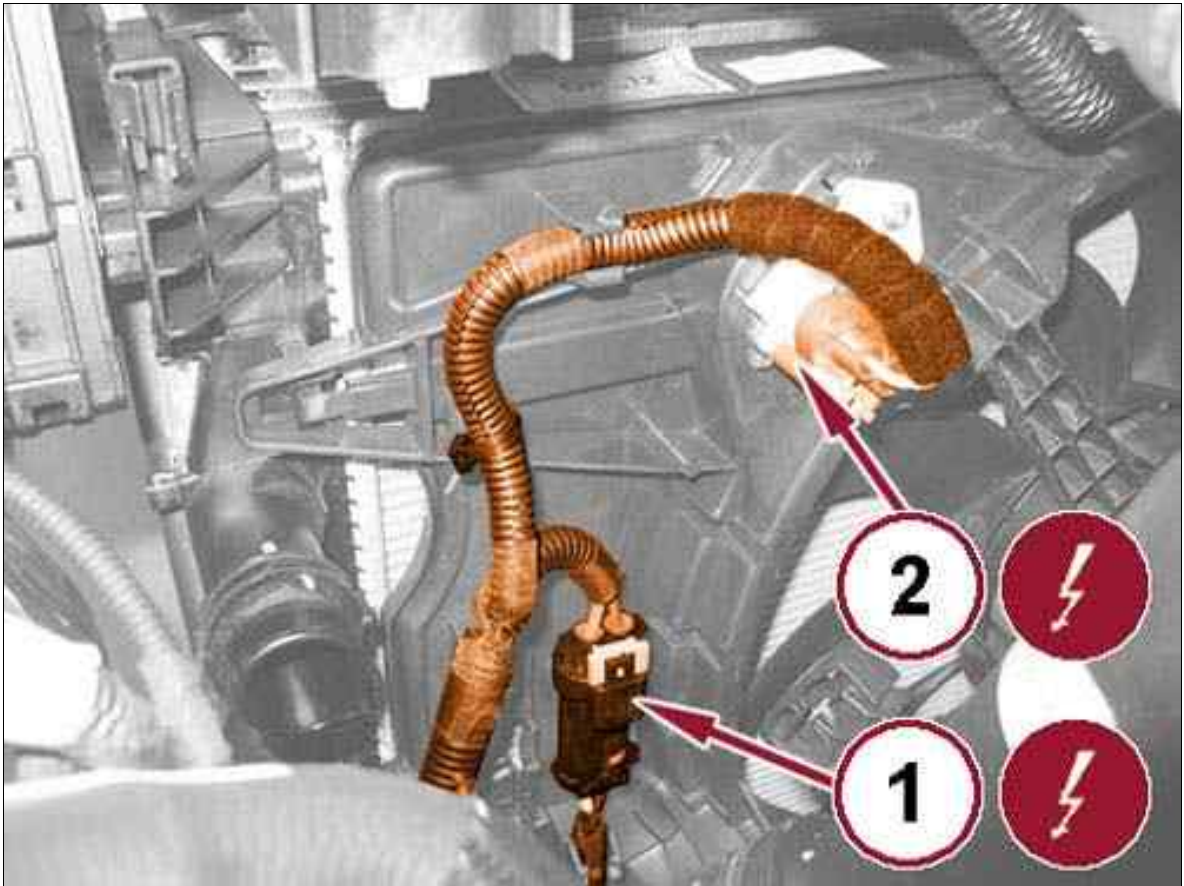
Fig 3: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

8. Remove the left side Charge Air Cooler (CAC) hose (1).

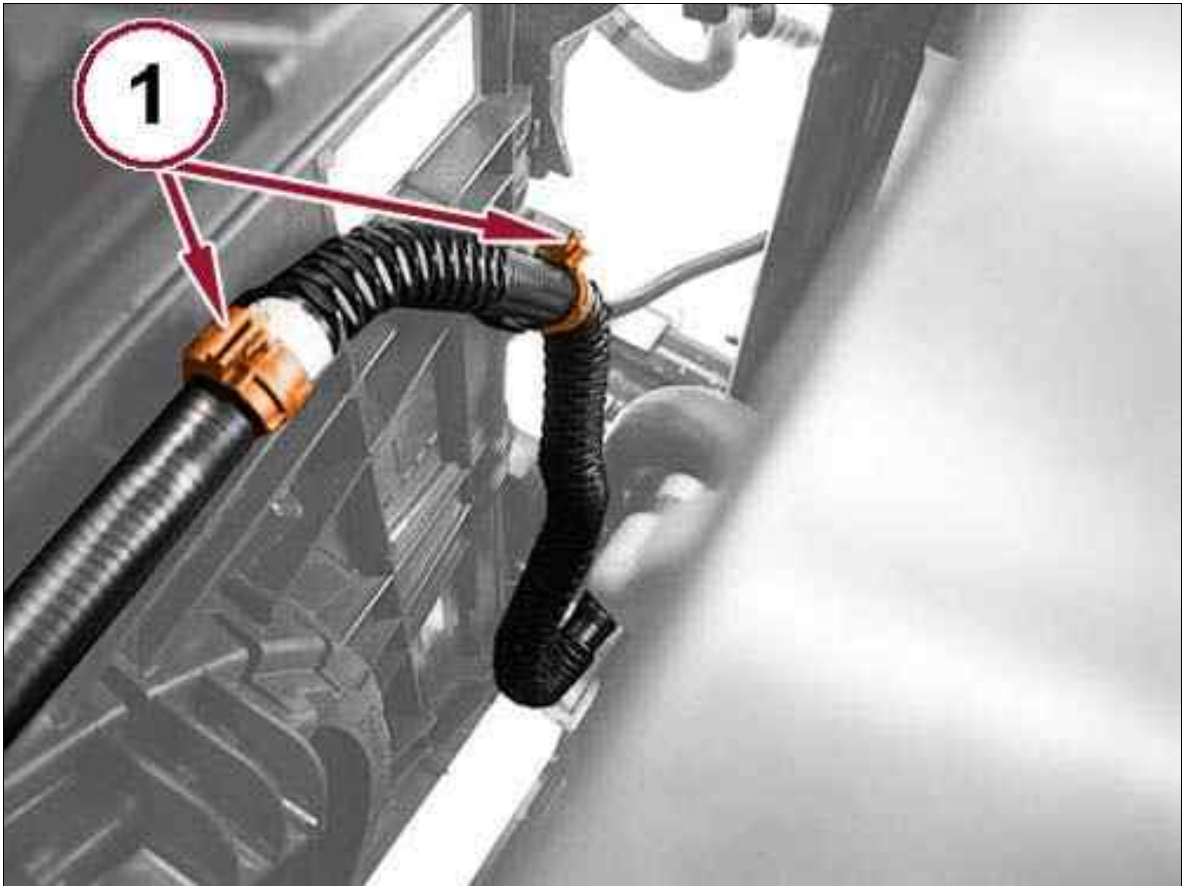
Fig 4: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

9. Disconnect the cooling fan wire harness connector (1).
10. Disconnect the cooling fan resistor wire harness connector (2).

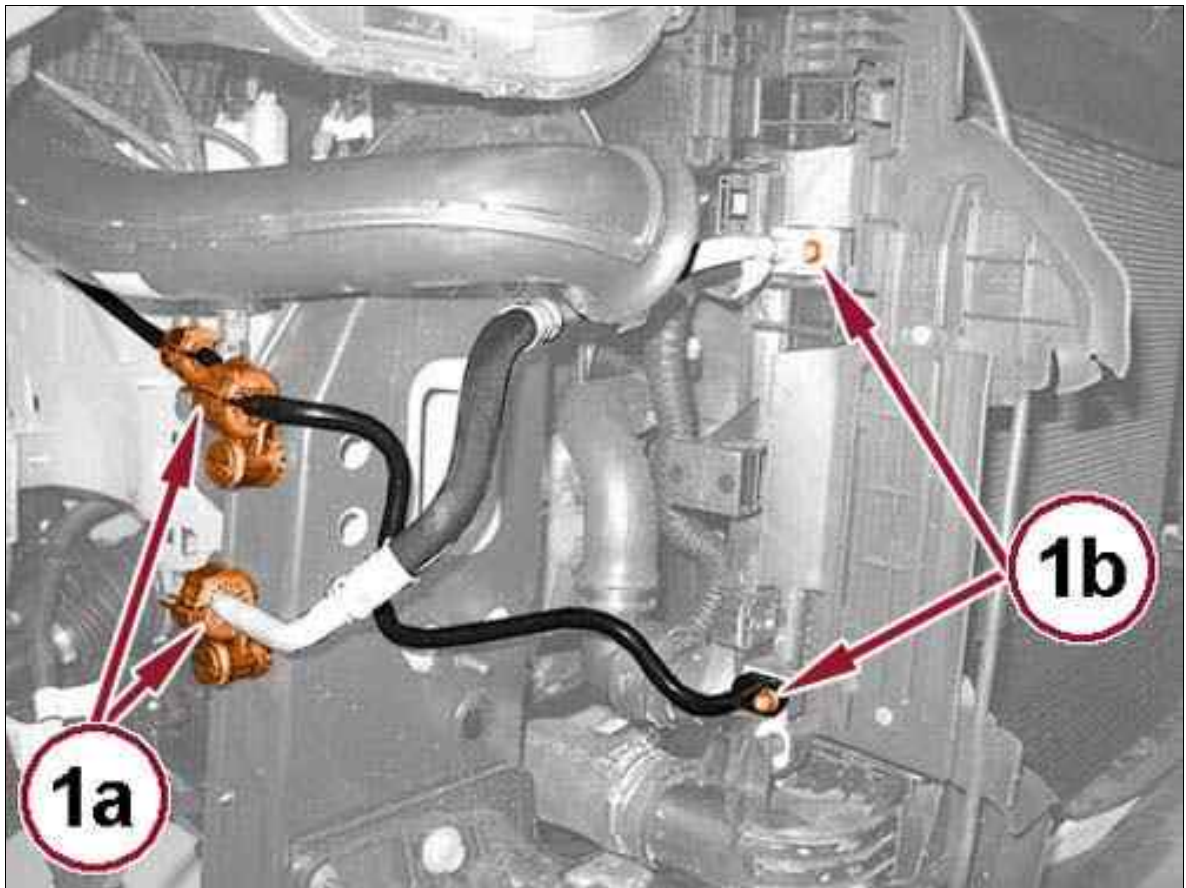
Fig 5: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

11. Unlock retaining clips (1) and remove the coolant hose from fan shroud.

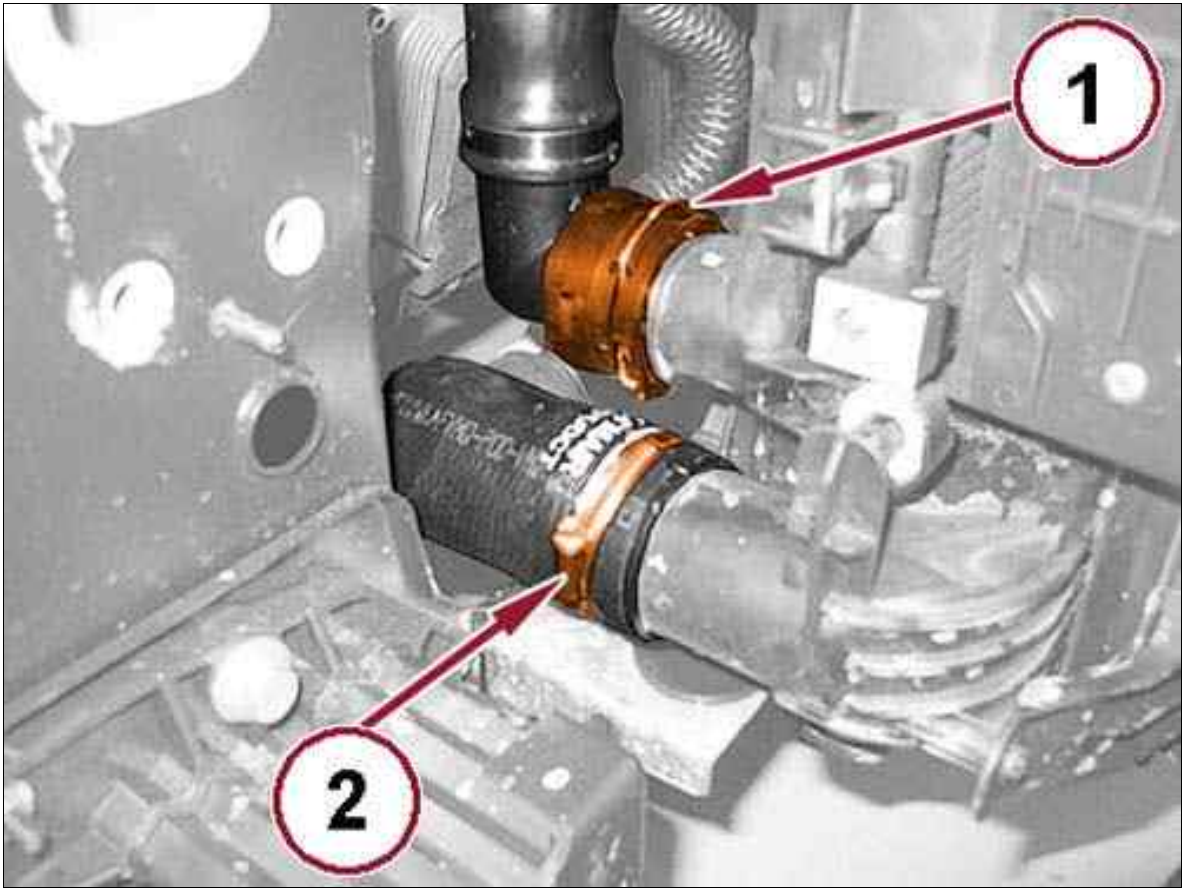
Fig 6: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Open the retaining clips (1a), remove the bolts (1b) and the A/C lines from the condenser.

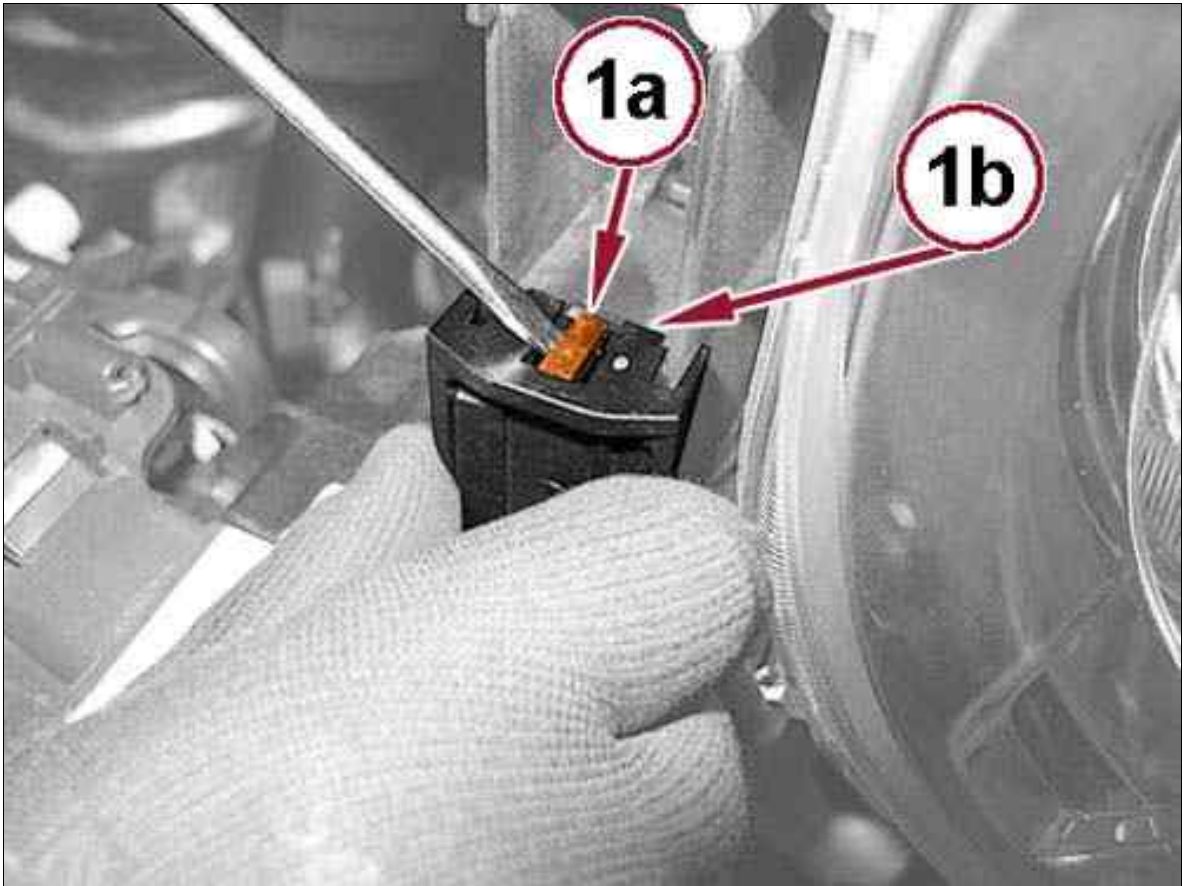
Fig 7: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

13. Remove the lower radiator hose (1).
14. Loosen clamp (2) and remove the right side CAC hose.

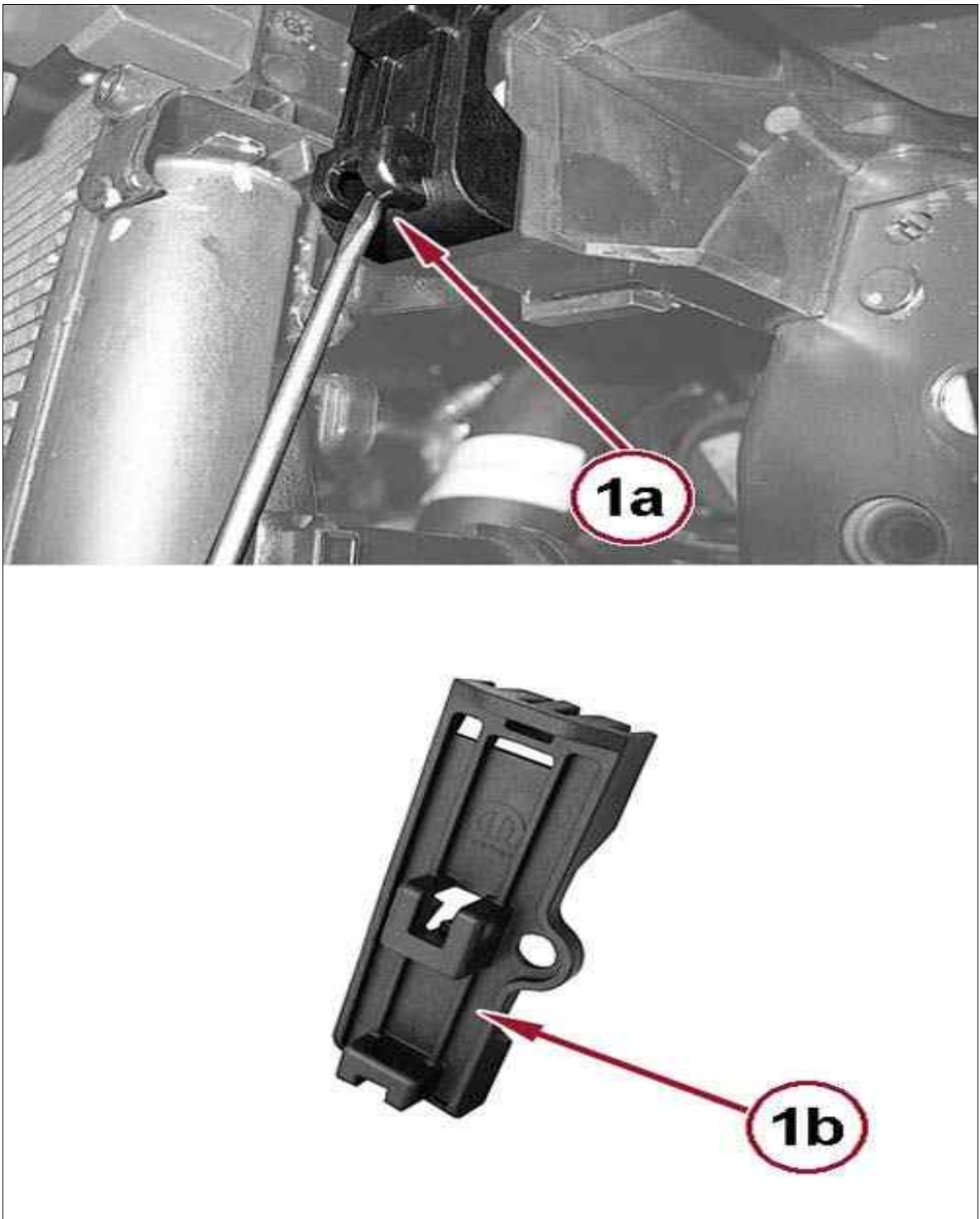
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

15. Lift the spring (1a) and disengage the clips (1b).

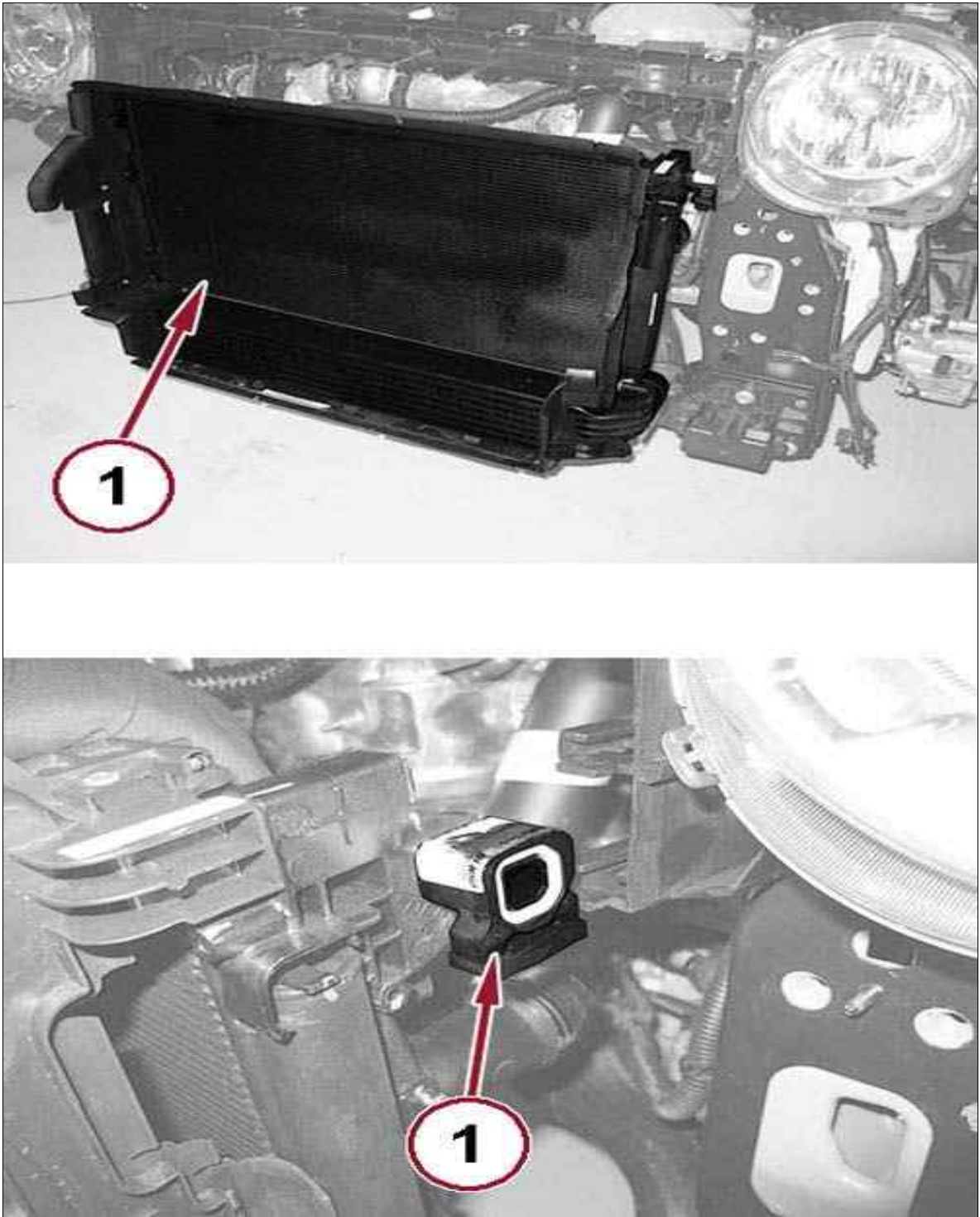
Fig 9: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

16. Working on both sides, to compress the spring (1a) and remove the retaining block (1b).

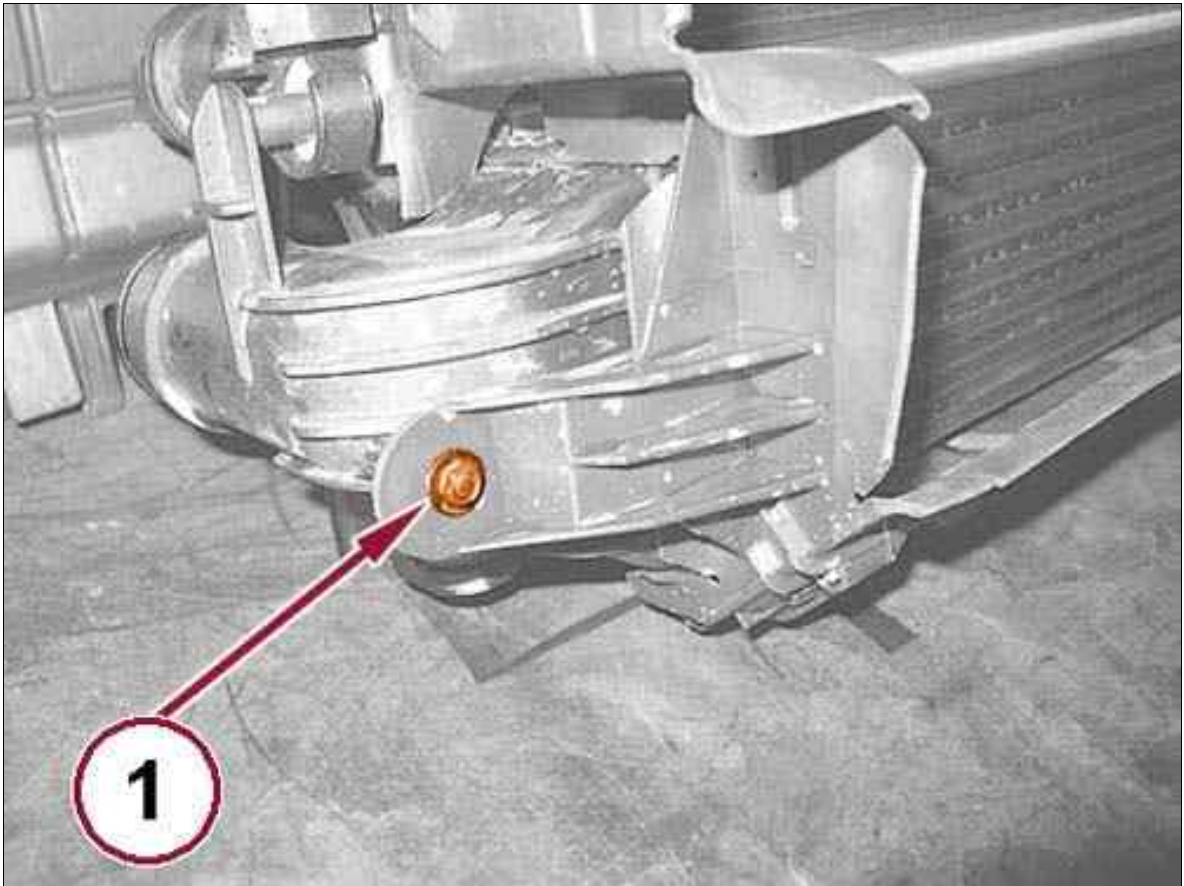
Fig 10: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

17. Working on both sides, disengage the upper tabs and remove the radiator assembly (1).

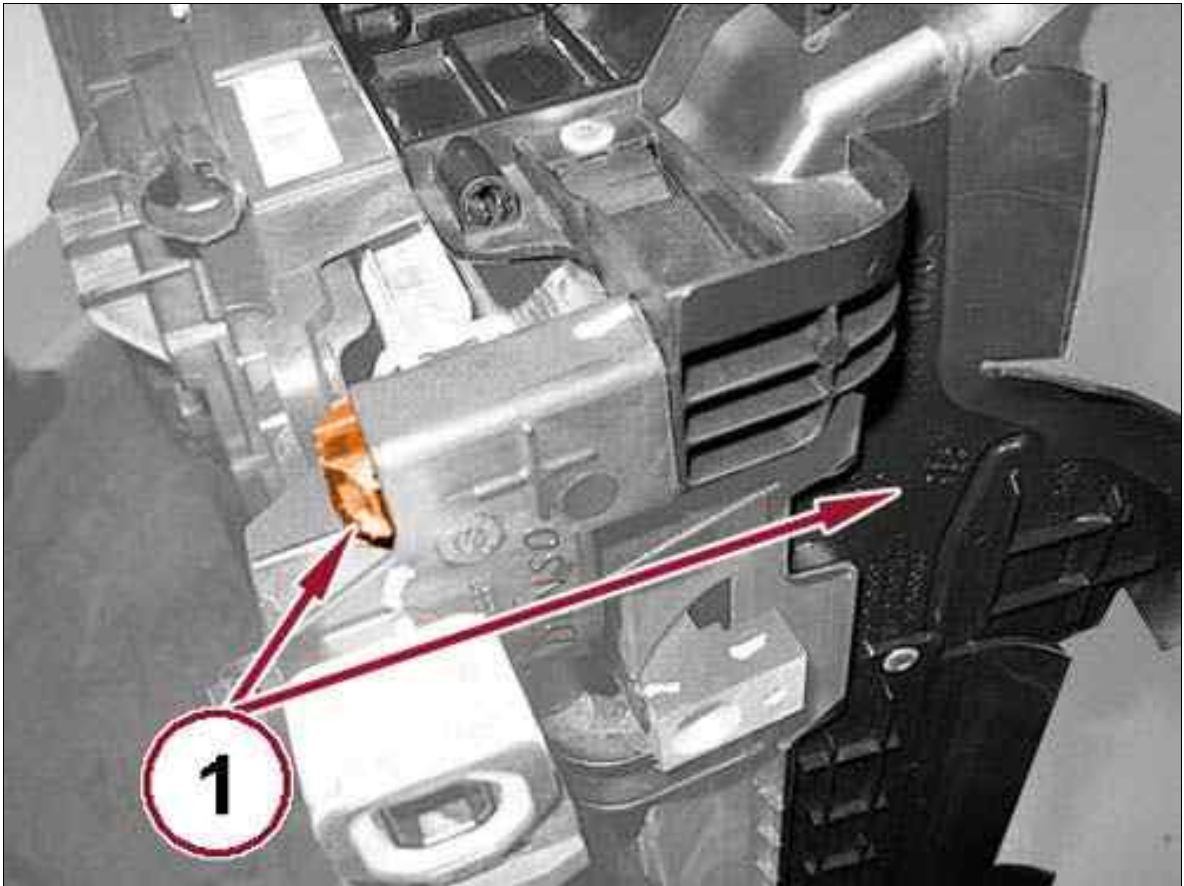
Fig 11: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

18. Remove the bolts (1) and the air deflector.

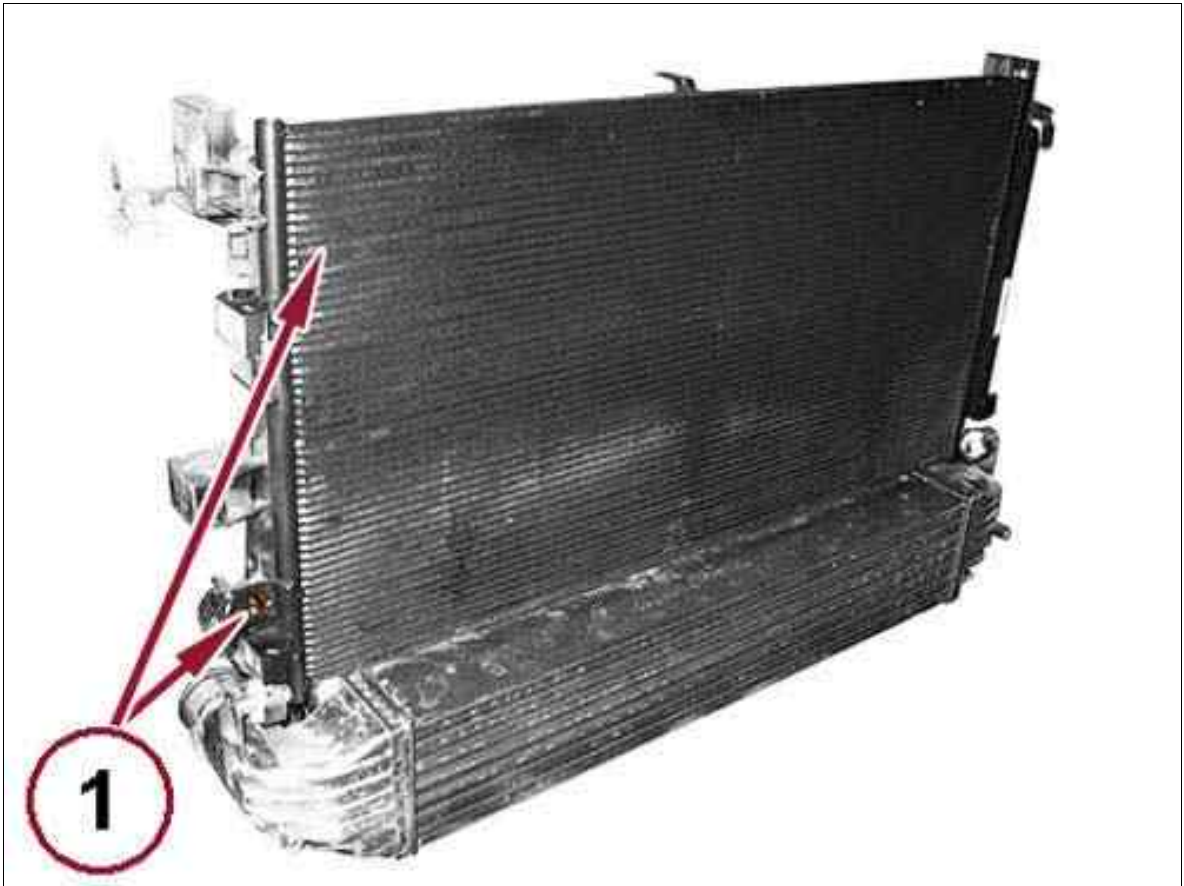
Fig 12: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

19. Detach the retaining clips and remove the air duct (1).

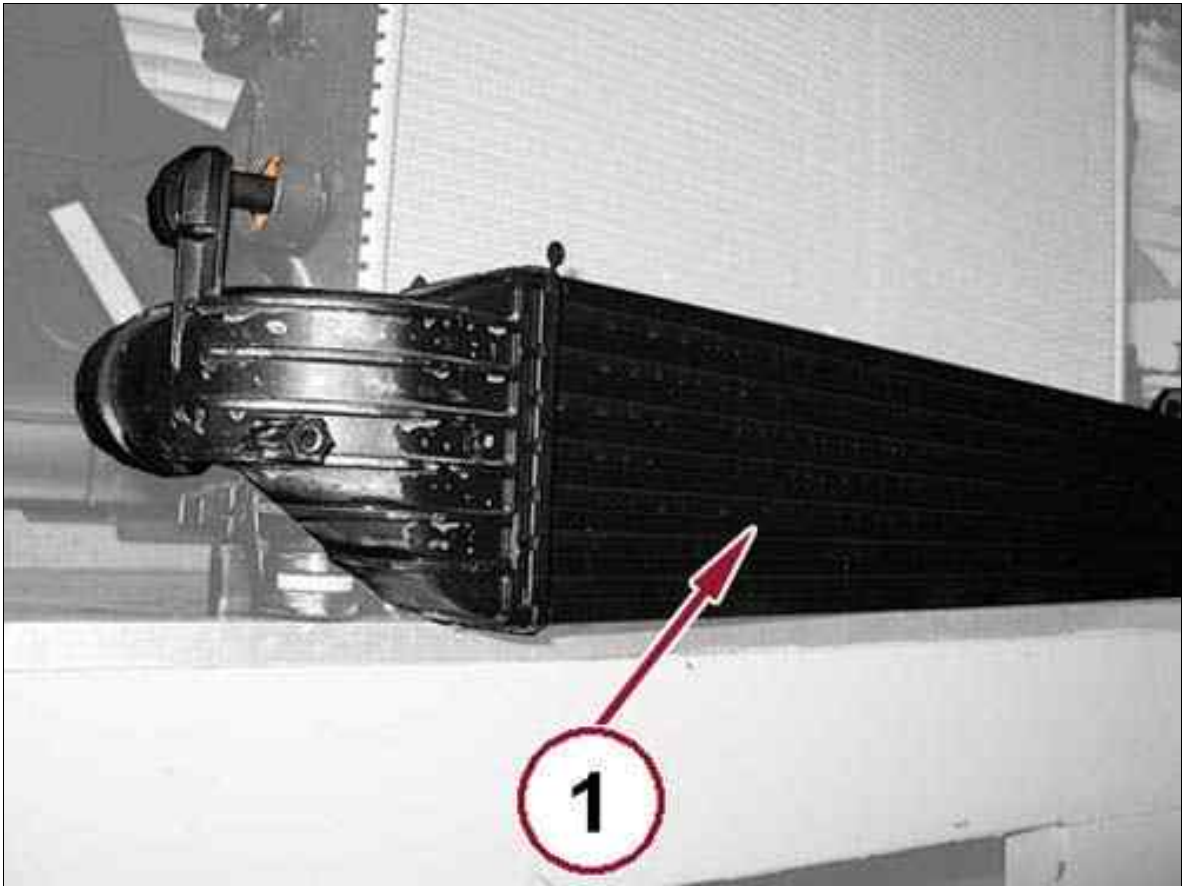
Fig 13: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

20. Compress the clips and remove the condenser (1).

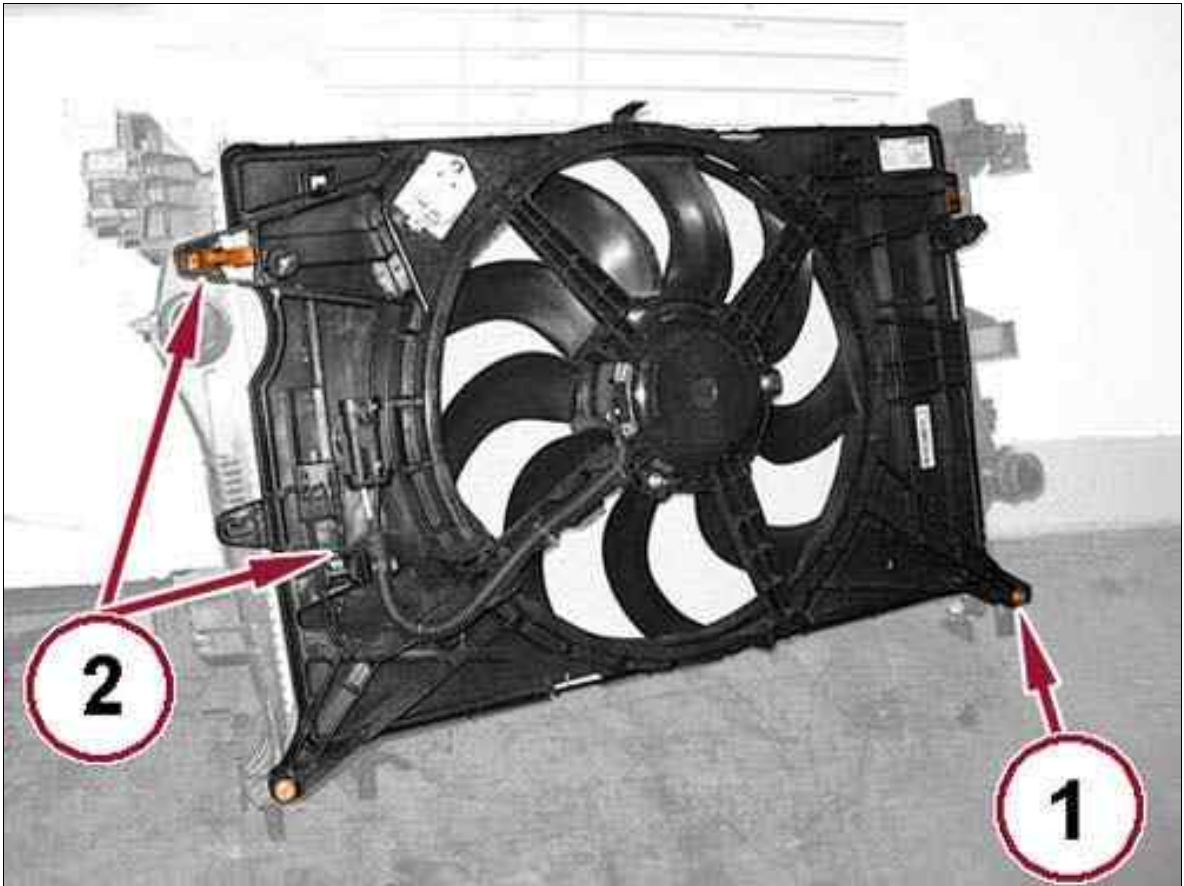
Fig 14: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

21. Unlock tabs and remove the CAC (1).

Fig 15: Cooling Fan, Clips & Bolts

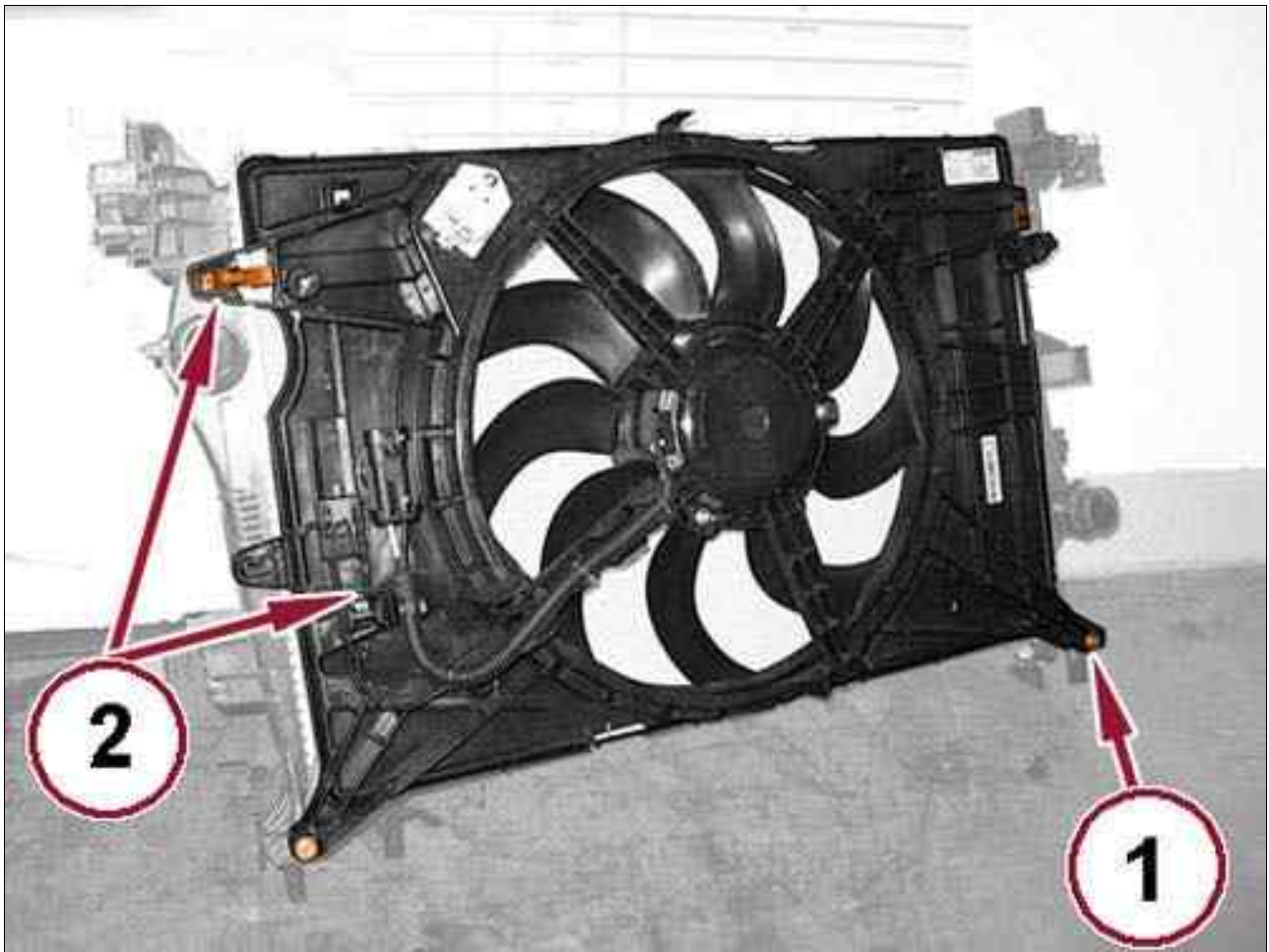


Courtesy of CHRYSLER GROUP, LLC

22. Remove the cooling fan bolts (1).
23. Unhook the clips and remove the cooling fan (2) from the radiator.

**ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 1.6L
DIESEL > INSTALLATION**

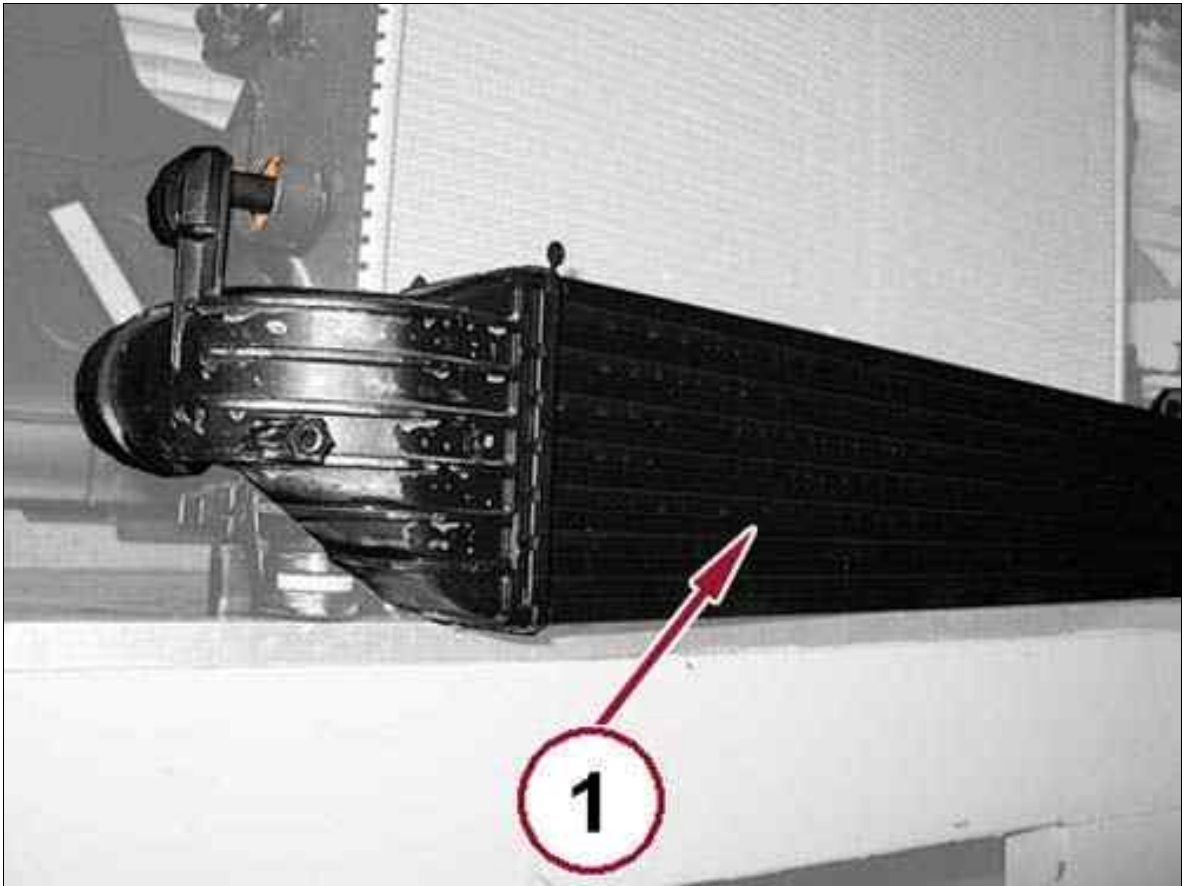
Fig 1: Cooling Fan, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

1. Install the cooling fan (2) onto the radiator and engage the retaining clips.
2. Install the cooling fan bolts (1) and securely tighten.

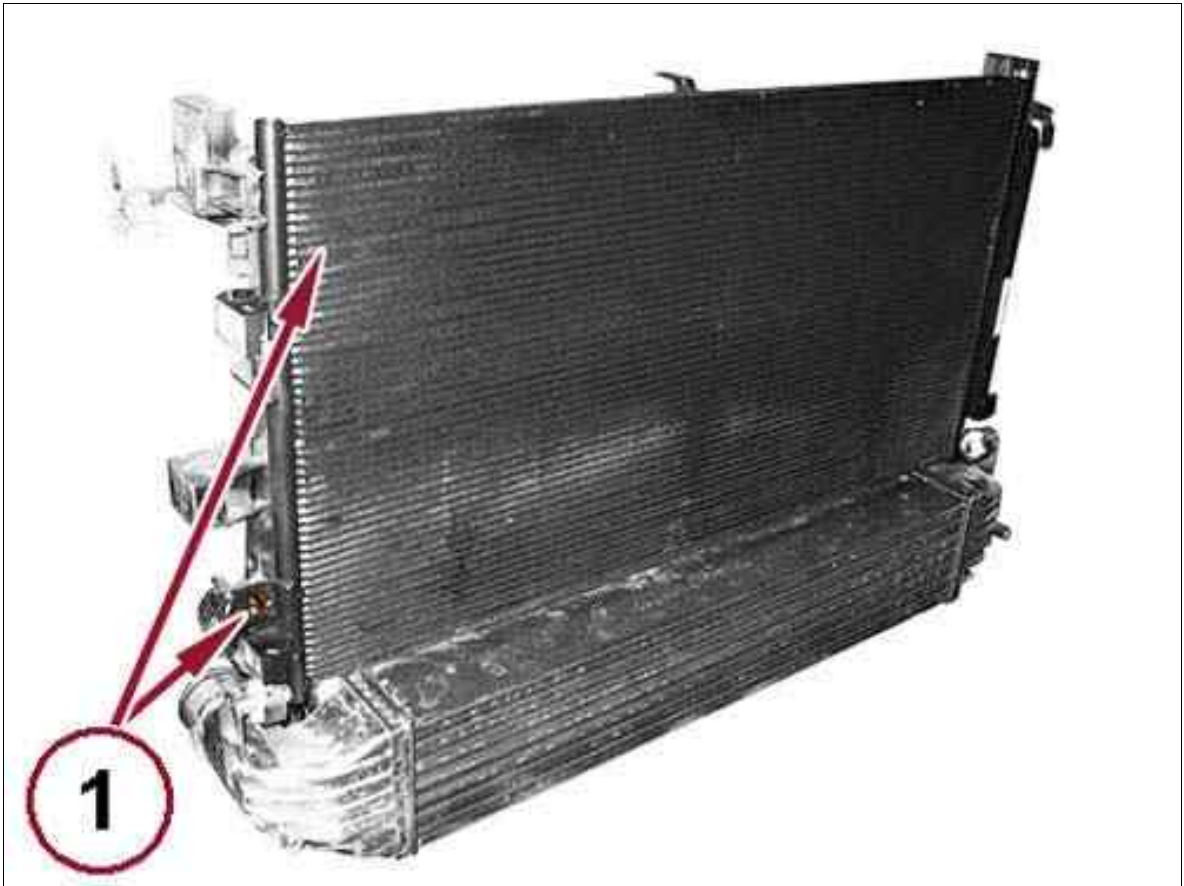
Fig 2: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

3. Install the Charge Air Cooler (1) and engage the retainers.

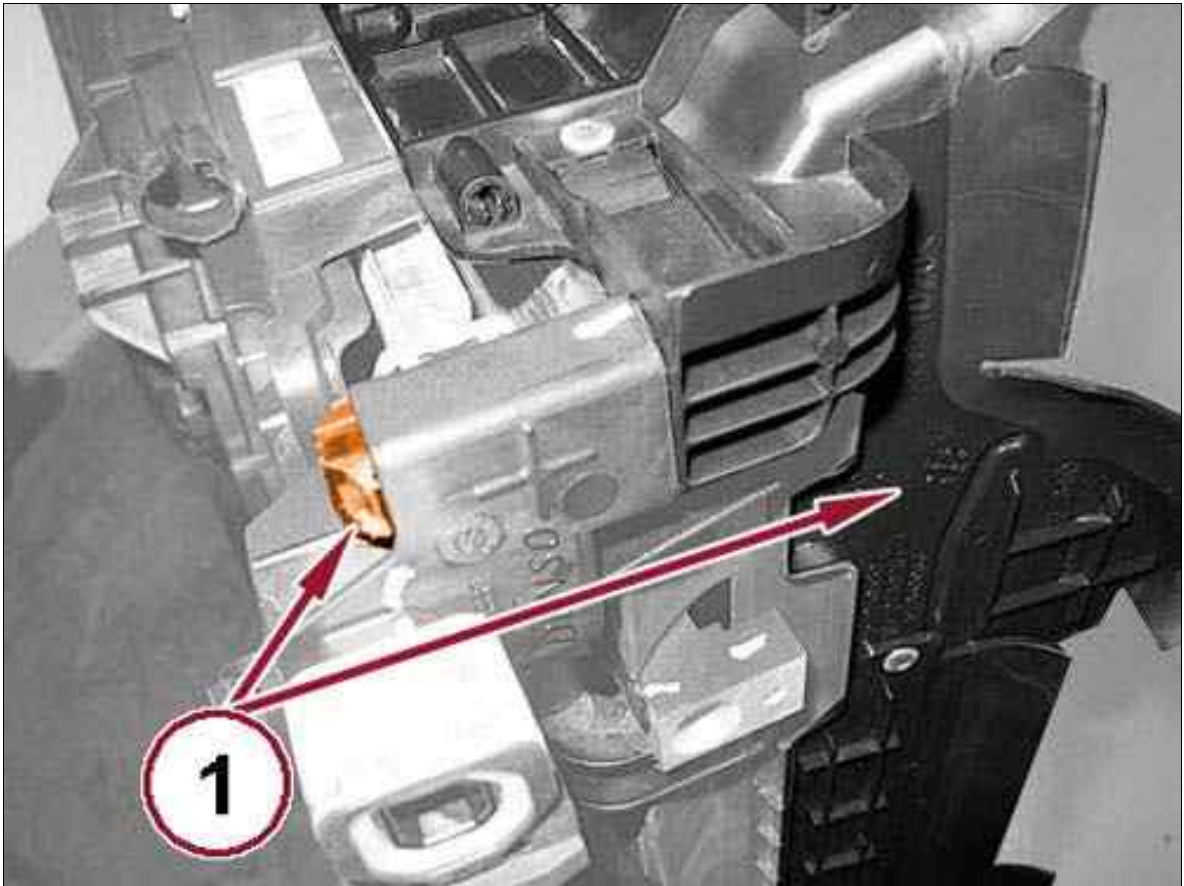
Fig 3: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

4. Install the condenser (1) to the radiator and engage the retaining clips.

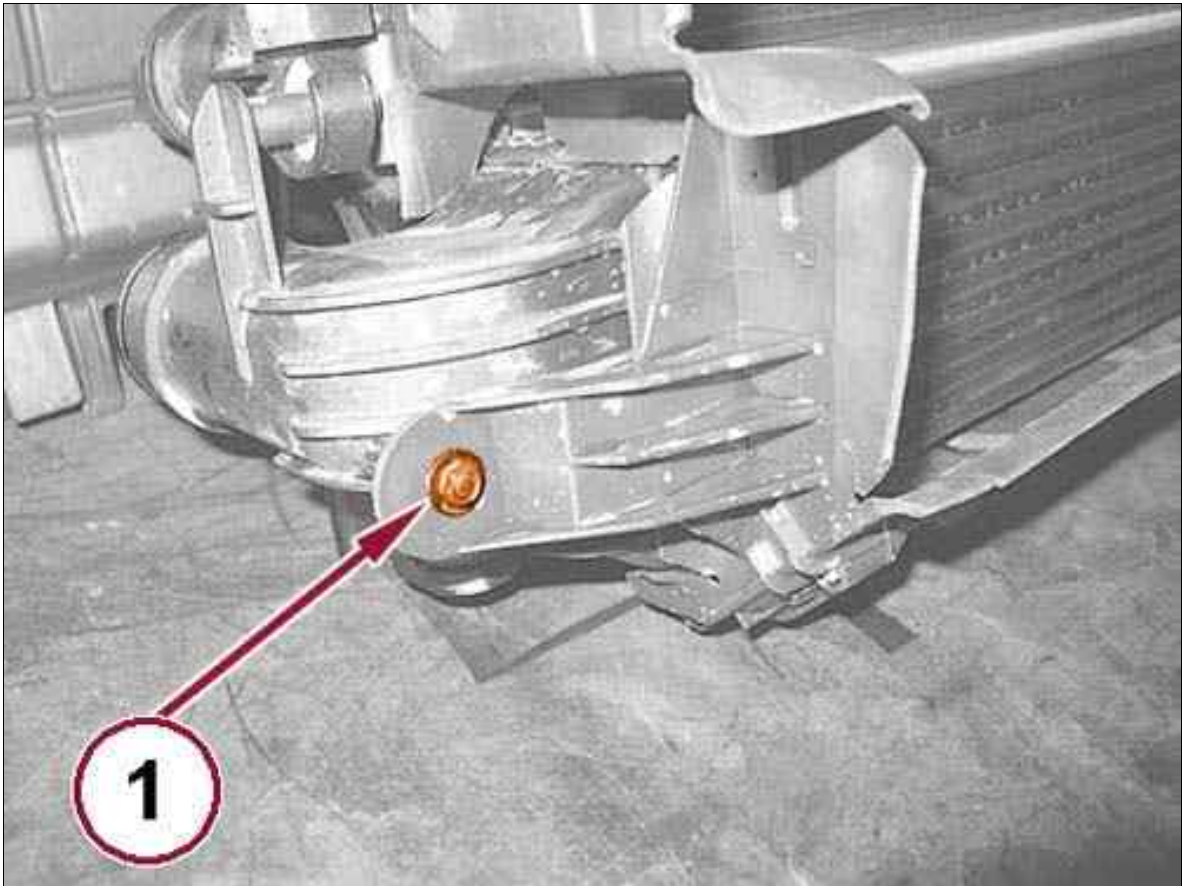
Fig 4: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

5. Install the air duct (1) and engage the retaining clips.

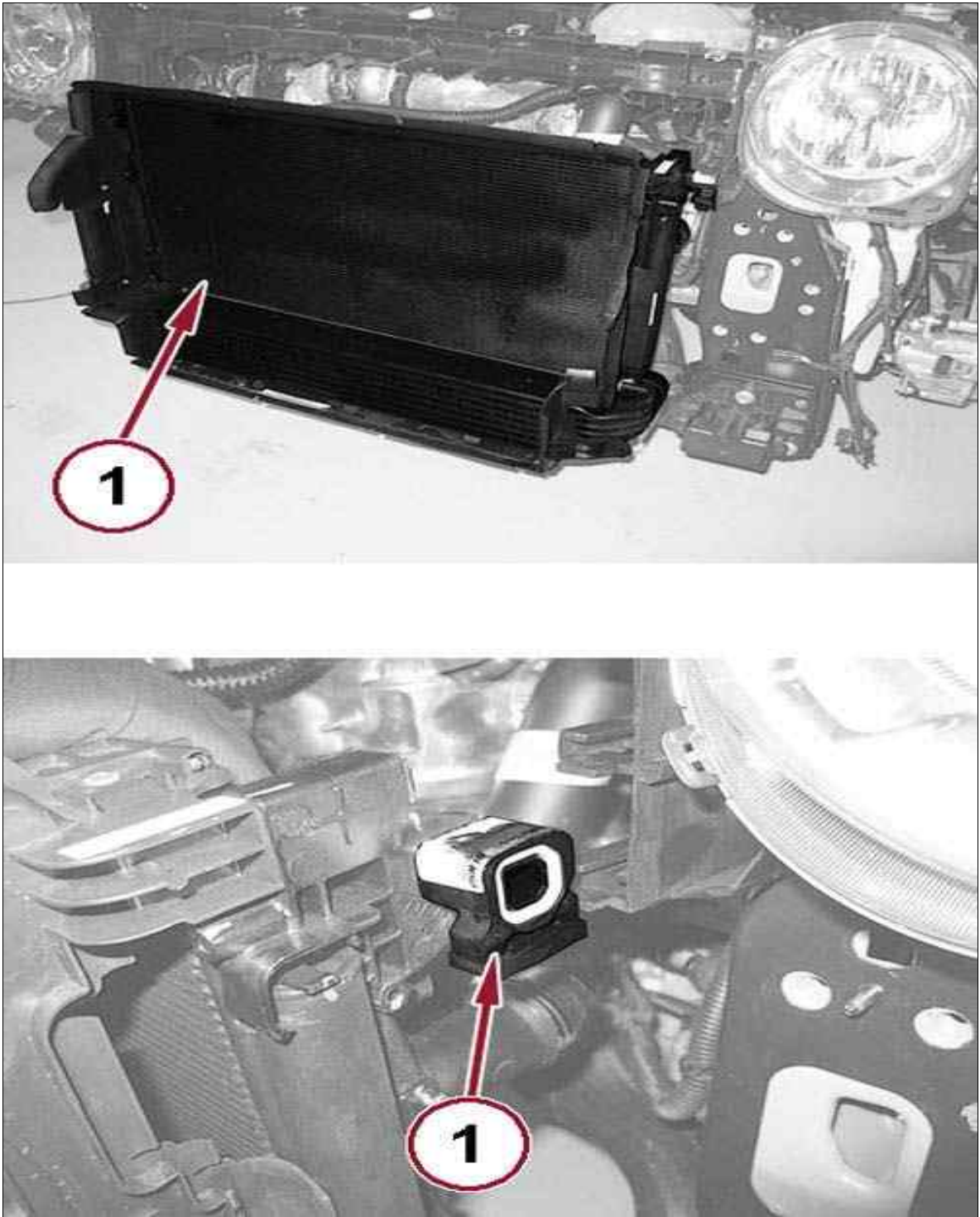
Fig 5: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

6. Install the CAC air deflector and securely tighten the bolts (1).

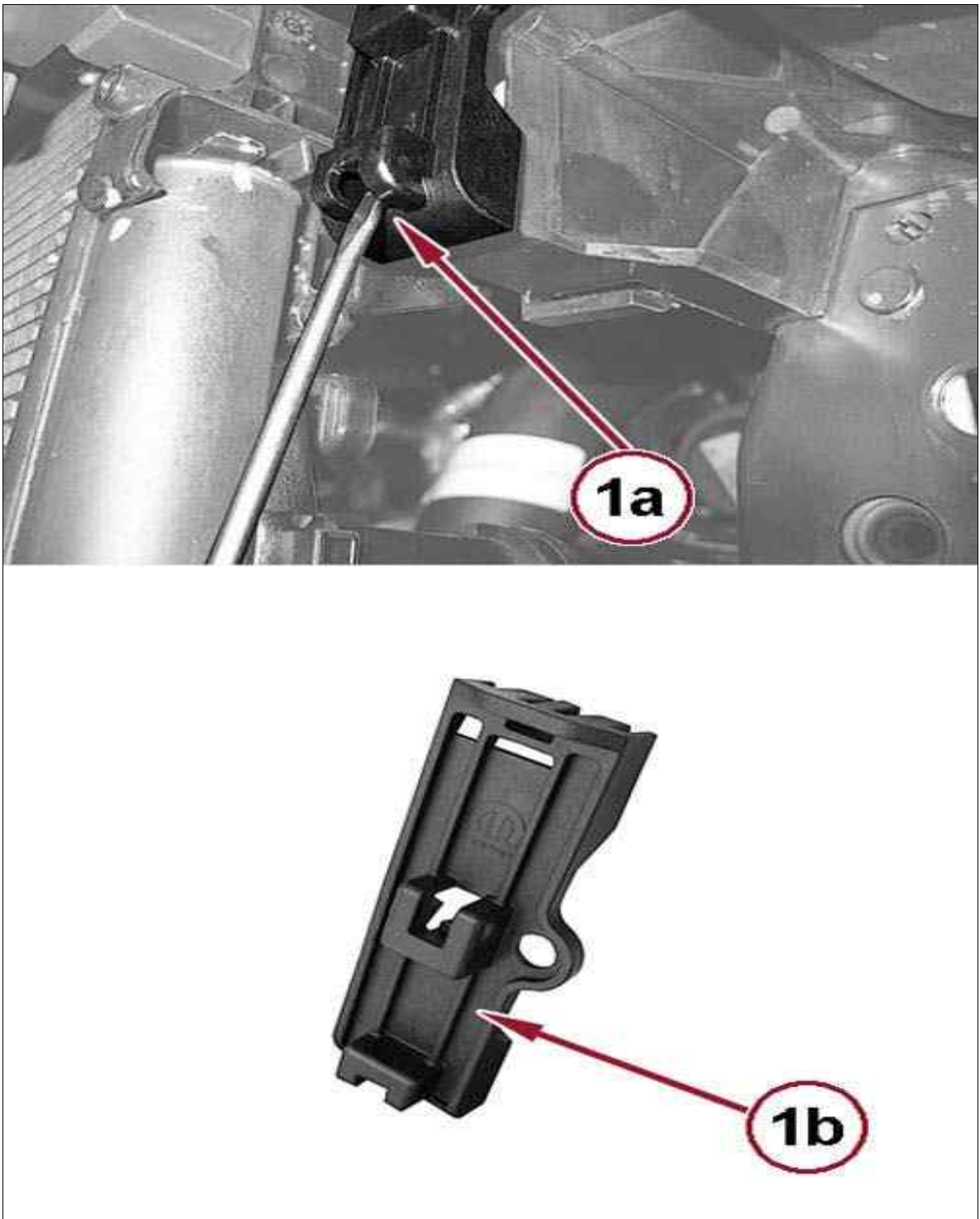
Fig 6: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

7. Install the radiator assembly (1) and engage the upper tabs on both sides.

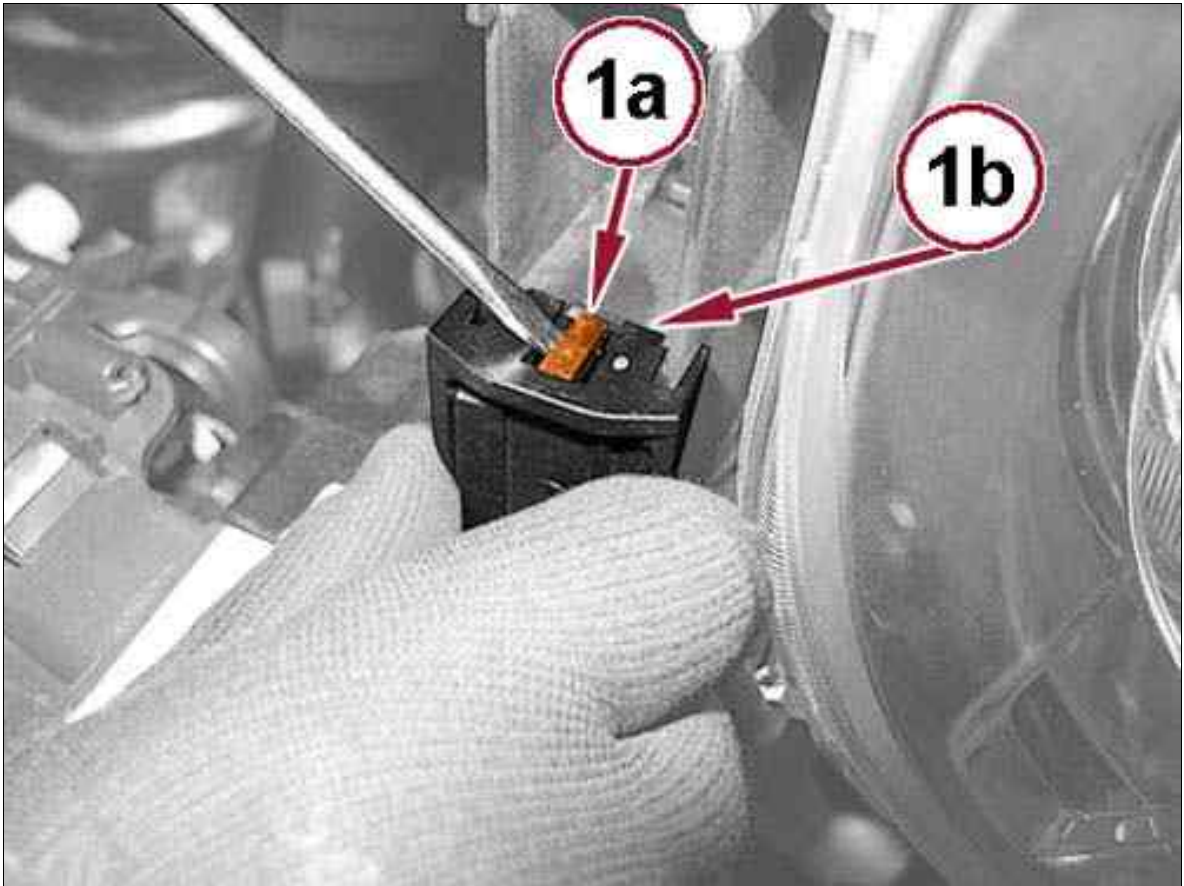
Fig 7: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

8. Install the radiator retaining block (1b) and engage the spring clips on both sides.

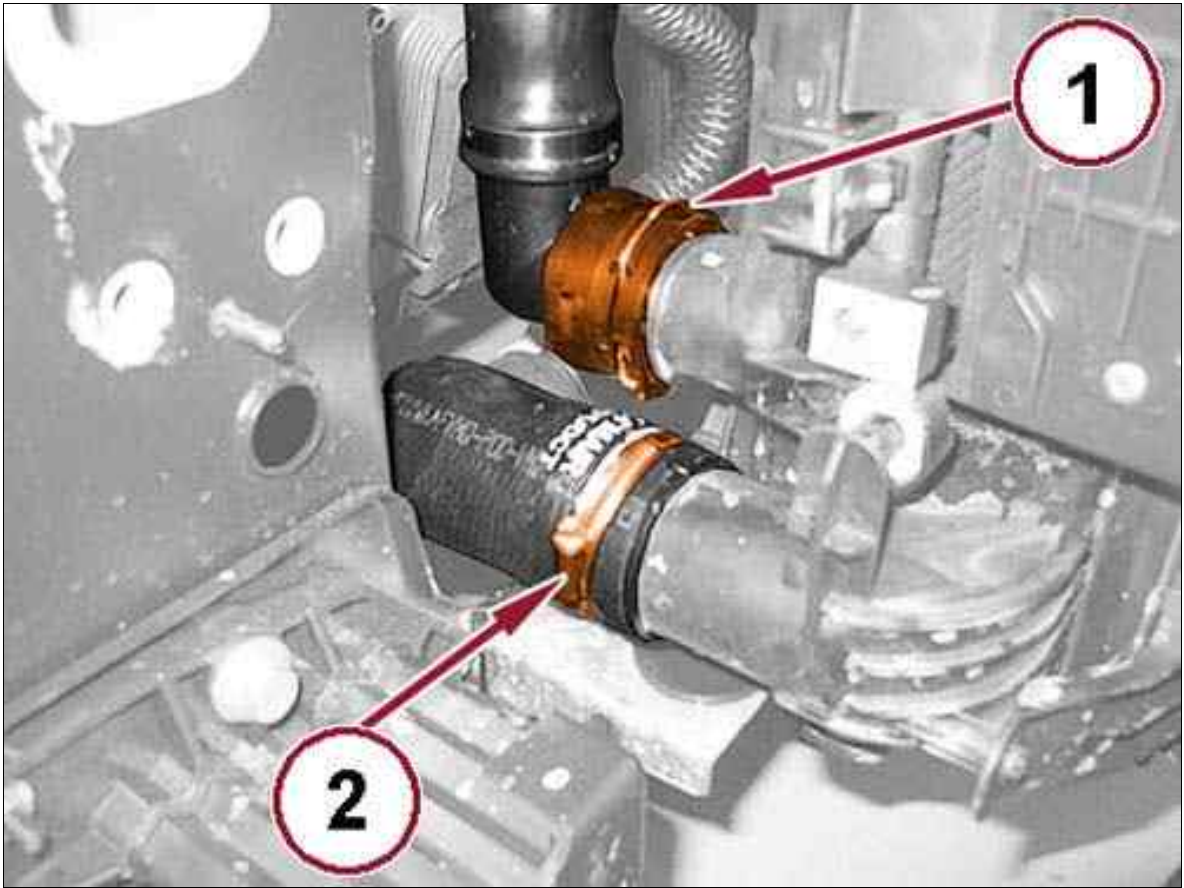
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

9. Engage the clips (1b) and lock the spring clip (1a).

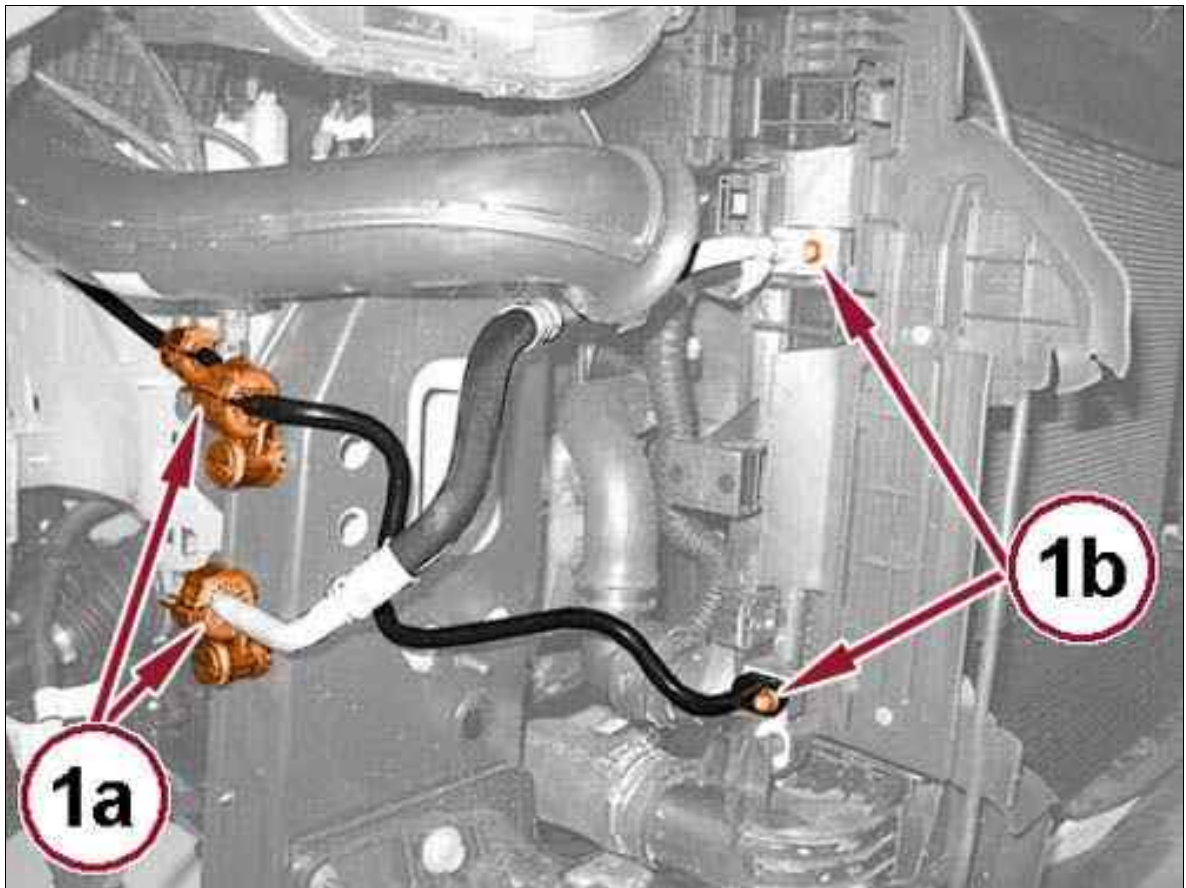
Fig 9: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

10. Install the CAC hose and securely tighten the clamp (2).
11. Install the lower radiator hose (1) and engage the spring clip.

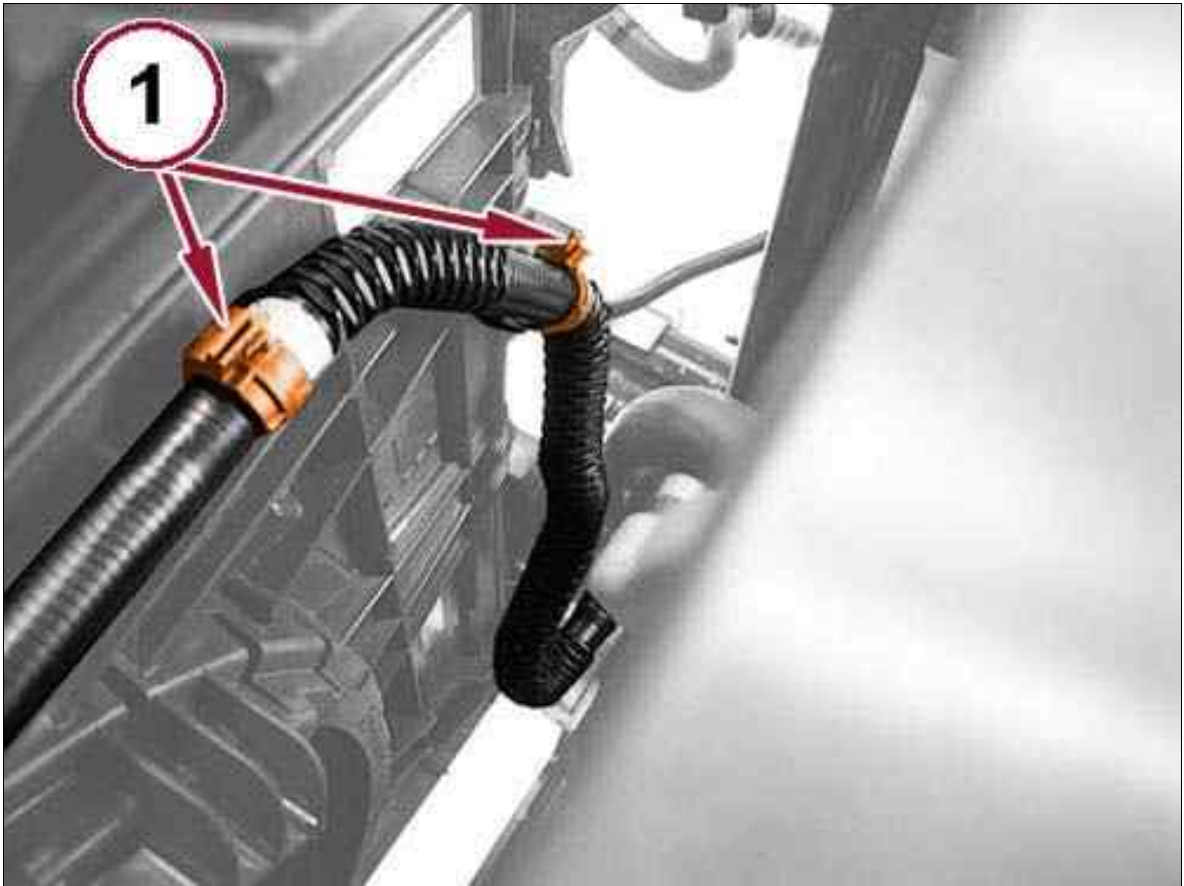
Fig 10: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Install the A/C lines to the condenser and securely tighten the bolts (1b) and close the retainer clips (1a).

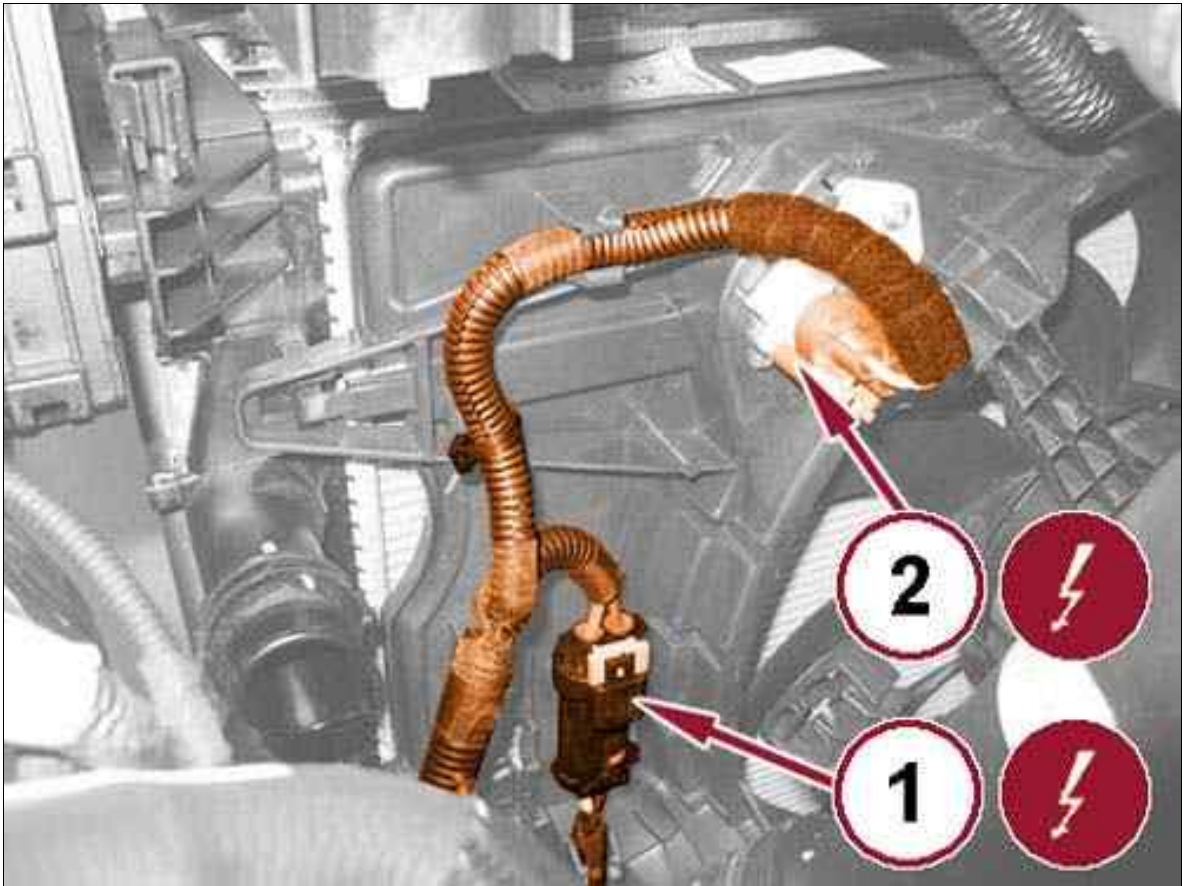
Fig 11: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

13. Install the coolant hose and close the retaining clips (1).

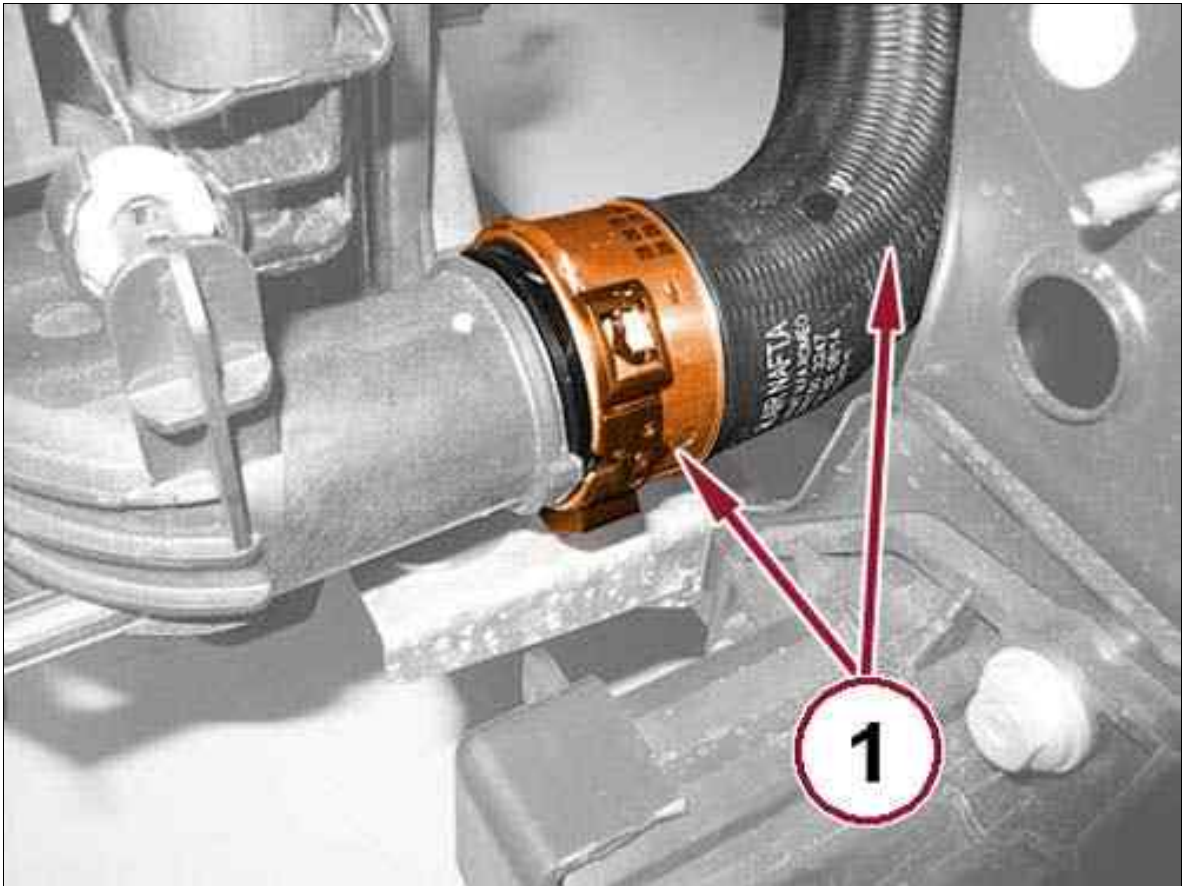
Fig 12: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

14. Connect the cooling fan resistor wire harness connector (2).
15. Connect the cooling fan wire harness connector (1).

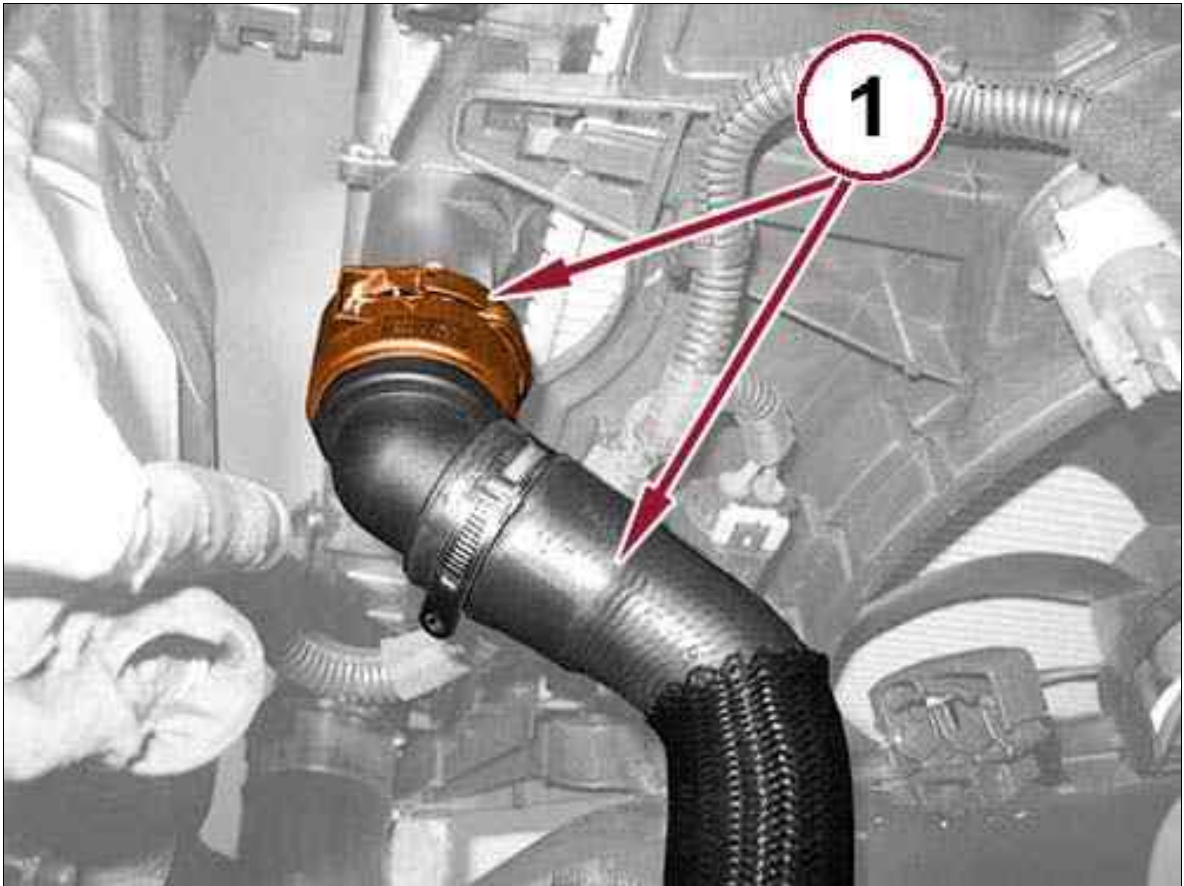
Fig 13: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

16. Install the CAC hose (1) and engage the spring clip.

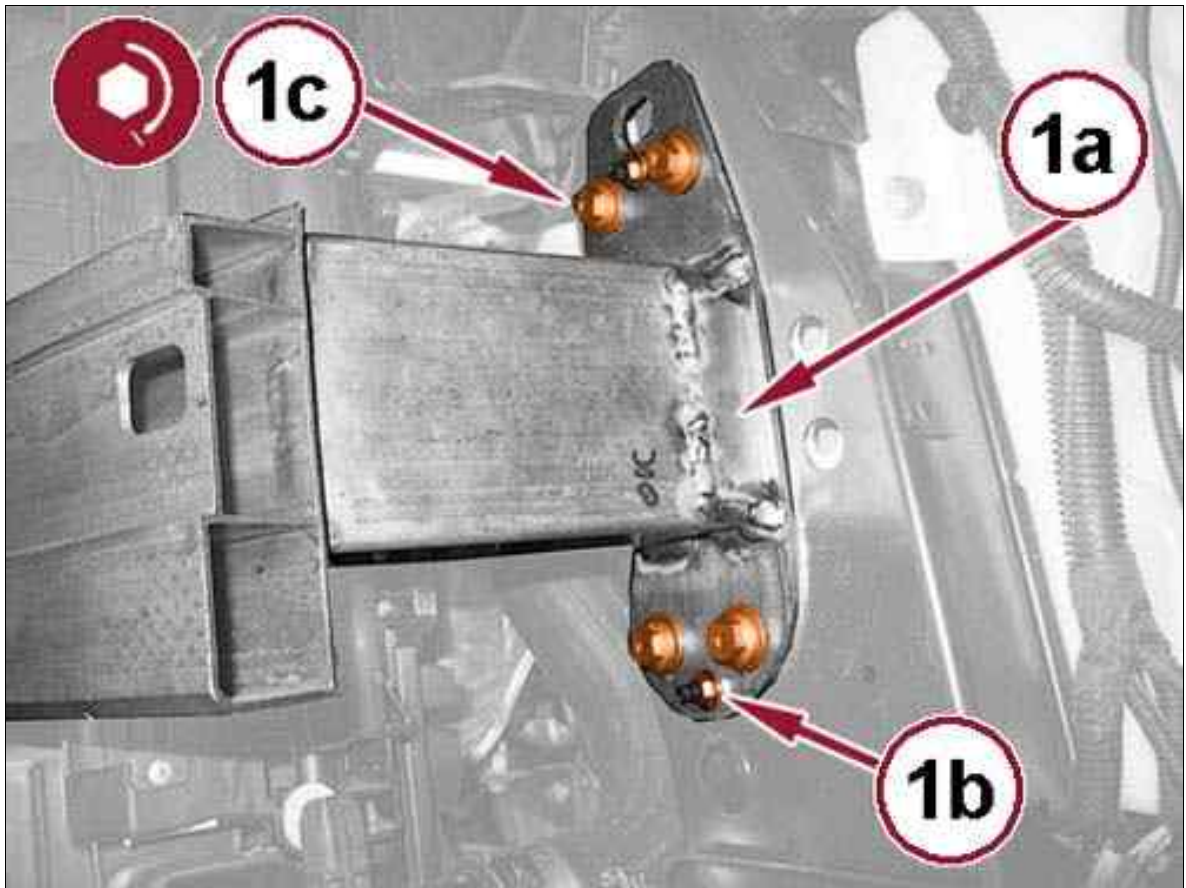
Fig 14: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

17. Install the upper radiator hose (1) and engage the spring clip.

Fig 15: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

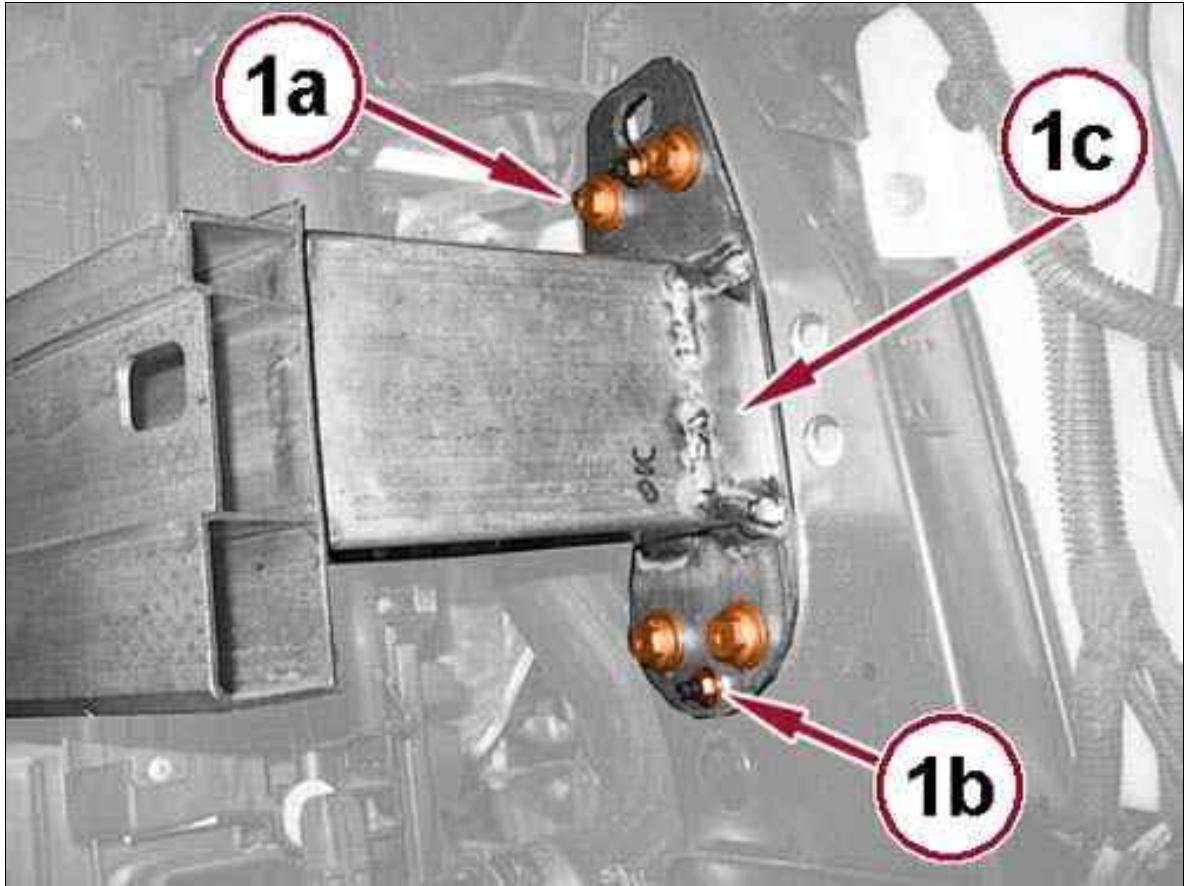
18. Install the front bumper crossbar (1a) and working from both sides, tighten the bolts (1c) and the nuts (1b) to the proper specification. Refer to SPECIFICATIONS .
19. Install the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
20. Fill the cooling system. Refer to STANDARD PROCEDURE .
21. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
22. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
23. Connect the negative battery cable.

ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 120/140 CV > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
3. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

5. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

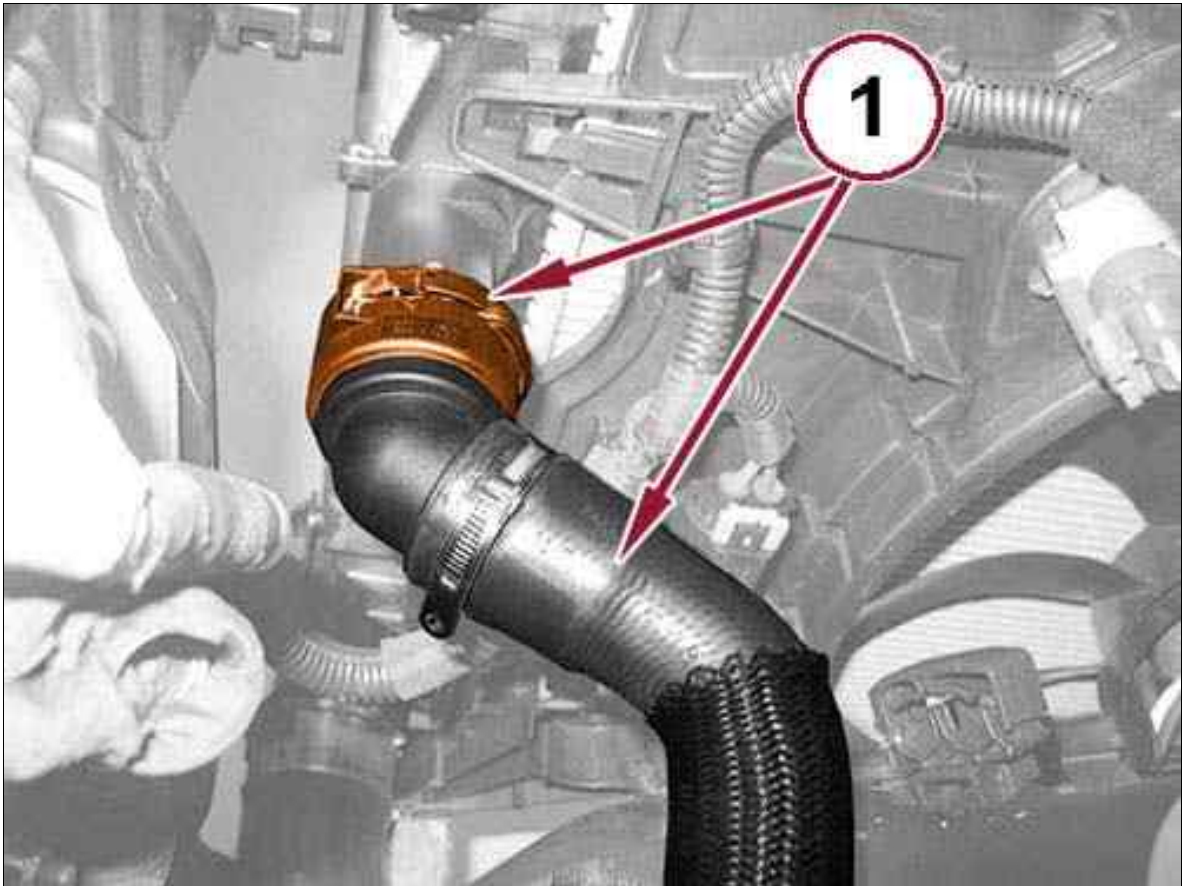
Fig 1: Front Bumper Beam, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

6. Working on both sides, remove the bolts (1a), nuts (1b) and the front bumper reinforcement (1c).

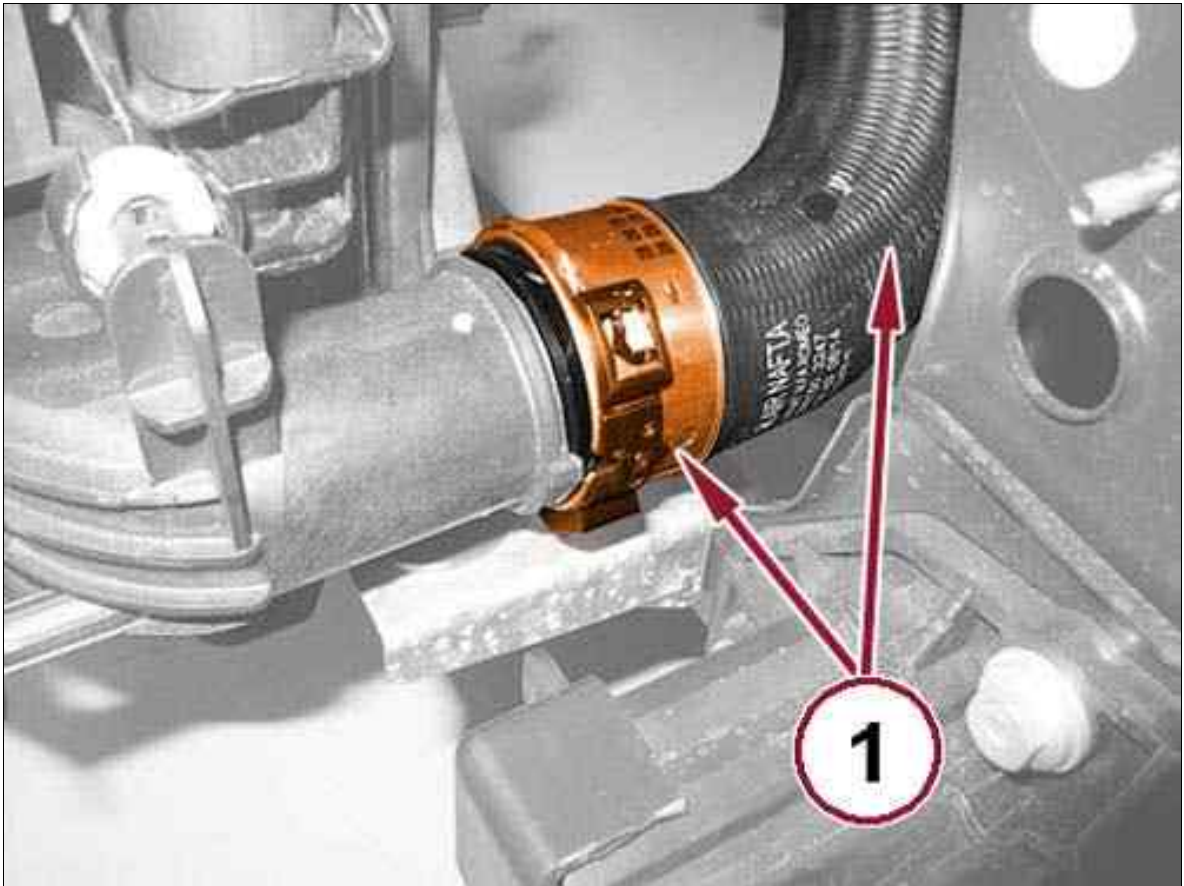
Fig 2: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

7. Disengage the retaining clip and remove the upper radiator hose (1).

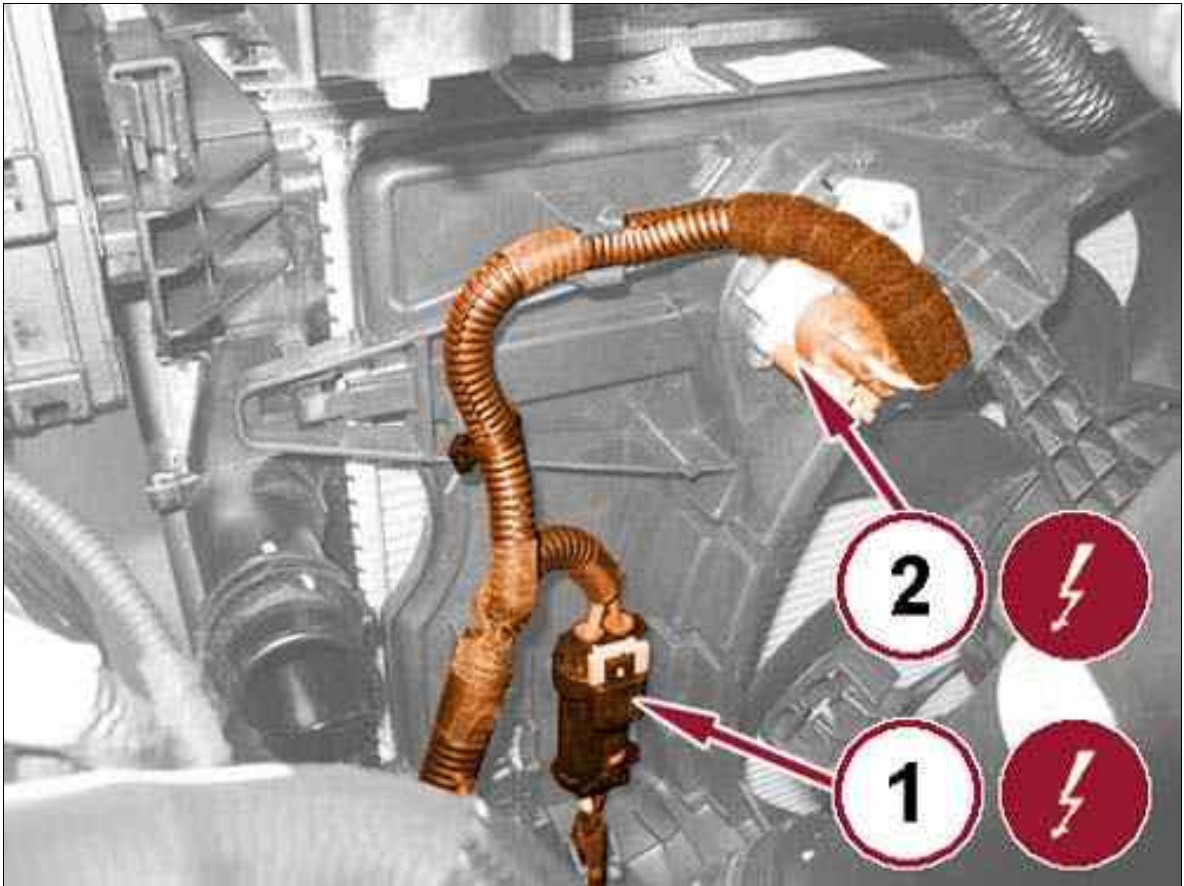
Fig 3: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

8. Disengage the retaining clip and remove the Charge Air Cooler (CAC) hose (1).

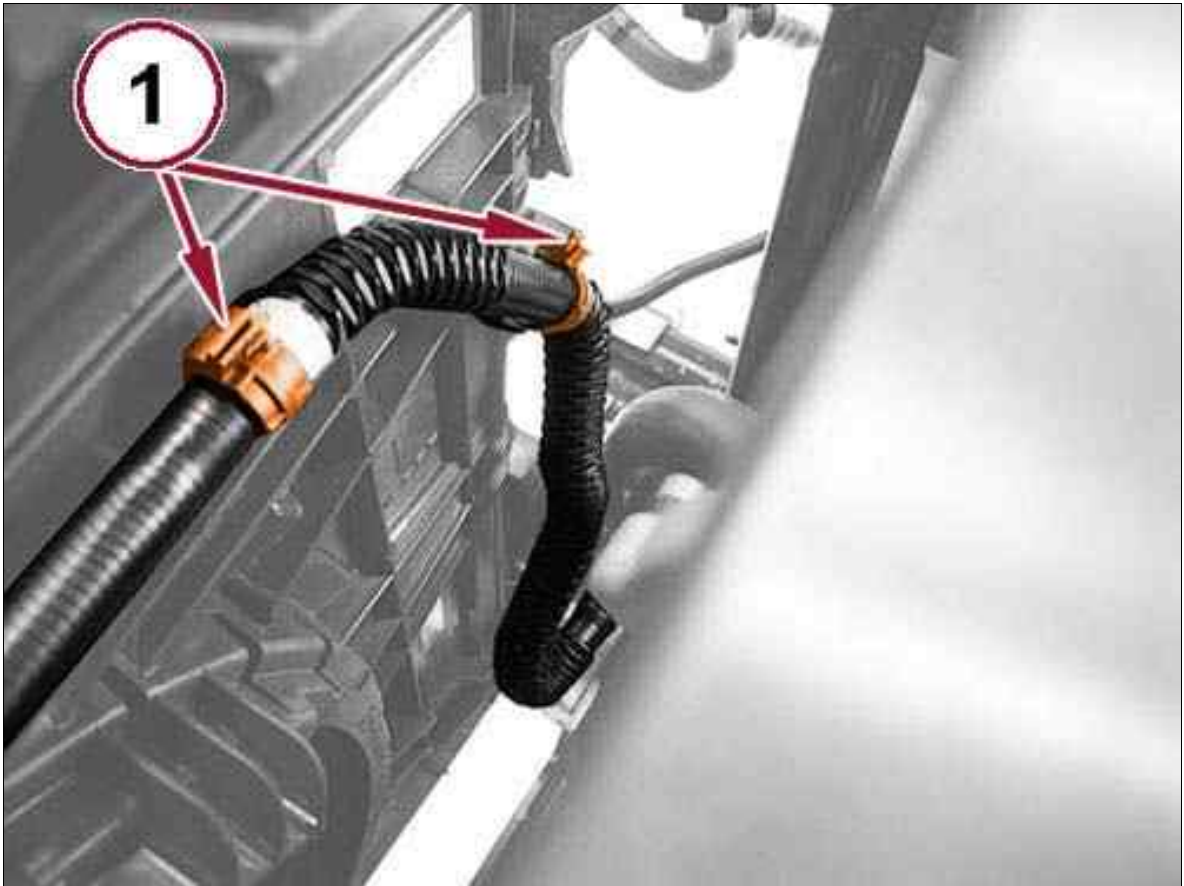
Fig 4: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

9. Disconnect the cooling fan resistor wire harness connectors (2).
10. Disconnect the cooling fan wire harness connector (1).

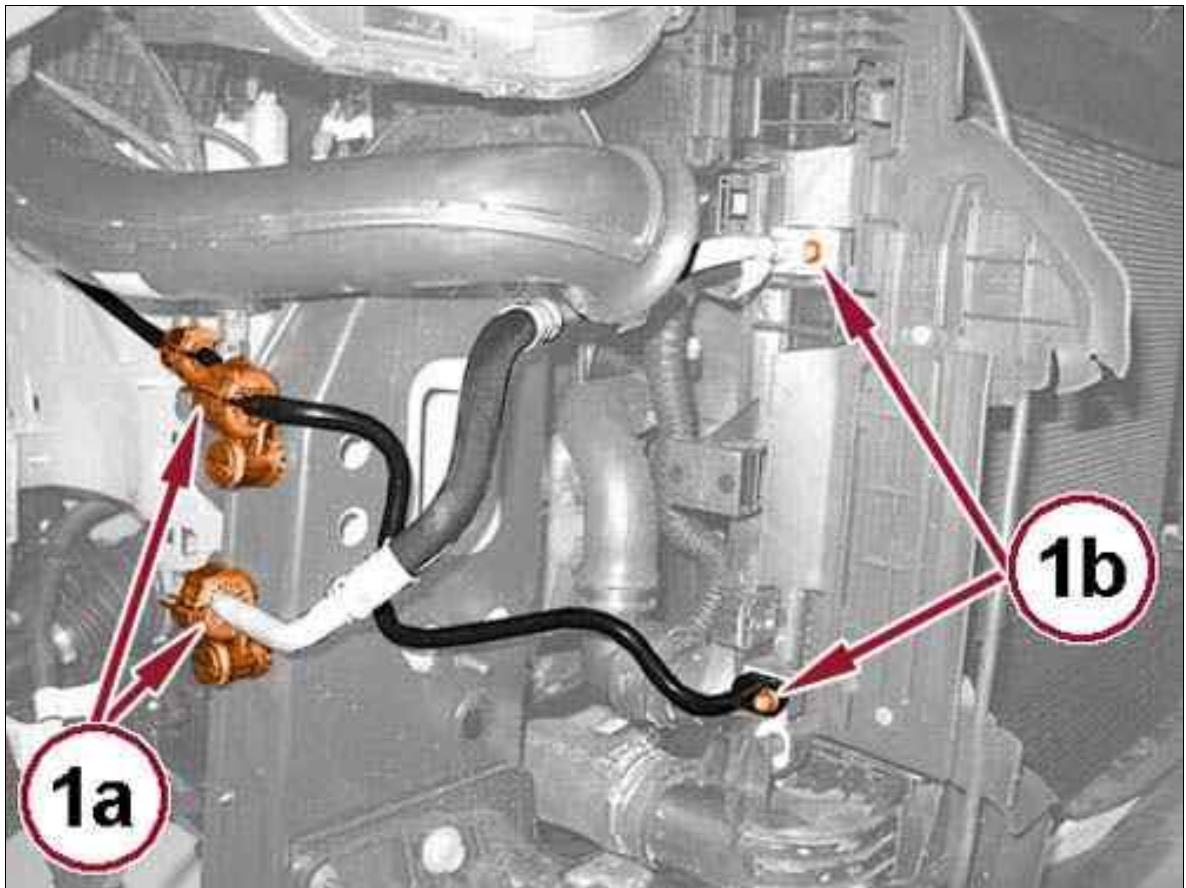
Fig 5: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

11. Open retainer clips (1) and remove the coolant hose from fan shroud.

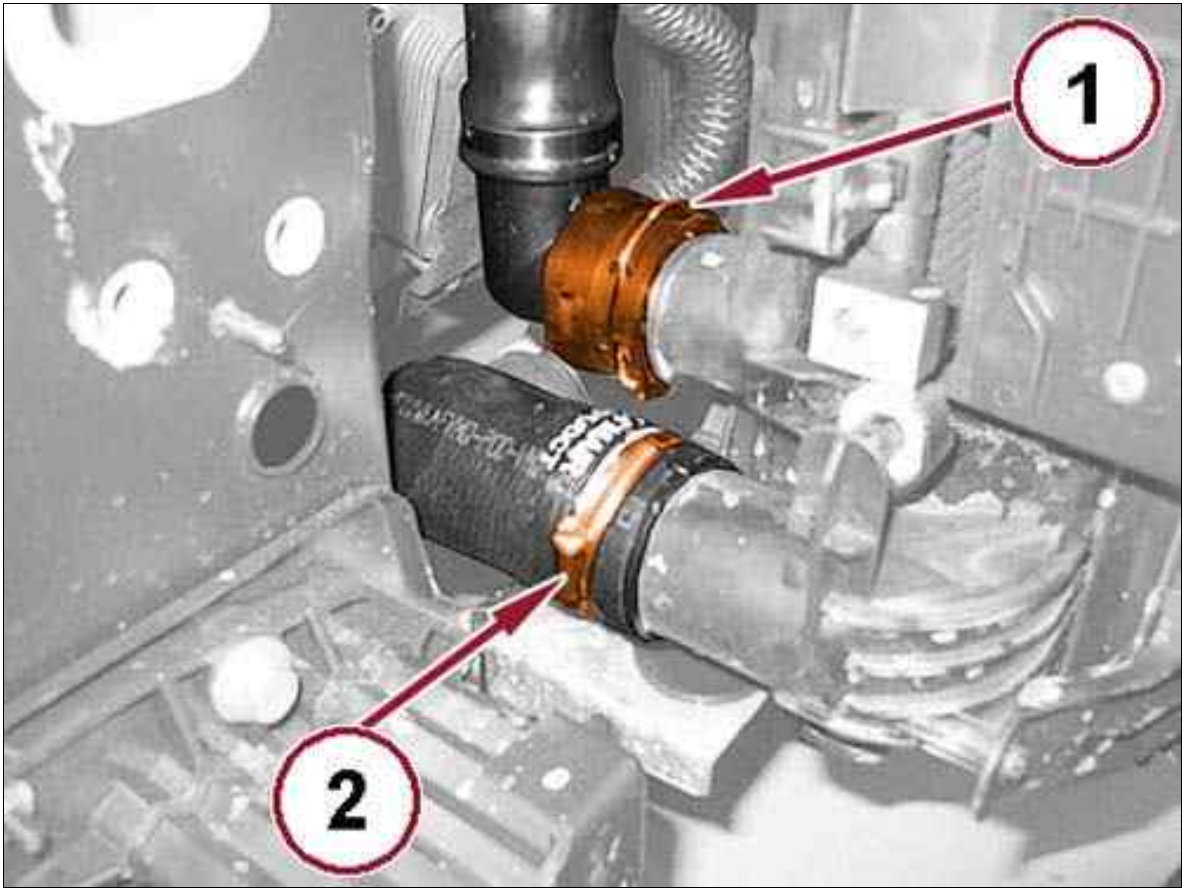
Fig 6: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Open the retaining clips (1a) then remove the bolts (1b) and the A/C lines from the A/C condenser.

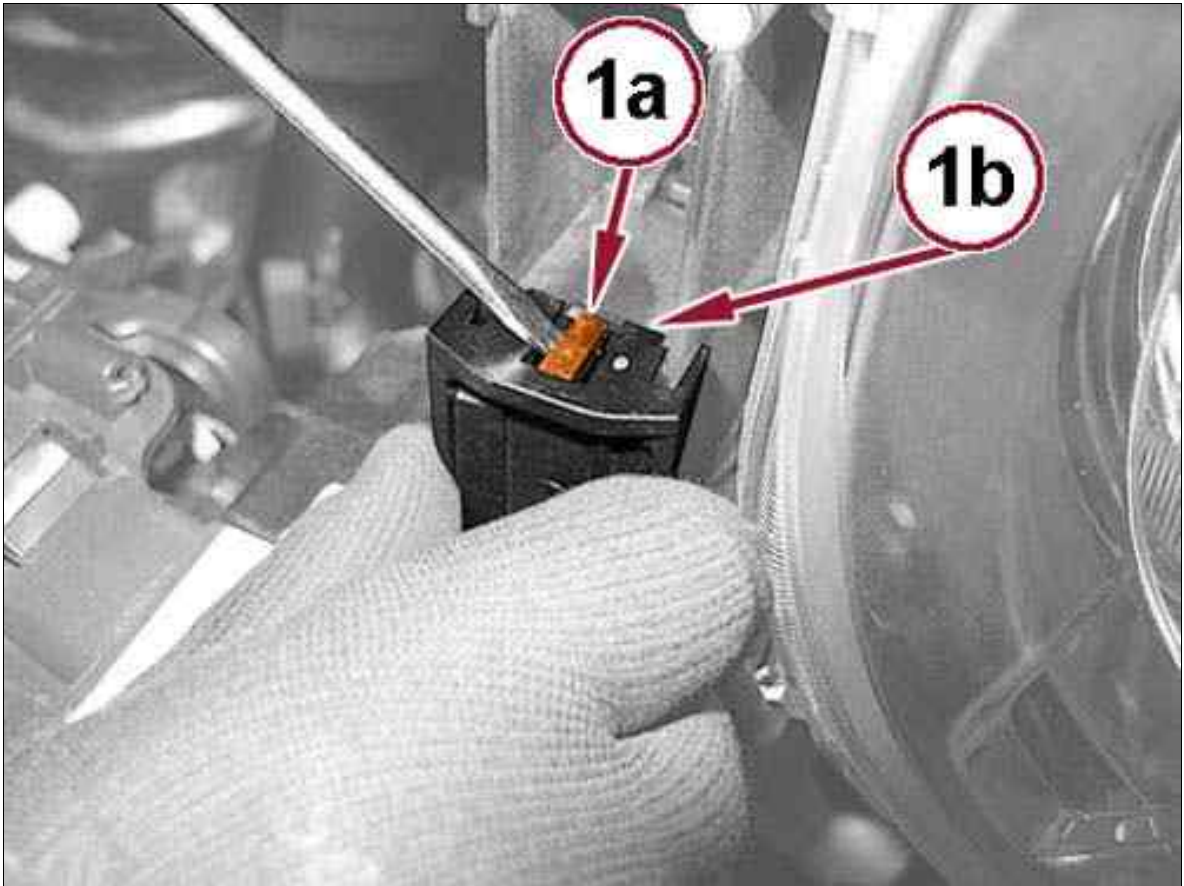
Fig 7: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

13. Disengage the retaining clip and remove the lower radiator hose (1).
14. Loosen the clamp and remove the CAC hose (2).

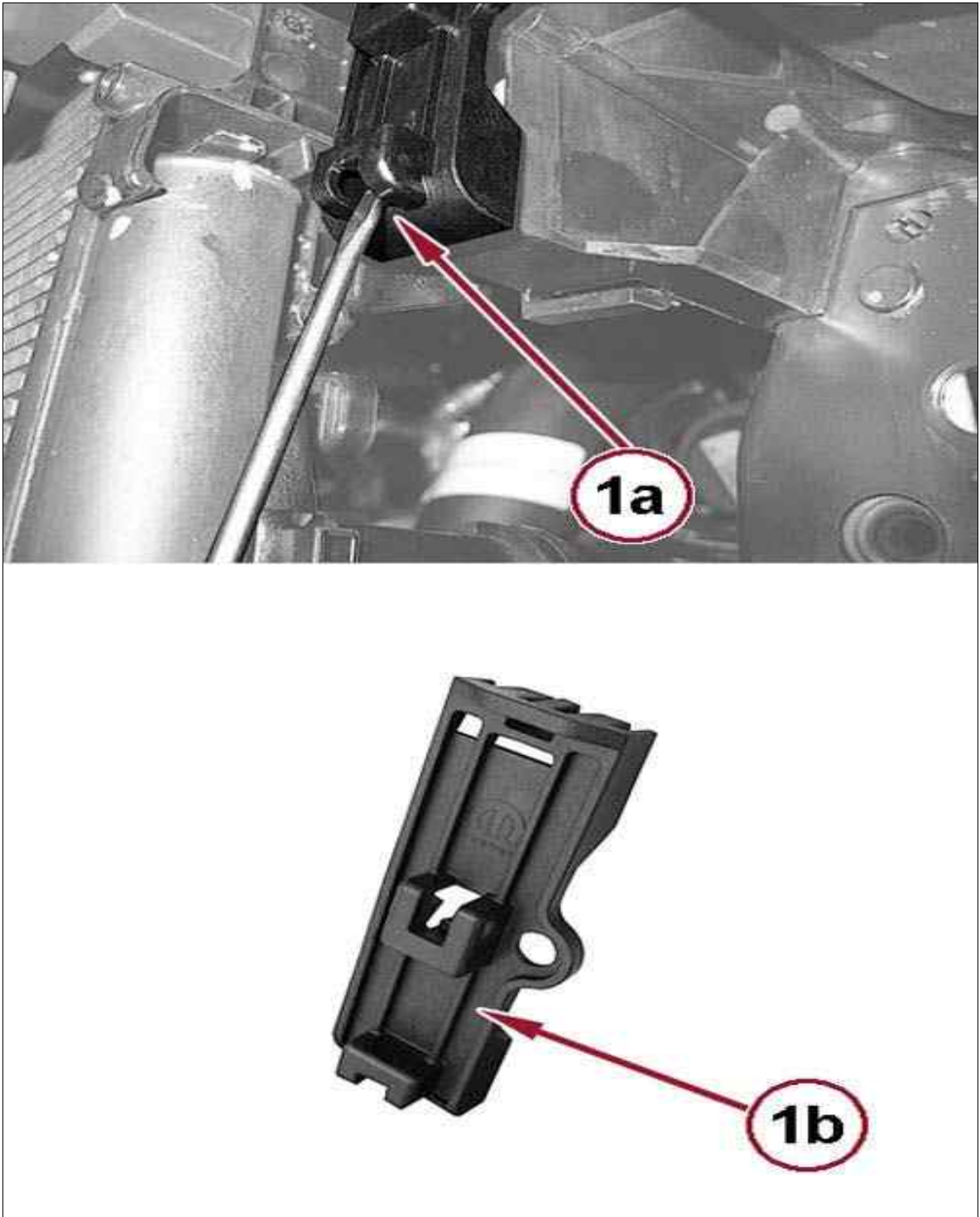
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

15. Lift the spring (1a) and disengage the clips (1b) securing the block to the radiator.

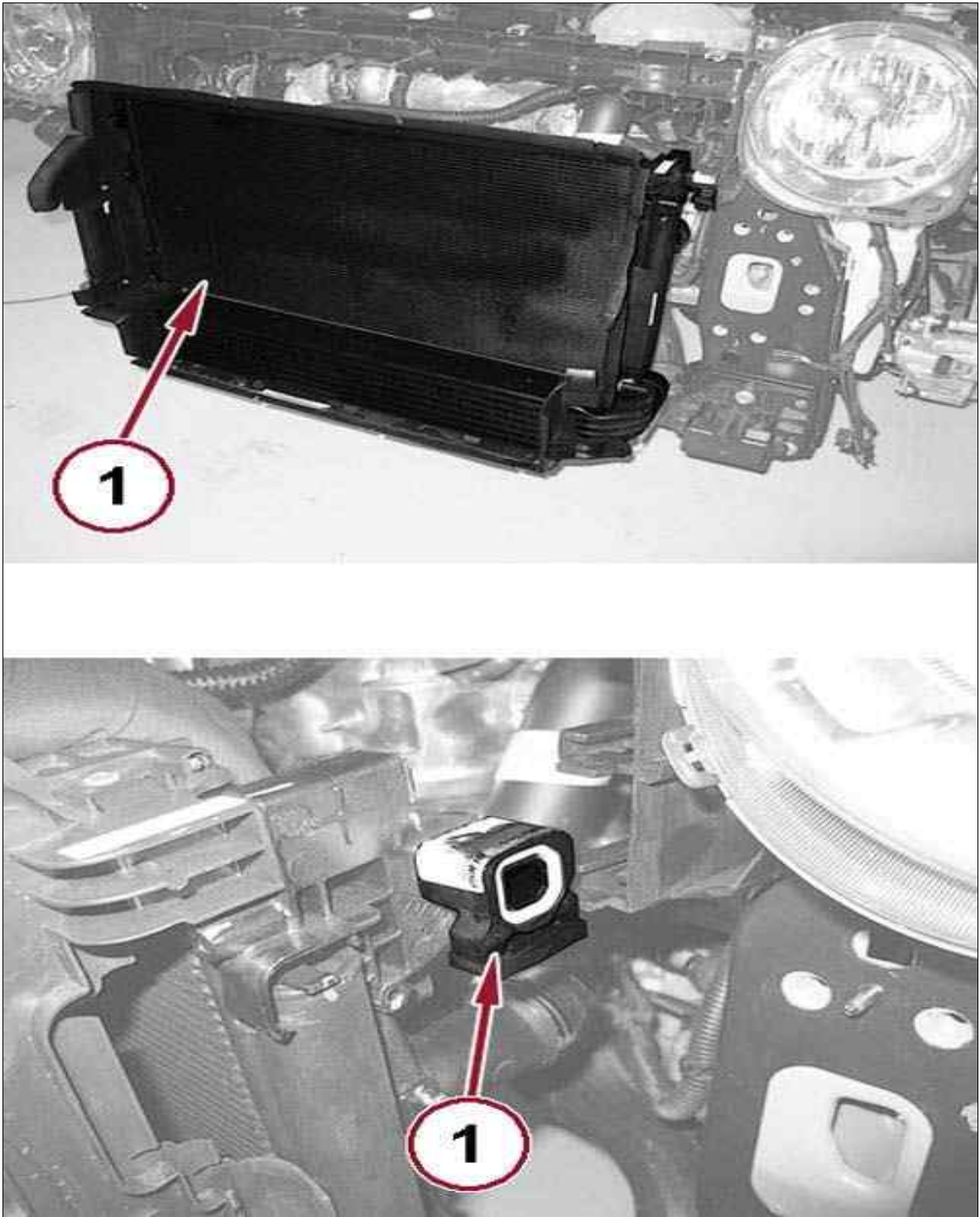
Fig 9: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

16. Working on both sides, compress the spring (1a) then disengage and remove the cover block (1b) securing the radiator.

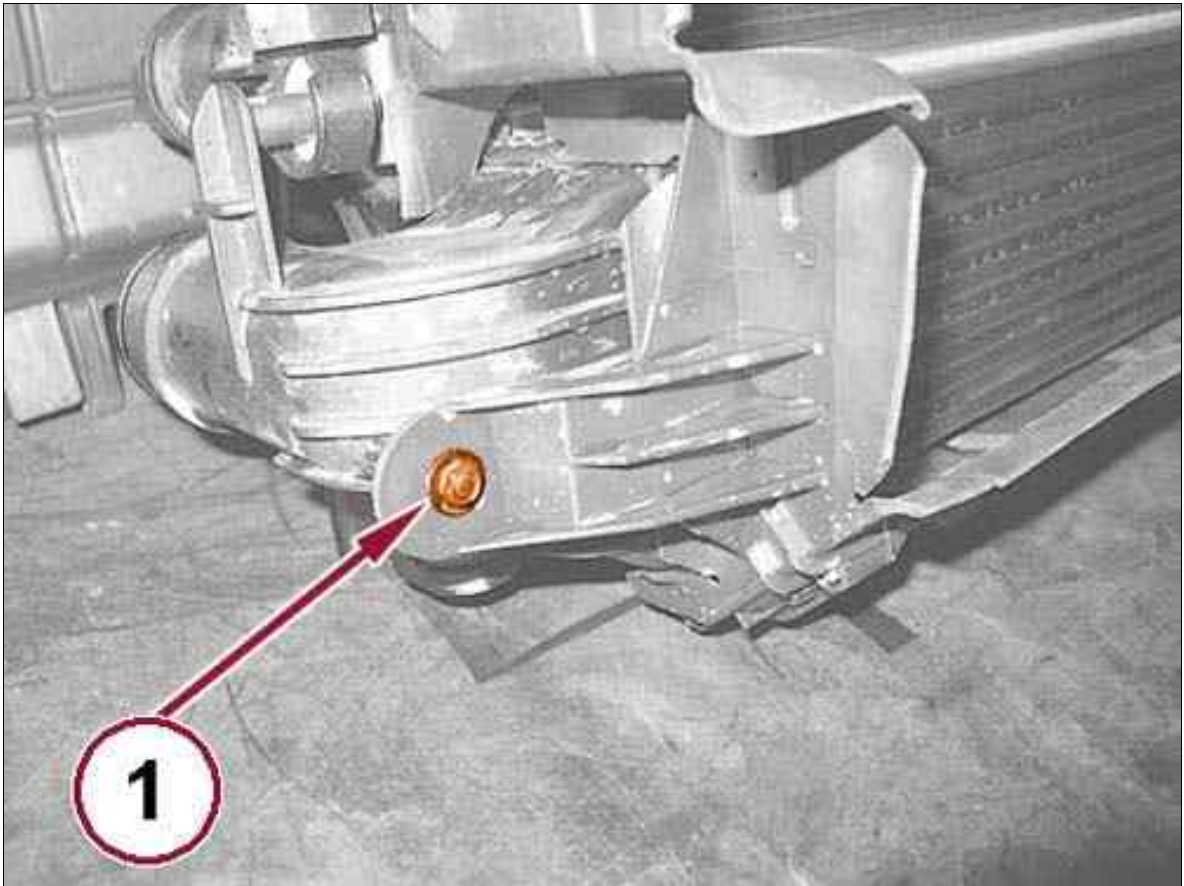
Fig 10: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

17. Working on both sides, disengage the upper mount and remove the radiator (1).

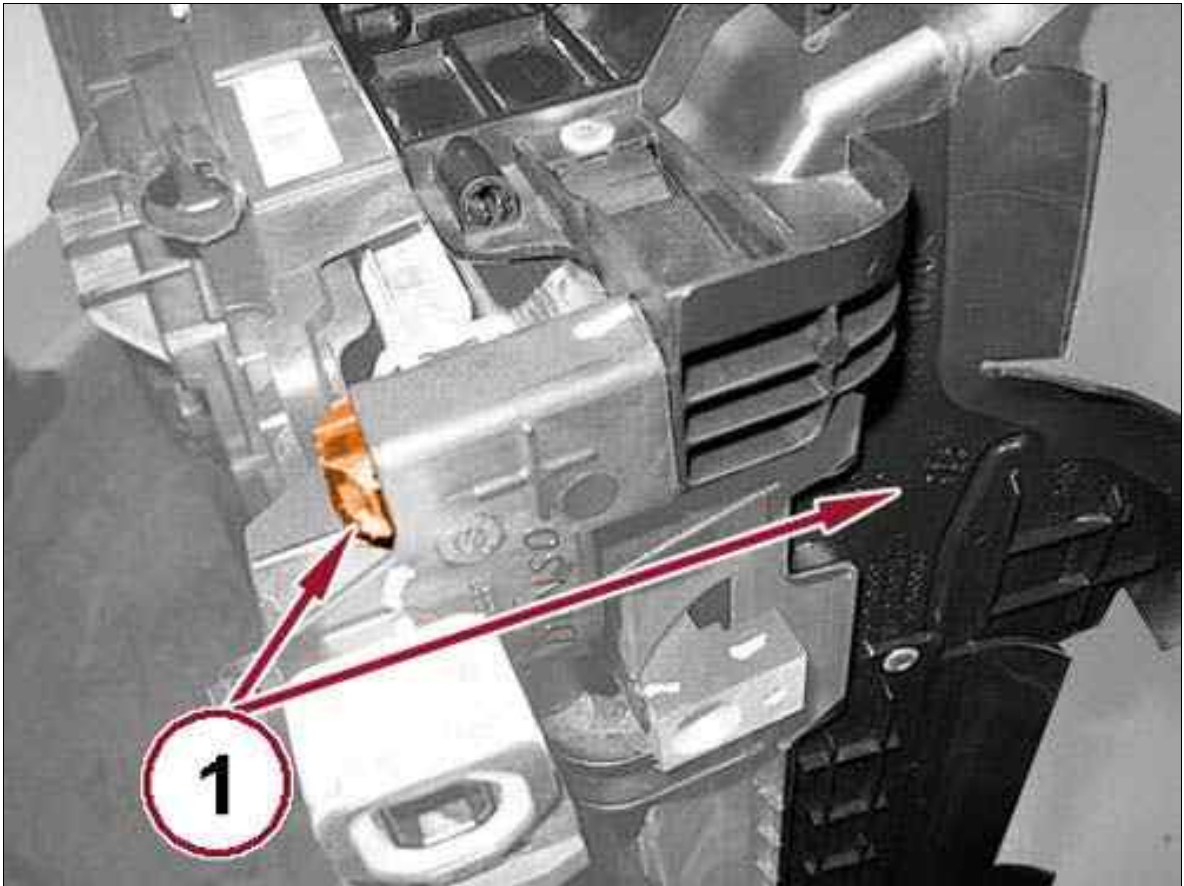
Fig 11: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

18. Remove the bolts (1) securing the air duct.

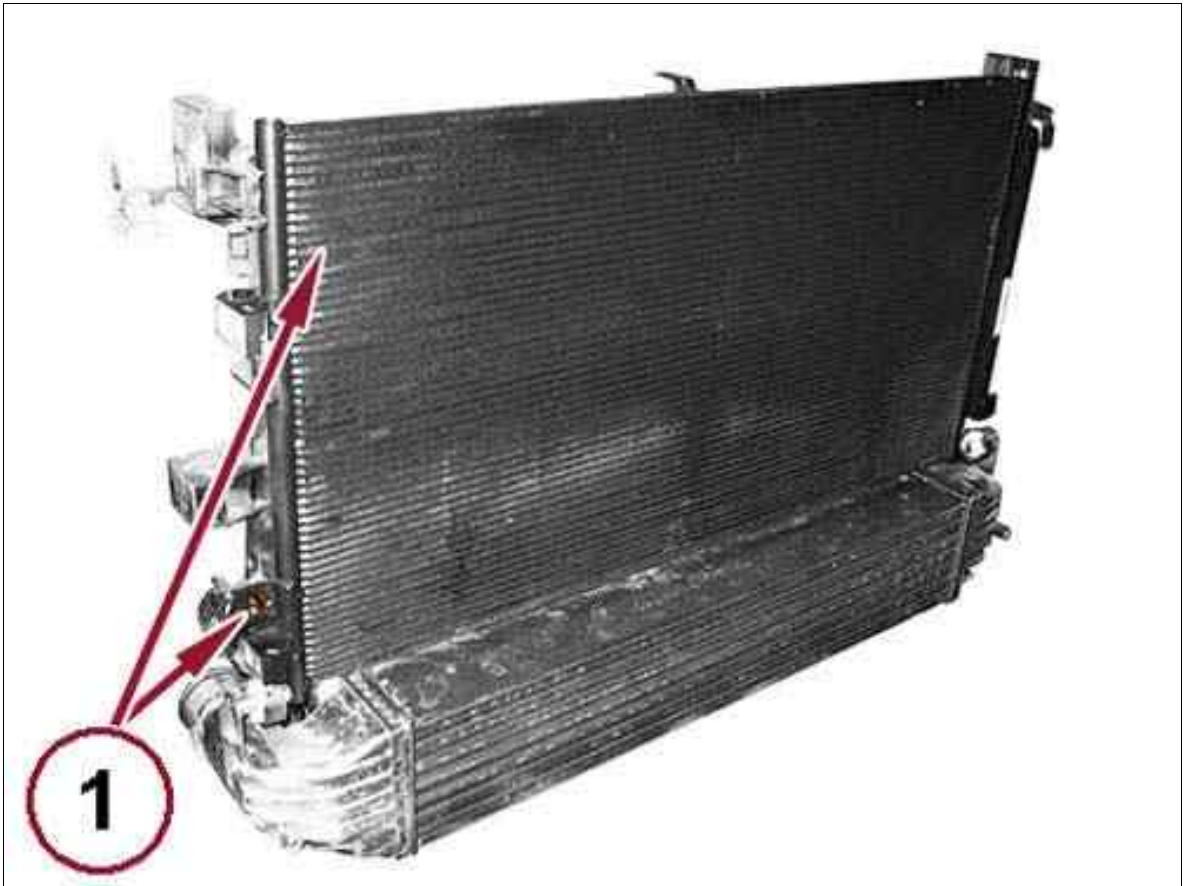
Fig 12: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

19. Detach the clips above and remove the air duct (1).

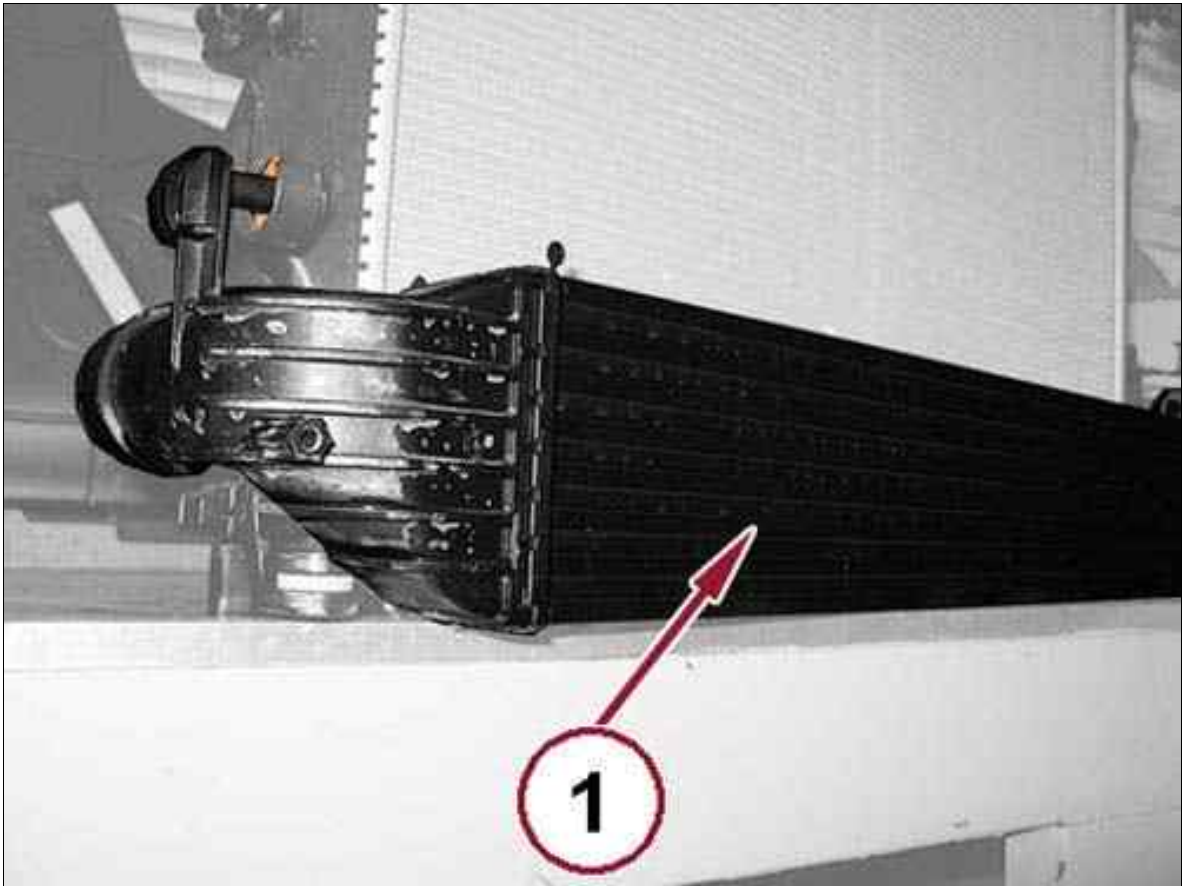
Fig 13: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

20. Release the clips and remove the A/C condenser (1).

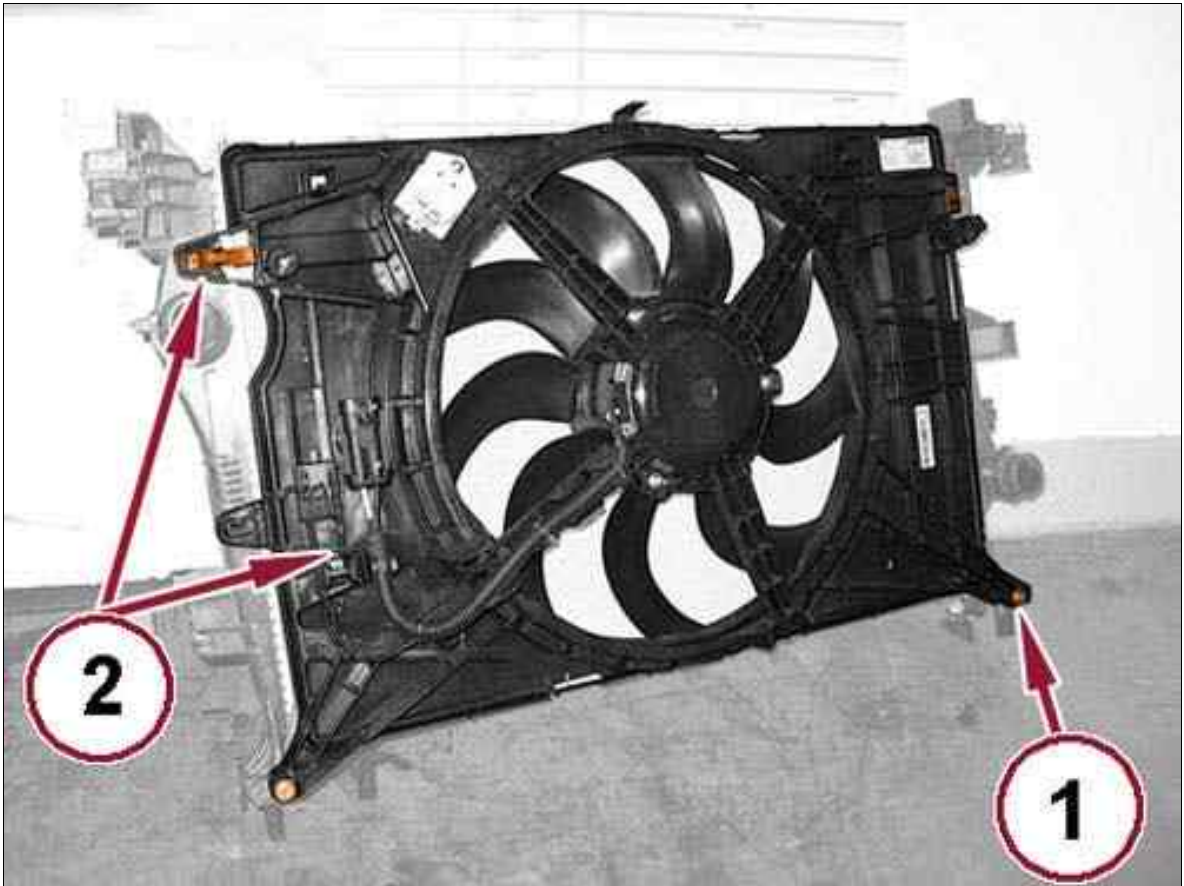
Fig 14: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

21. Unlock and remove the CAC (1).

Fig 15: Cooling Fan, Clips & Bolts

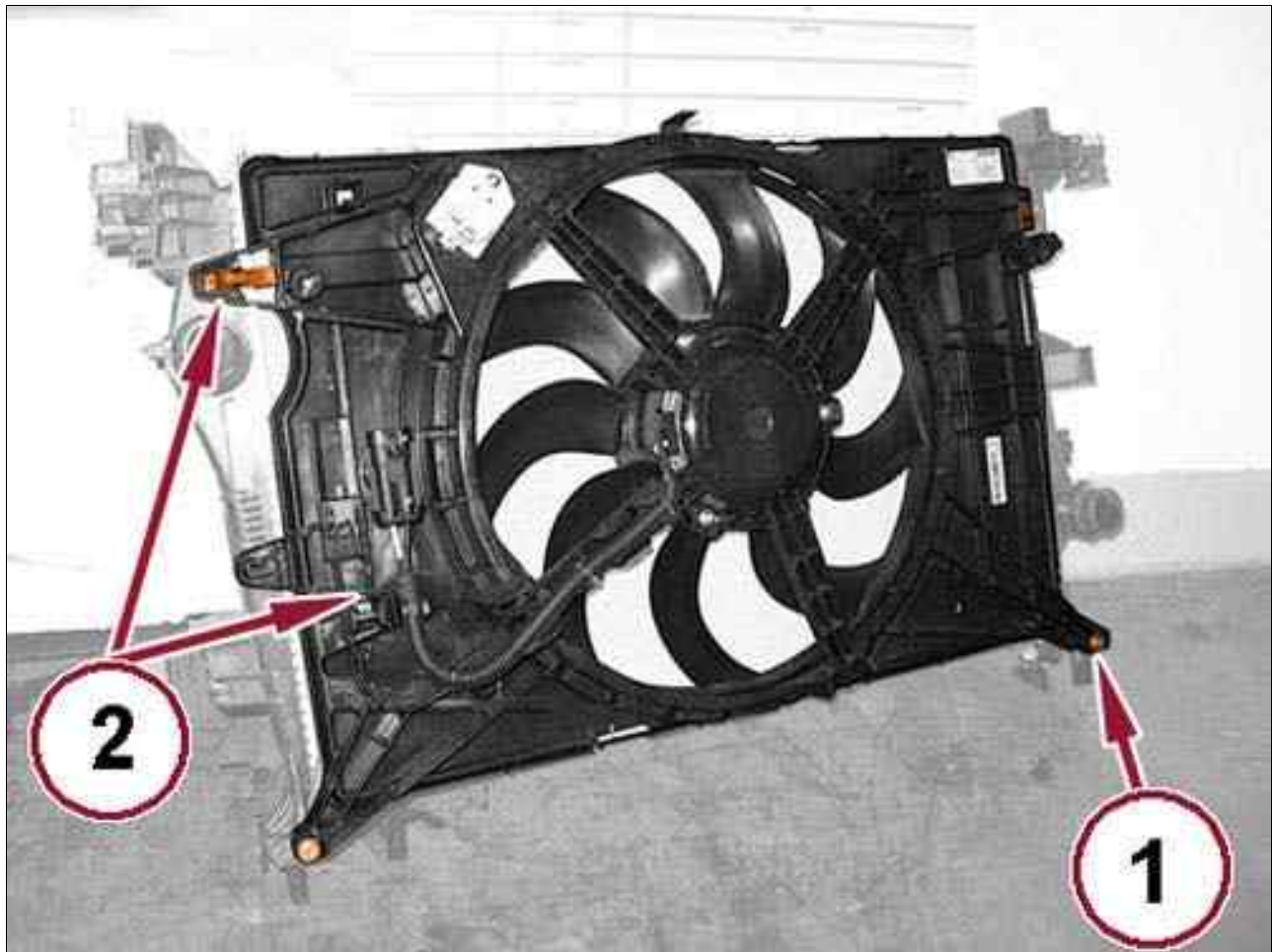


Courtesy of CHRYSLER GROUP, LLC

22. Remove lower bolts (1) securing the cooling fan to the radiator.
23. Unhook the clips (2) and remove the cooling fan from the radiator.

**ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.0L
DIESEL 120/140 CV > INSTALLATION**

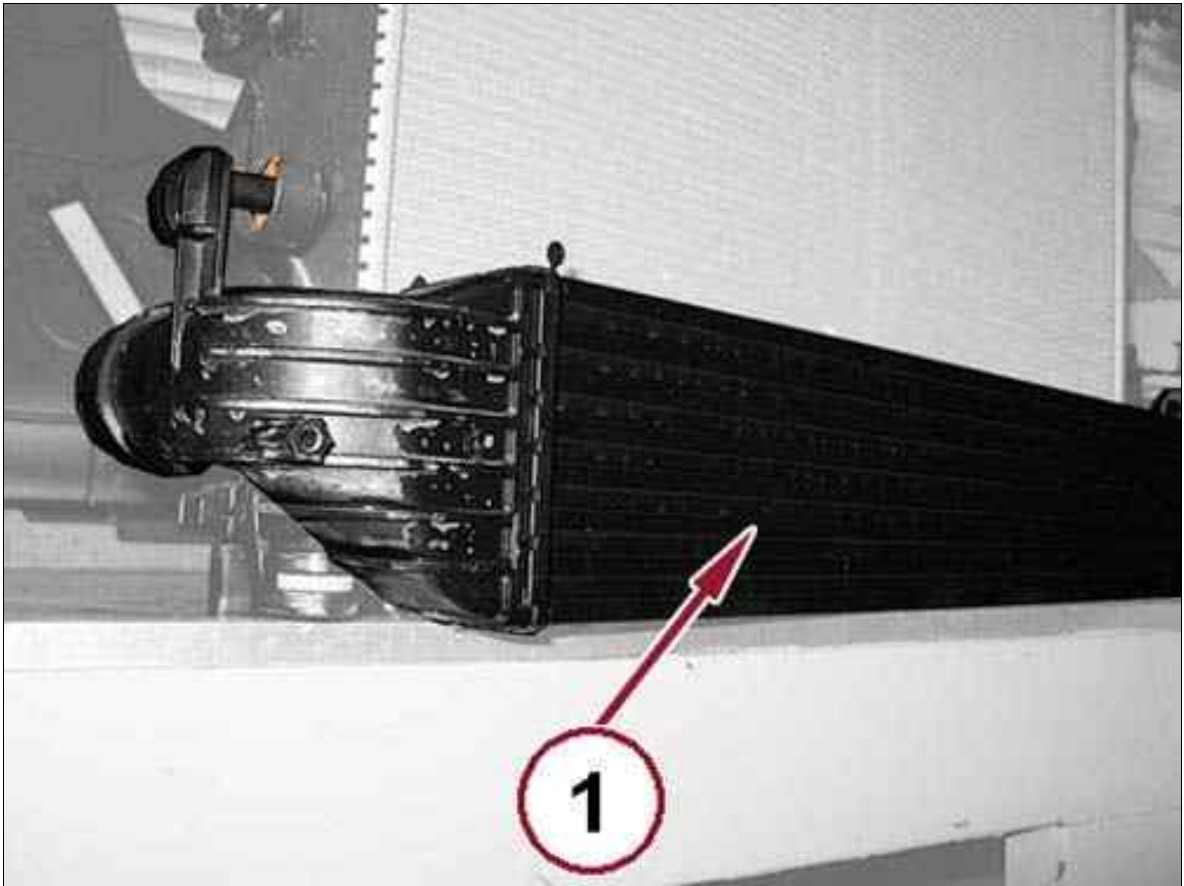
Fig 1: Cooling Fan, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

1. Care must be taken not to damage the radiator cooling fins and tubes during installation.
2. Install the cooling fan onto radiator and engage the upper retaining clips (2).
3. Install the lower cooling fan bolts (1) and securely tighten.

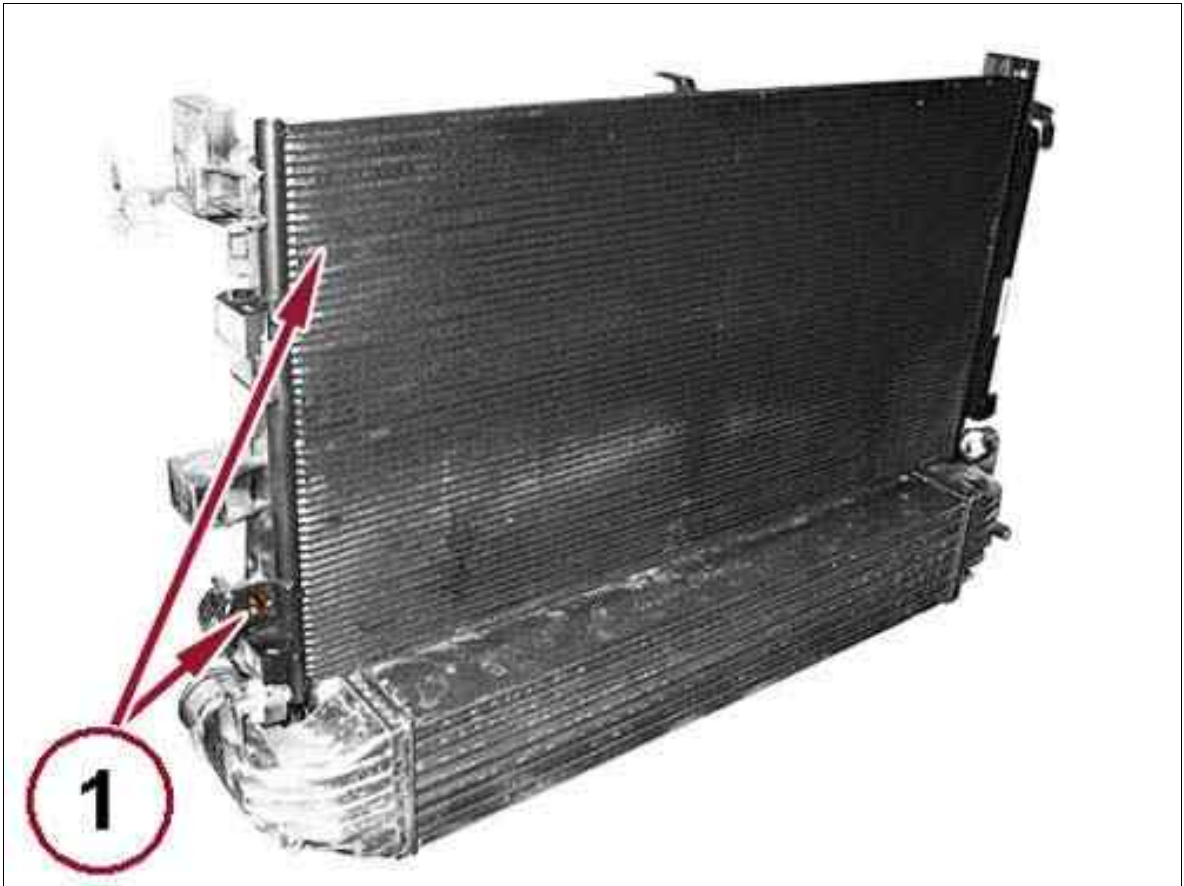
Fig 2: Charge Air Cooler



Courtesy of CHRYSLER GROUP, LLC

4. Install and lock the Charge Air Cooler (CAC) (1).

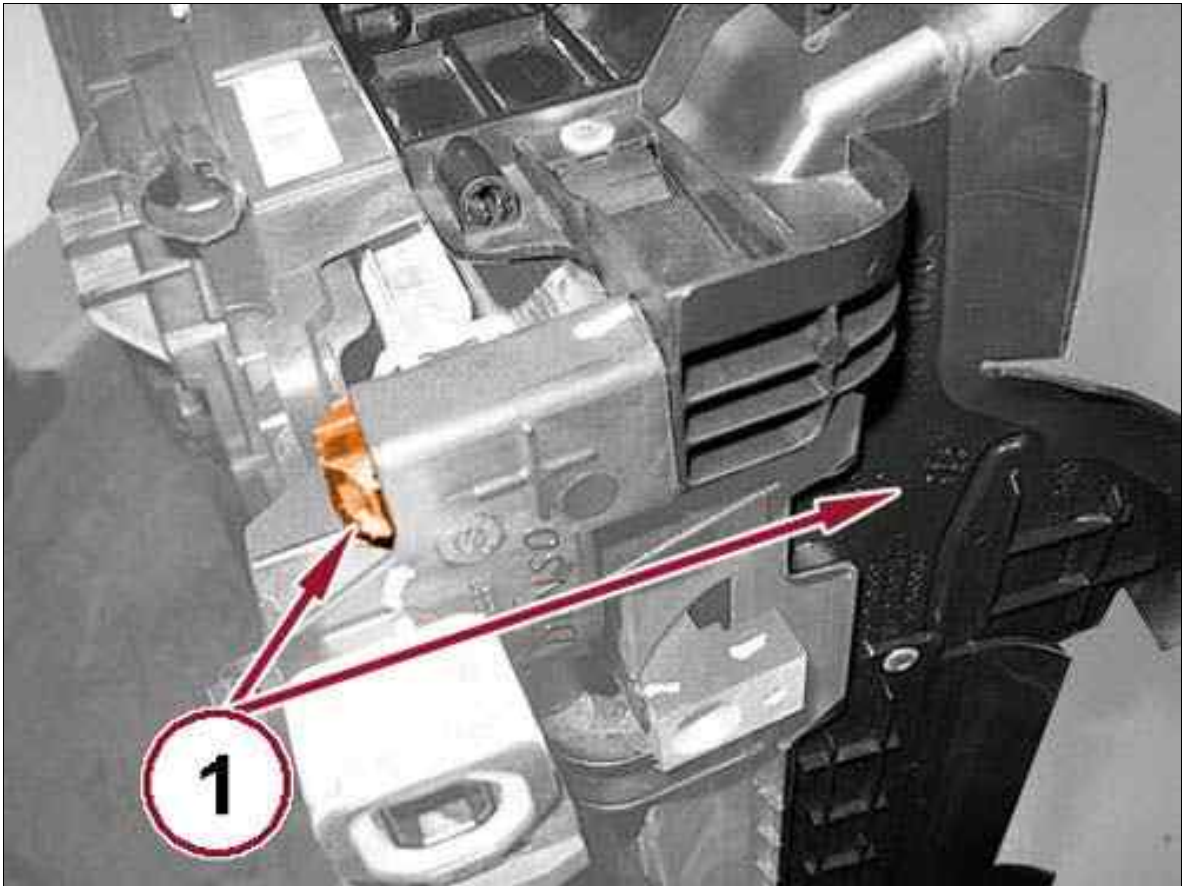
Fig 3: Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

5. Install the A/C condenser (1) and engage the retaining clips.

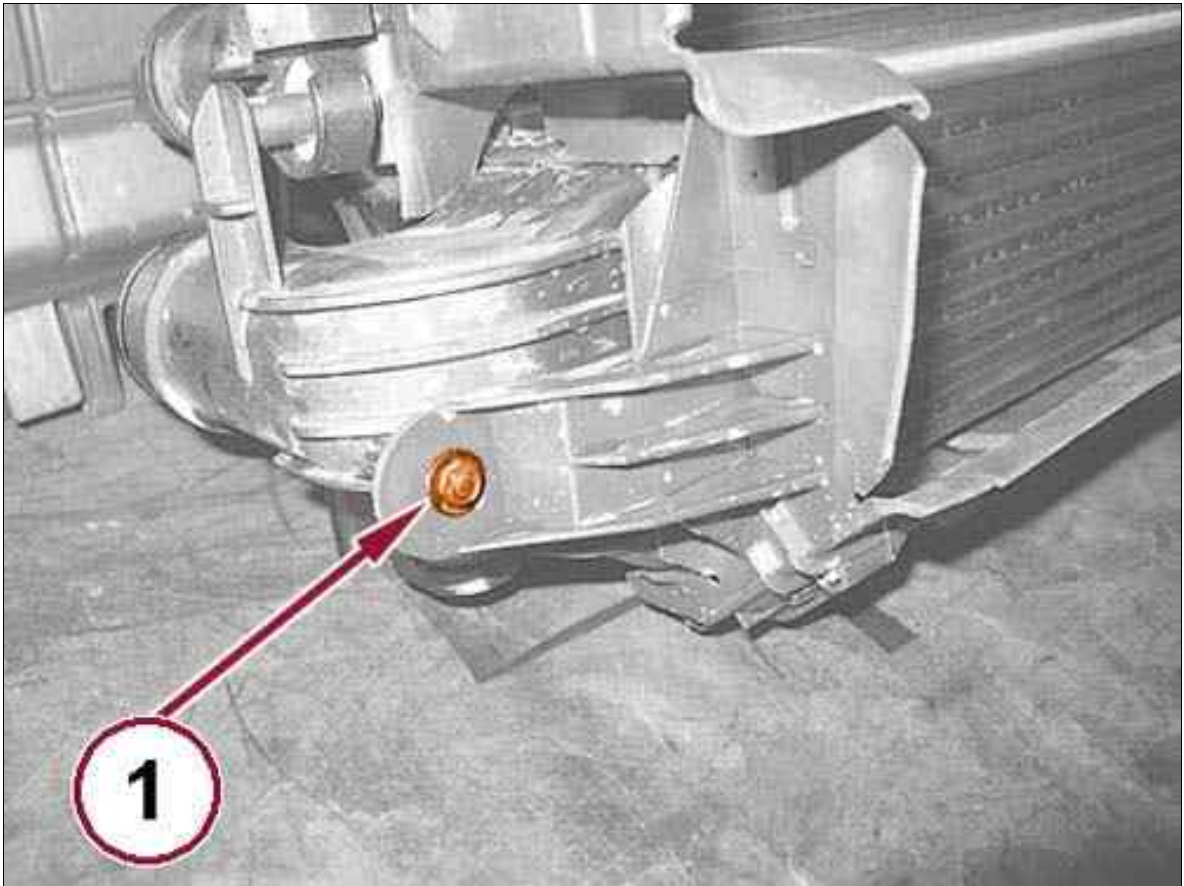
Fig 4: Air Duct Clips



Courtesy of CHRYSLER GROUP, LLC

6. Install the air duct (1) and attach the retaining clips.

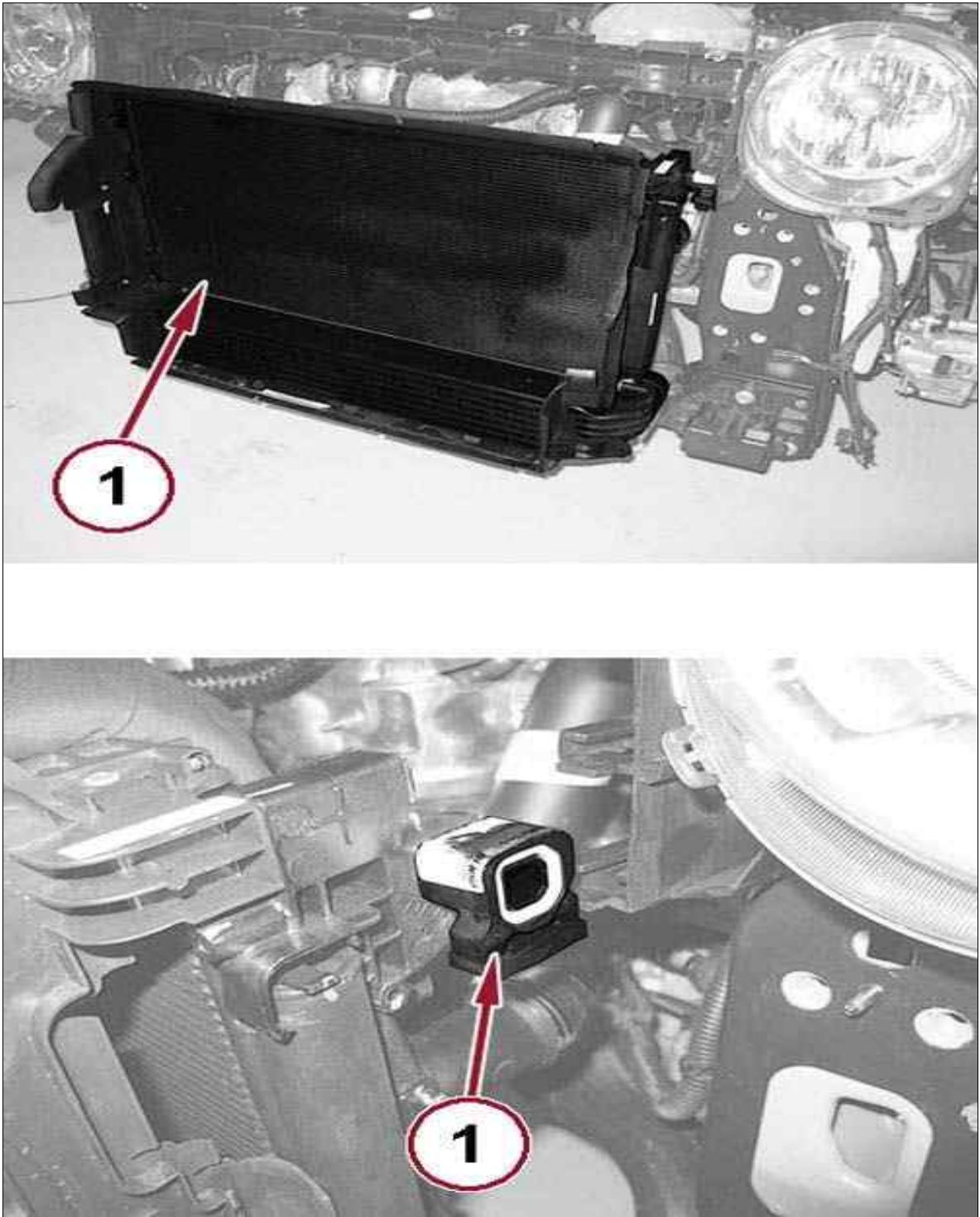
Fig 5: Air Deflector Bolts



Courtesy of CHRYSLER GROUP, LLC

7. Install the air duct bolt (1) and securely tighten.

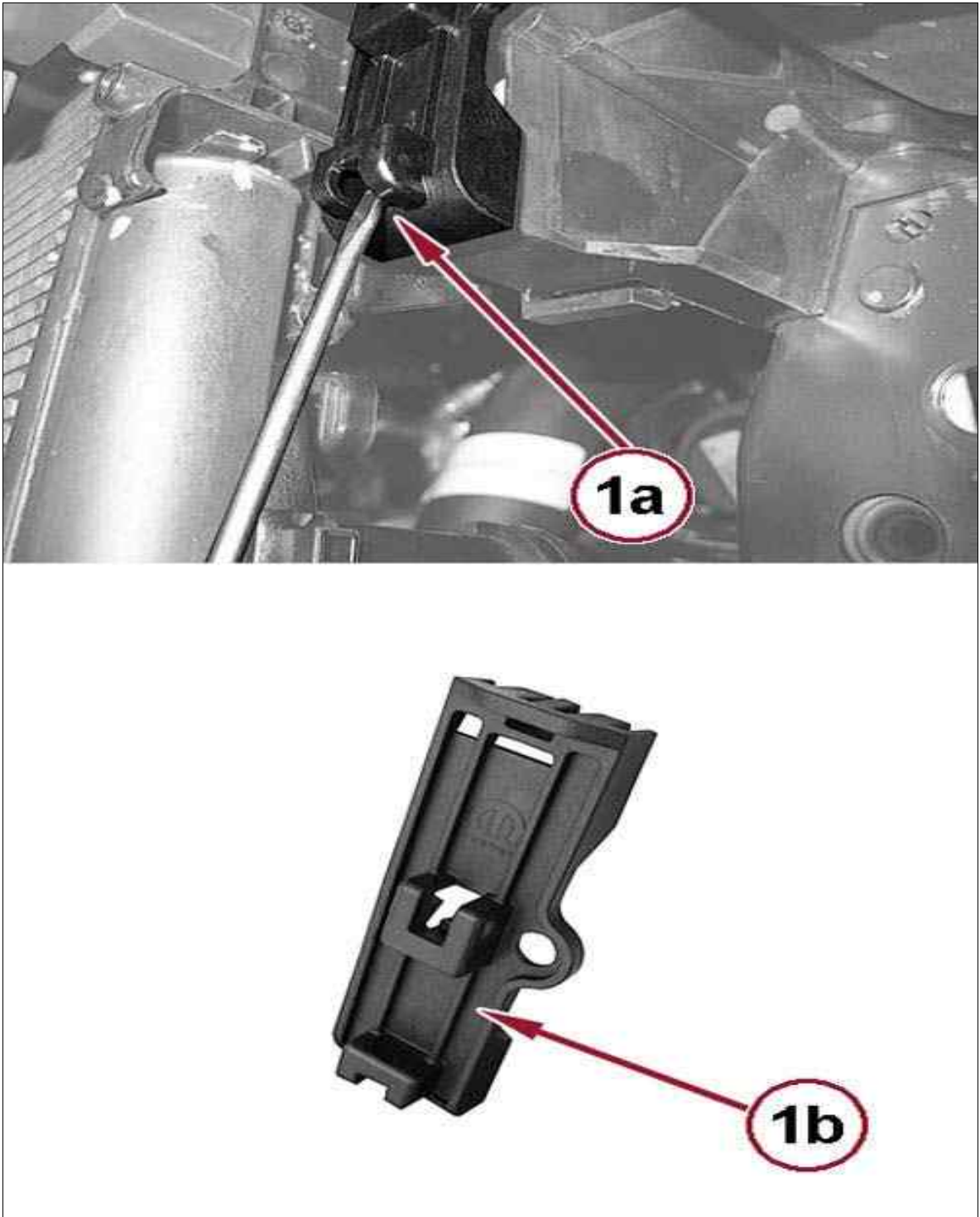
Fig 6: Radiator & Tab



Courtesy of CHRYSLER GROUP, LLC

8. Install the radiator (1) and engage the upper mounts.

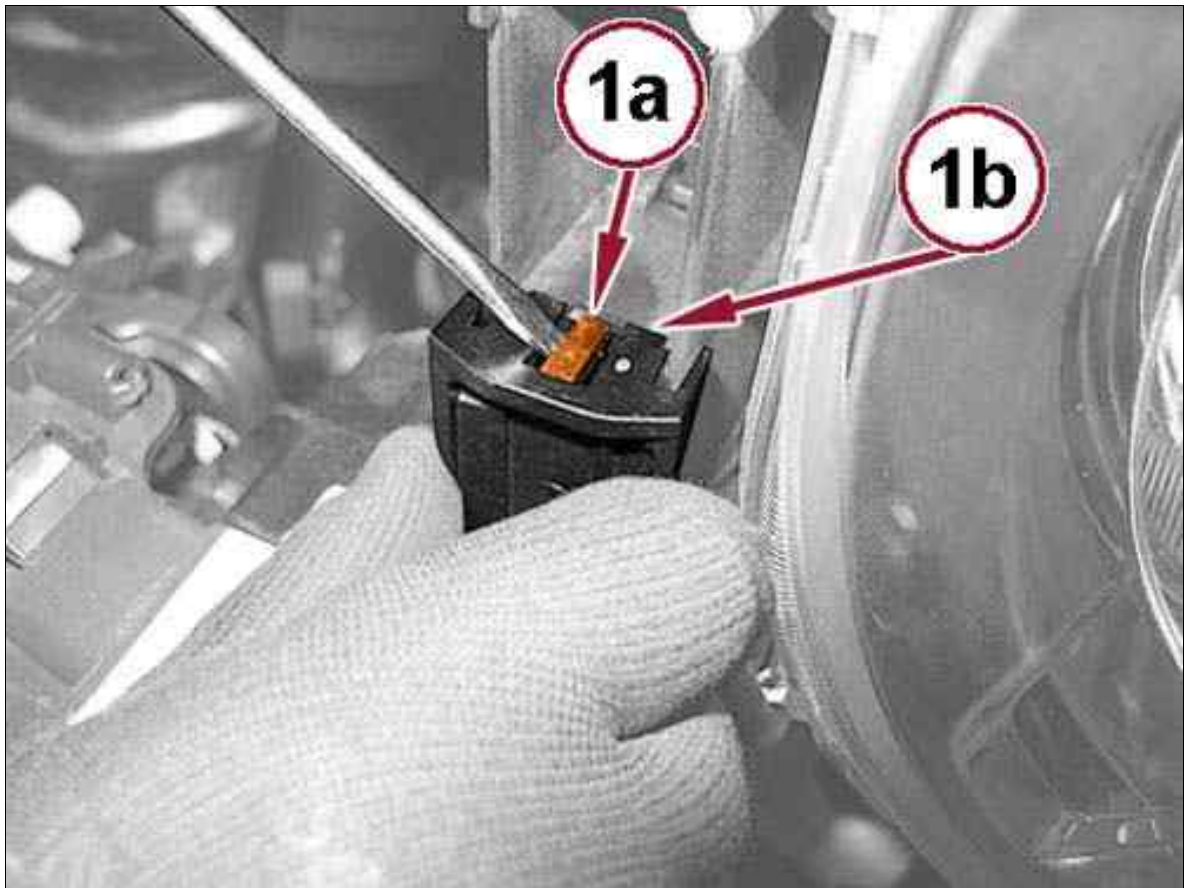
Fig 7: Radiator Retaining Block & Spring



Courtesy of CHRYSLER GROUP, LLC

9. Working on both sides, install the cover block (1b) securing the radiator and engage the retaining clip (1a).

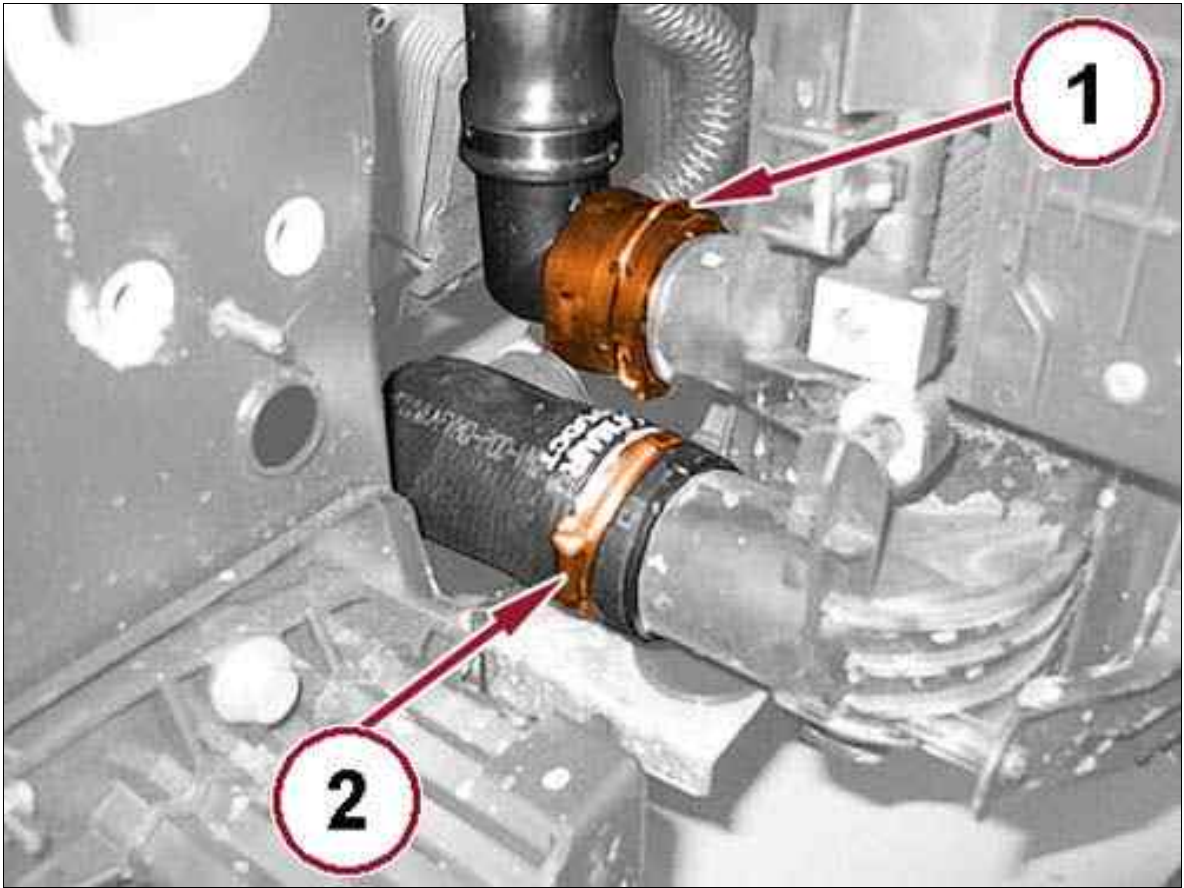
Fig 8: Clips



Courtesy of CHRYSLER GROUP, LLC

10. Engage the clips (1b) securing the block to the radiator and engage spring (1a).

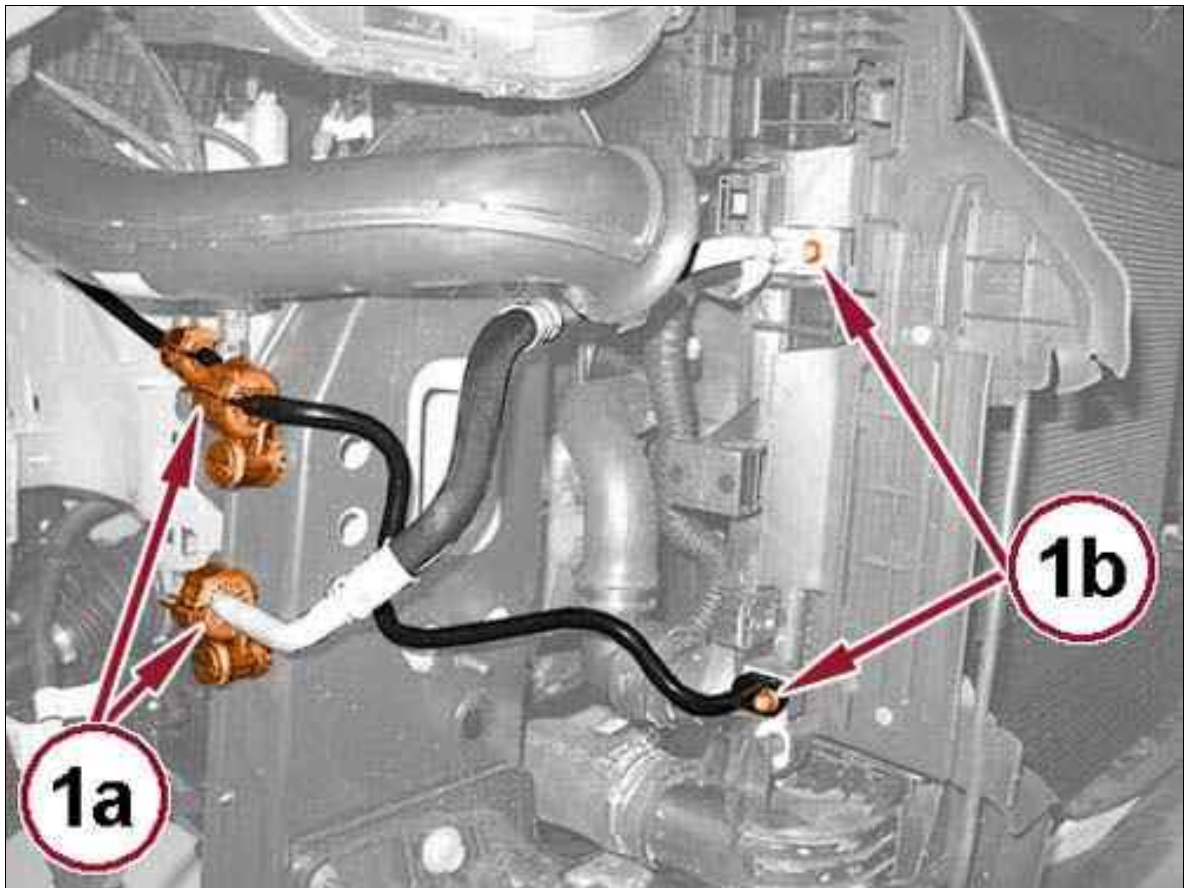
Fig 9: Lower Radiator Hose Clip & CAC Hose Clamp



Courtesy of CHRYSLER GROUP, LLC

11. Install the CAC hose and secure tighten the clamp (2).
12. Install the lower radiator hose and engage the retaining clip (1).

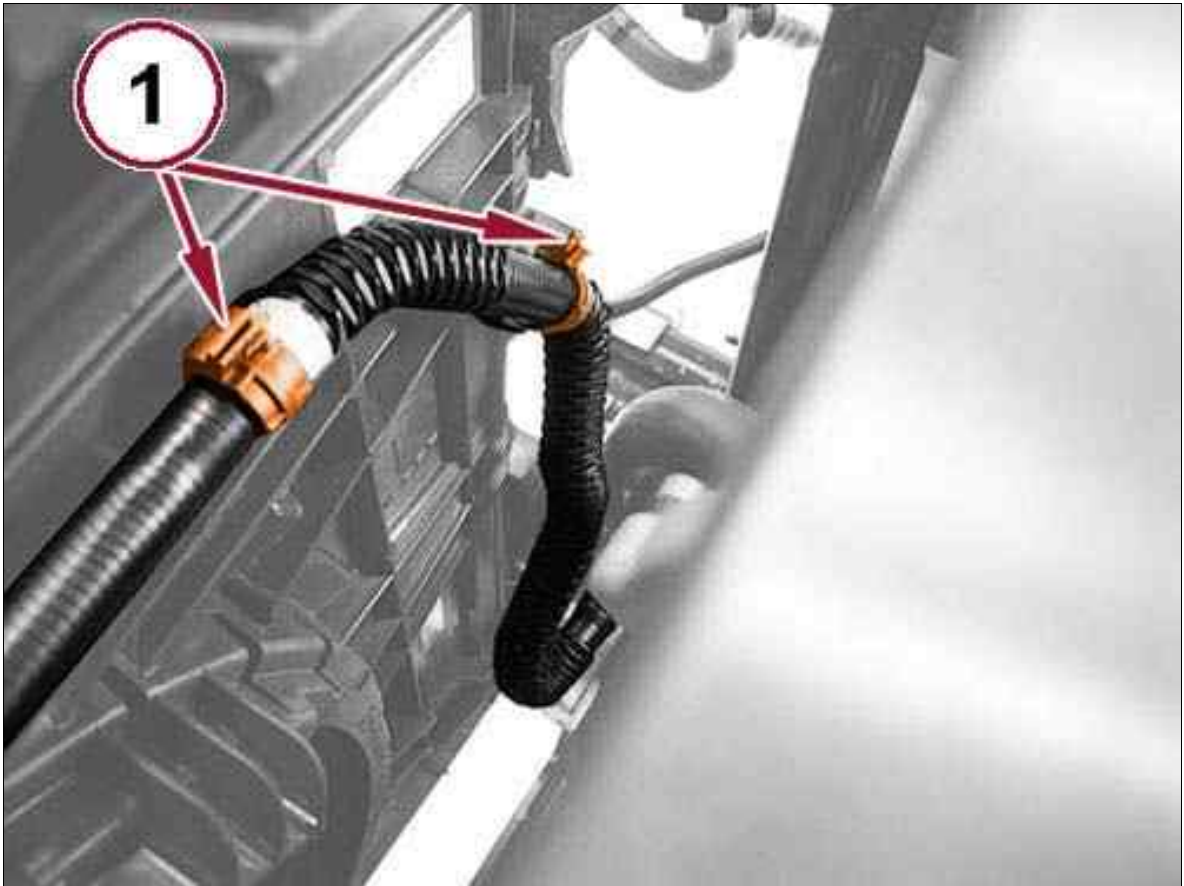
Fig 10: A/C Lines, Clips & Bolts



Courtesy of CHRYSLER GROUP, LLC

13. Using new gasket seals, install the A/C lines and securely tighten the bolts (1b) then close the retaining clips (1a).

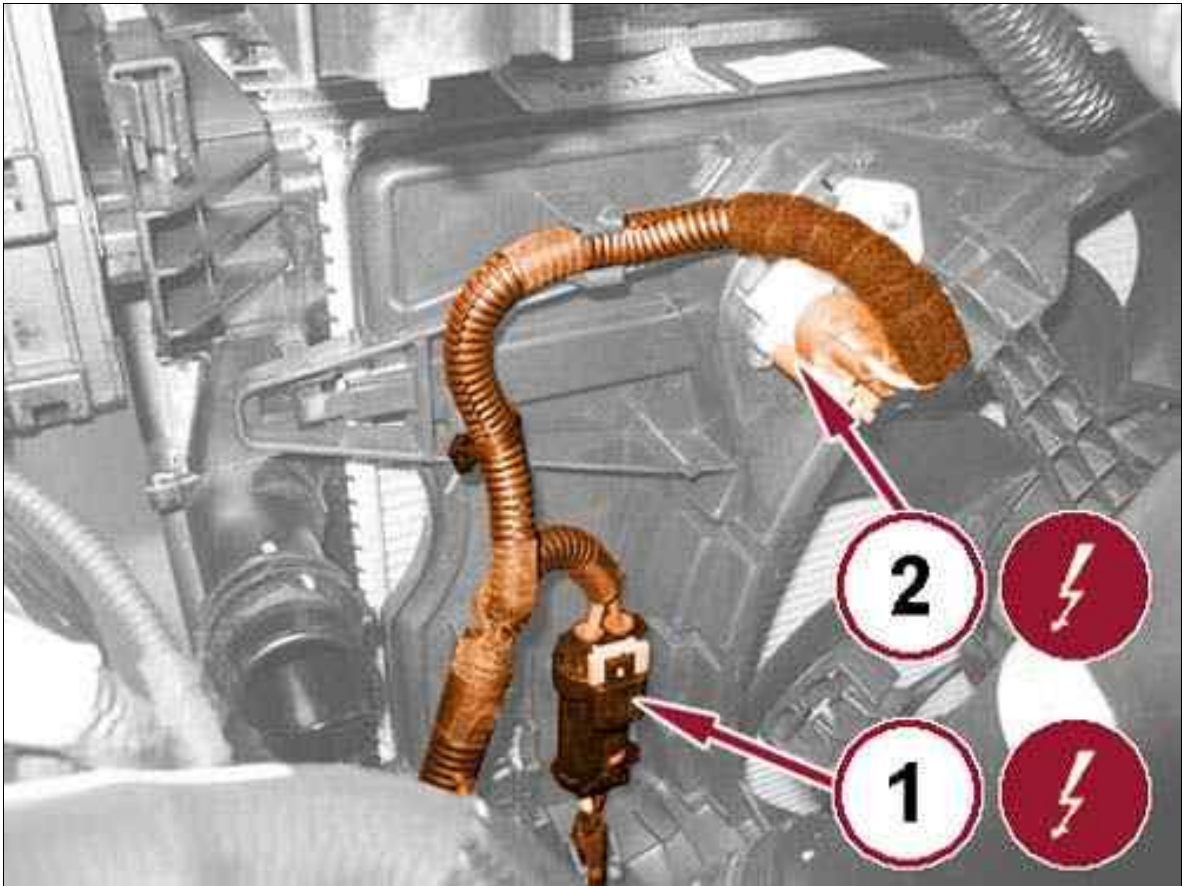
Fig 11: Coolant Hose Clips



Courtesy of CHRYSLER GROUP, LLC

14. Install the coolant hose onto the fan shroud and close the retaining clips.

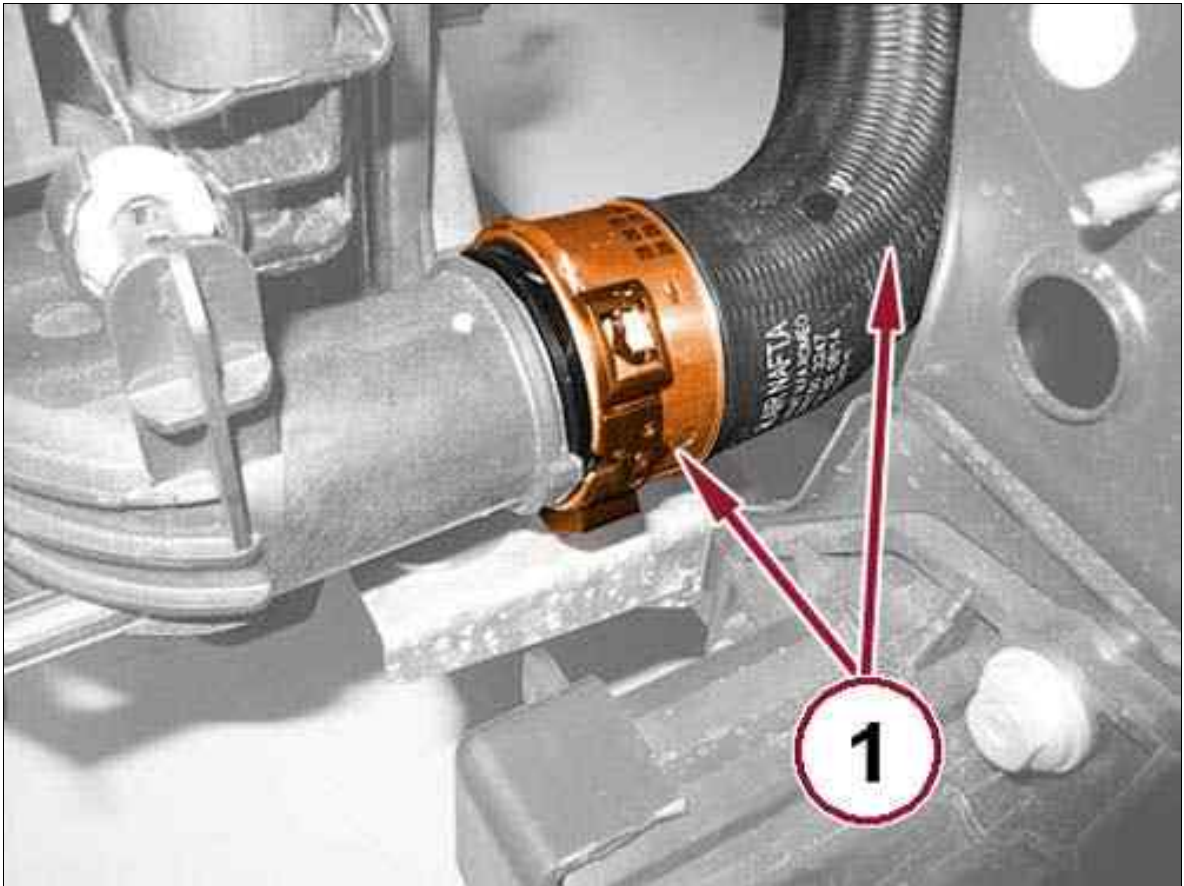
Fig 12: Cooling Fan Wire Harness Connectors



Courtesy of CHRYSLER GROUP, LLC

15. Connect the cooling fan wire harness connector (1).
16. Connect the cooling fan resistor wire harness connectors (2).

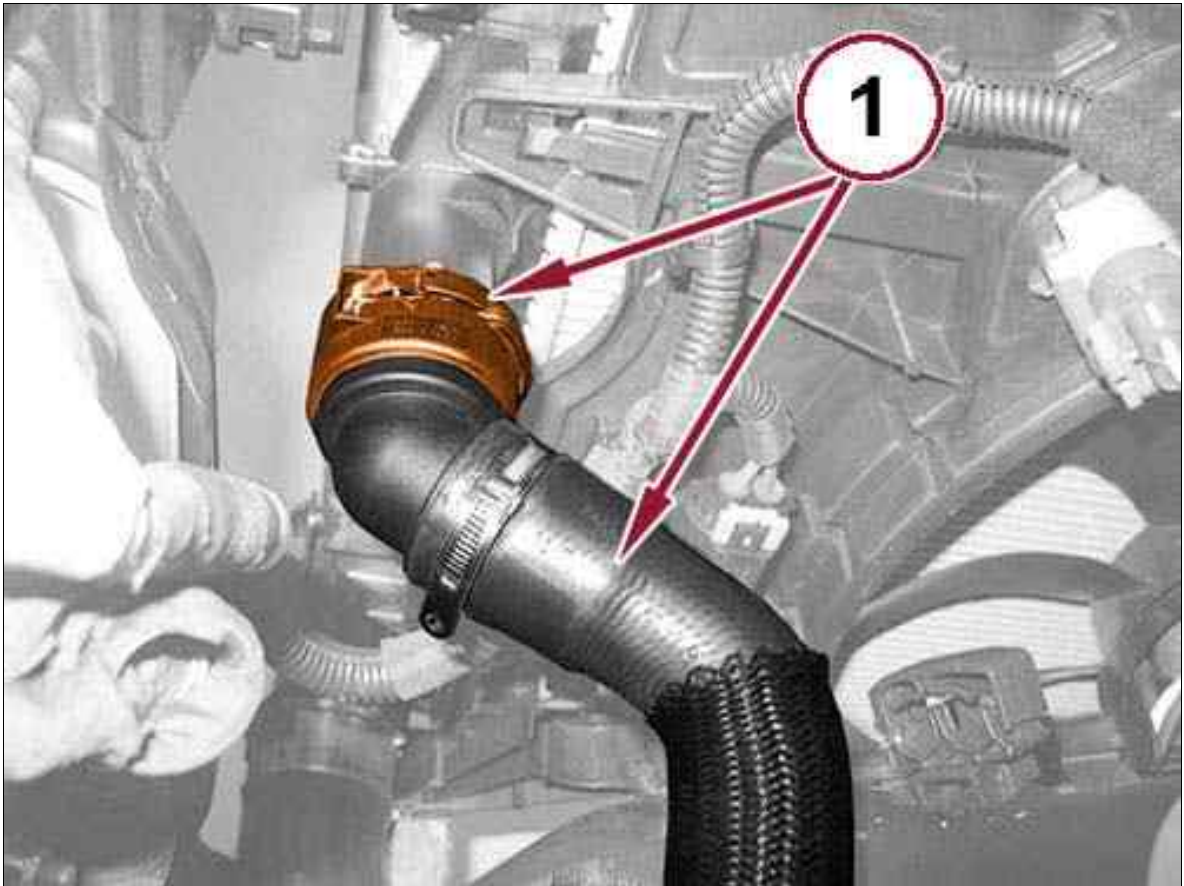
Fig 13: Charge Air Cooler Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

17. Install the CAC hose (1) and engage the retaining clip.

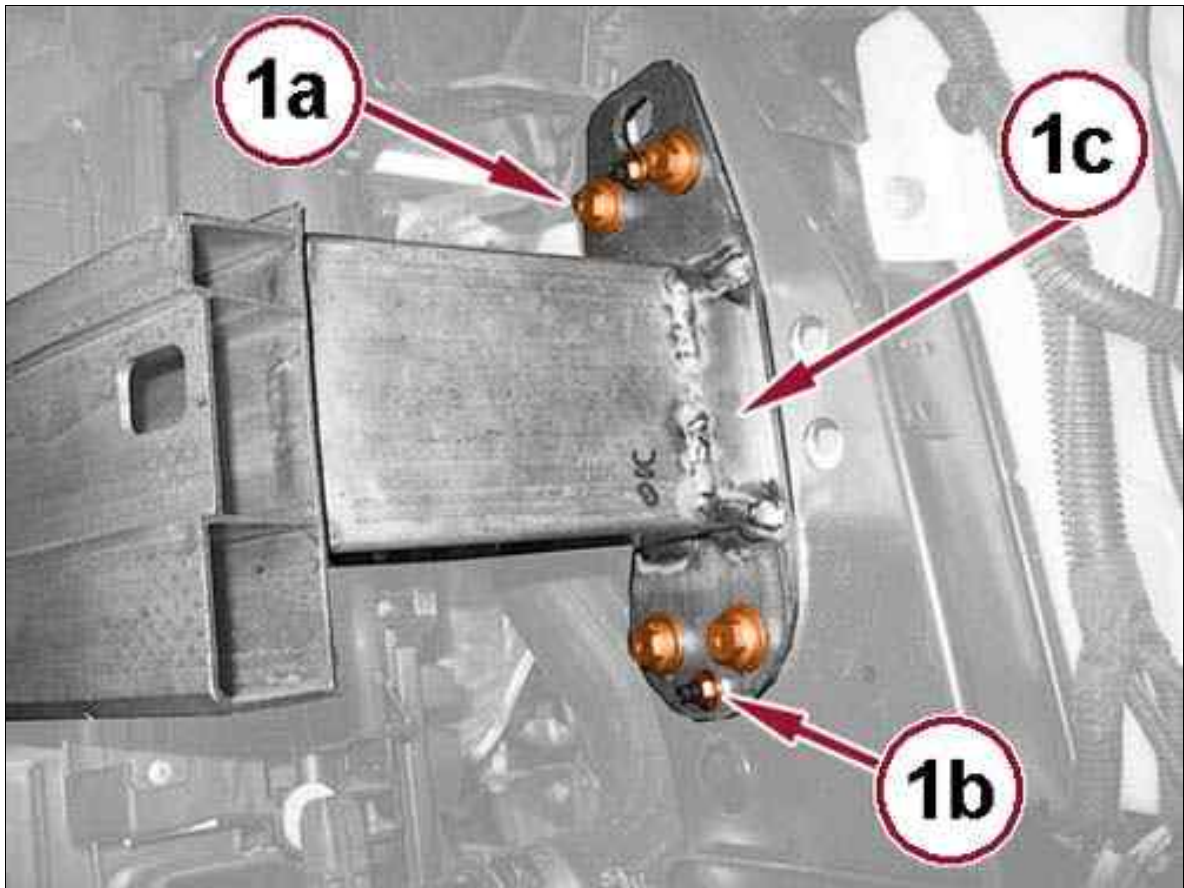
Fig 14: Upper Radiator Hose & Clip



Courtesy of CHRYSLER GROUP, LLC

18. Install the upper radiator hose (1) and engage the retaining clip.

Fig 15: Front Bumper Beam, Bolts & Nuts



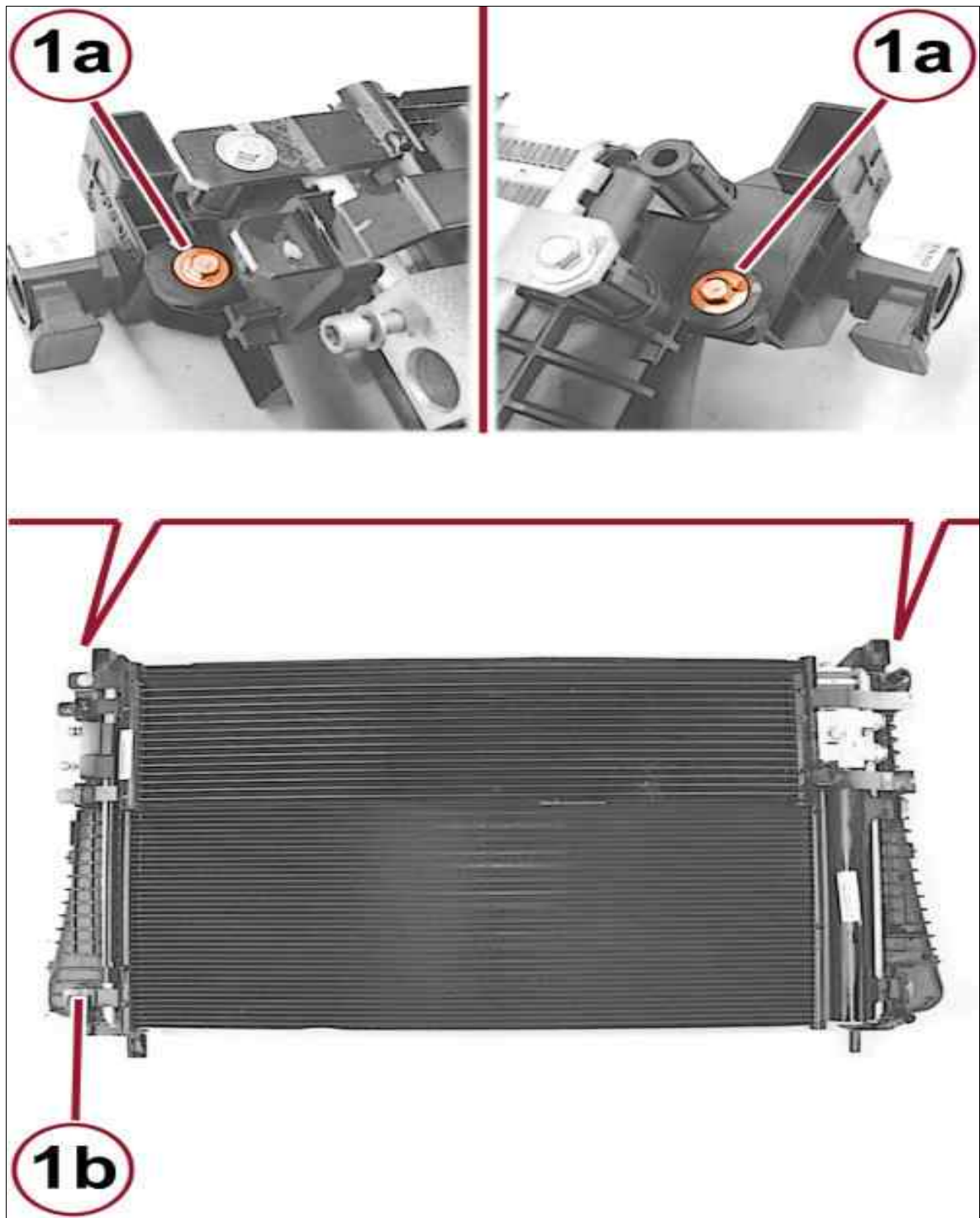
Courtesy of CHRYSLER GROUP, LLC

19. Install the front bumper reinforcement (1c). Tighten the bolts (1a) and the nuts (1b) to the proper specification. Refer to SPECIFICATIONS .
20. Install the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
21. Fill the cooling system. Refer to STANDARD PROCEDURE .
22. Remove the support and lower the vehicle.
23. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
24. Connect the negative battery cable.
25. Operate the engine until it reaches normal operating temperature. Check the cooling system for correct fluid level.

ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.0L DIESEL 170 CV > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the cooling fan. Refer to FAN, COOLING, REMOVAL AND INSTALLATION .

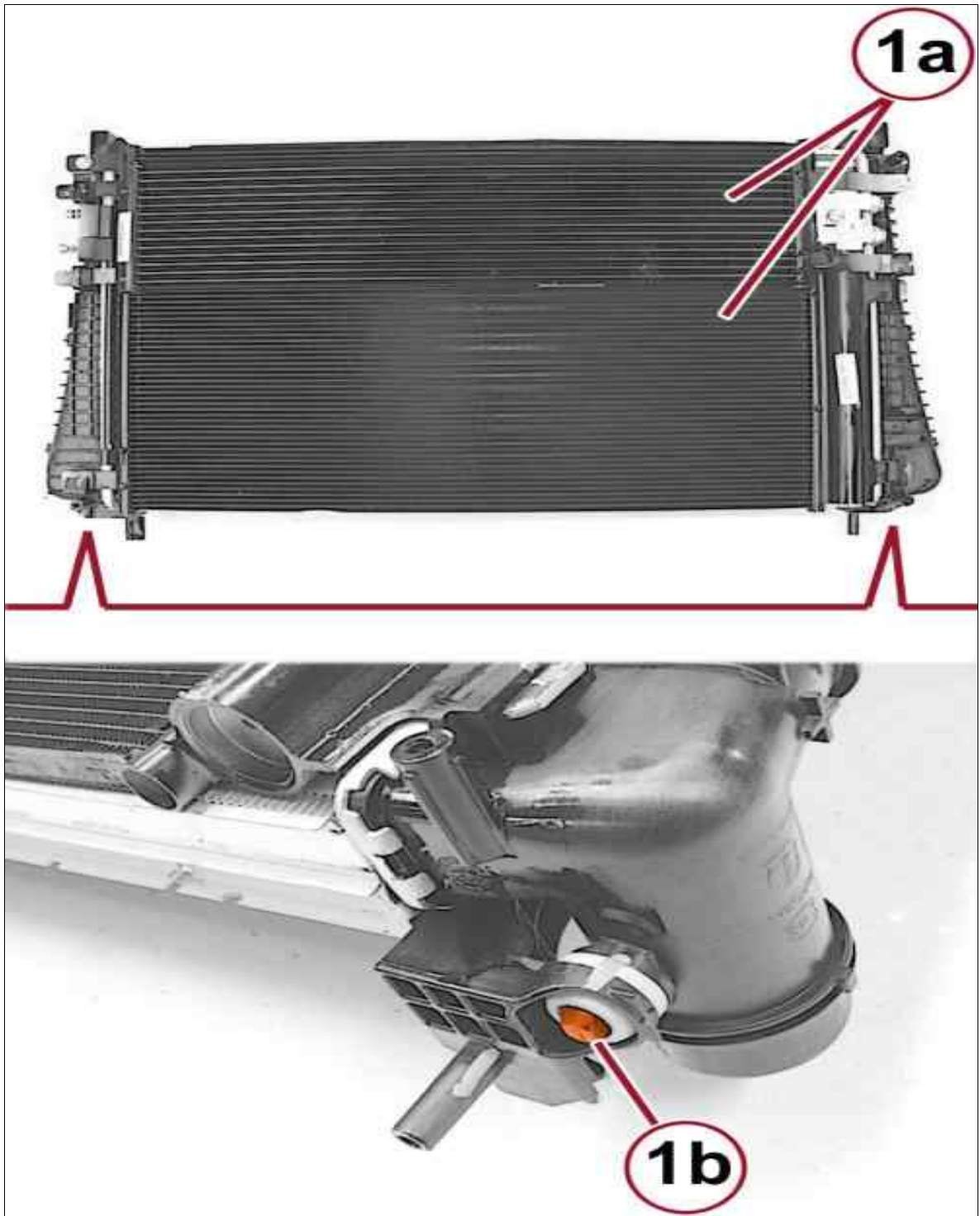
Fig 1: Cooler Bolts & Retaining Tab



Courtesy of CHRYSLER GROUP, LLC

3. Remove the upper bolts (1a) and retaining tab (1b) securing the cooler.

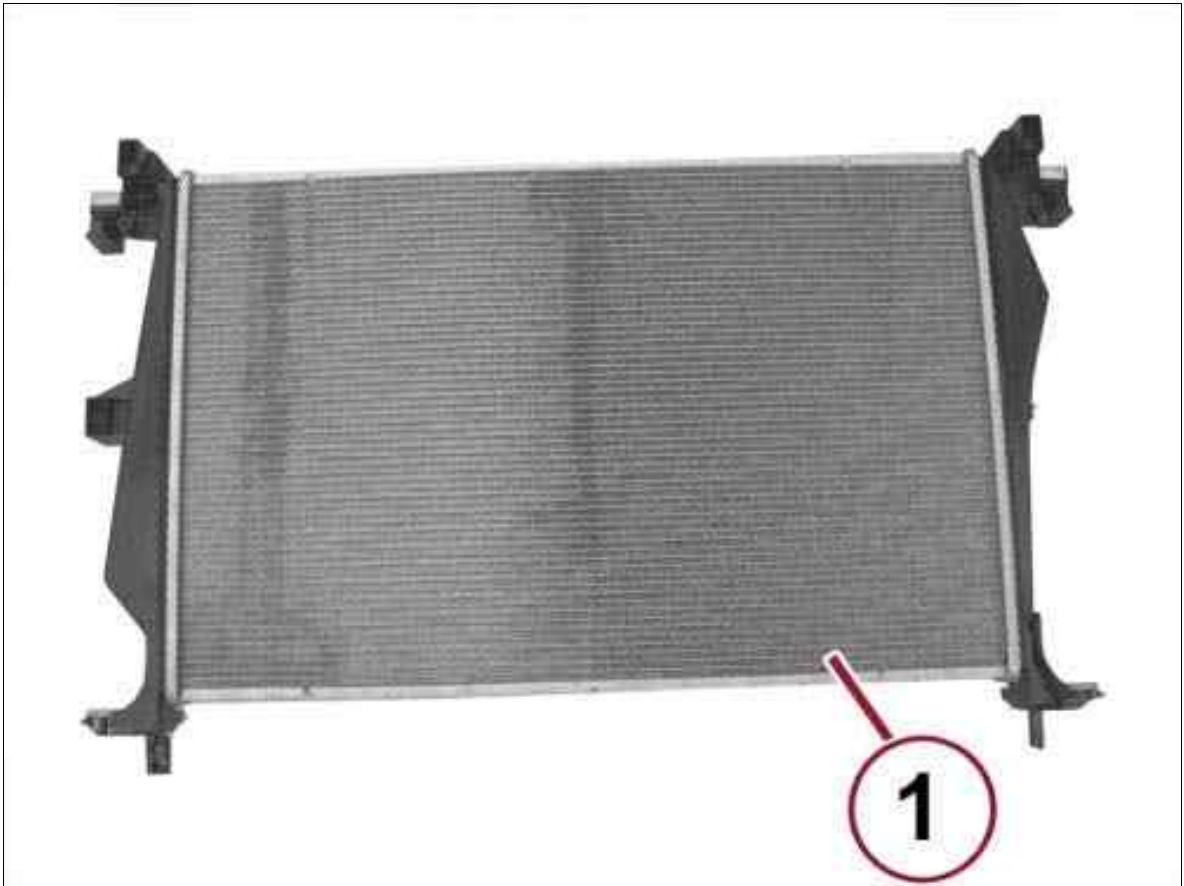
Fig 2: A/C Condenser/Transmission Oil Cooler & Pins



Courtesy of CHRYSLER GROUP, LLC

4. Disengage the lower pins (1b) and remove the A/C condenser/transmission oil cooler (1a).

Fig 3: Radiator

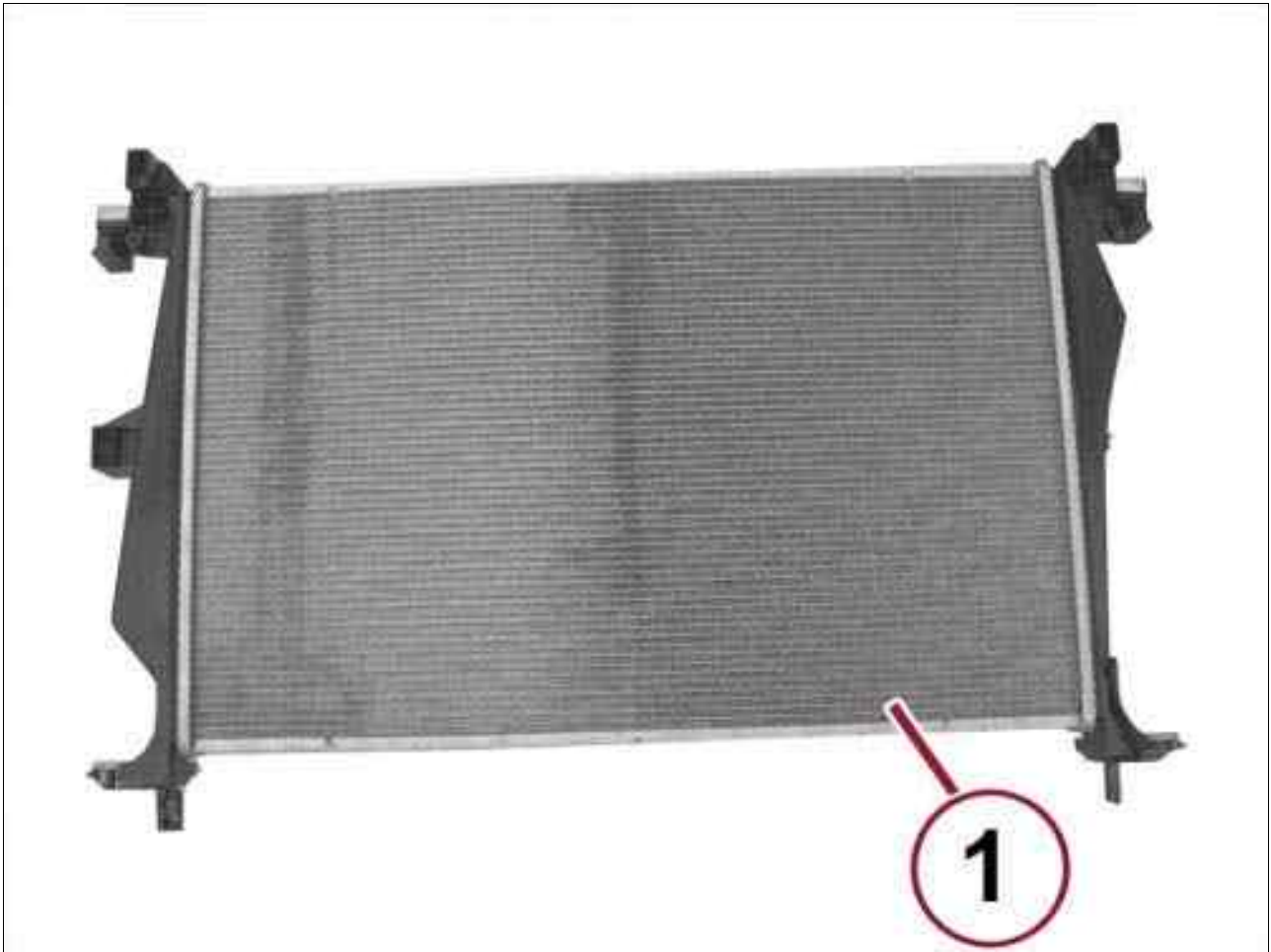


Courtesy of CHRYSLER GROUP, LLC

5. Remove the radiator (1).

**ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.0L
DIESEL 170 CV > INSTALLATION**

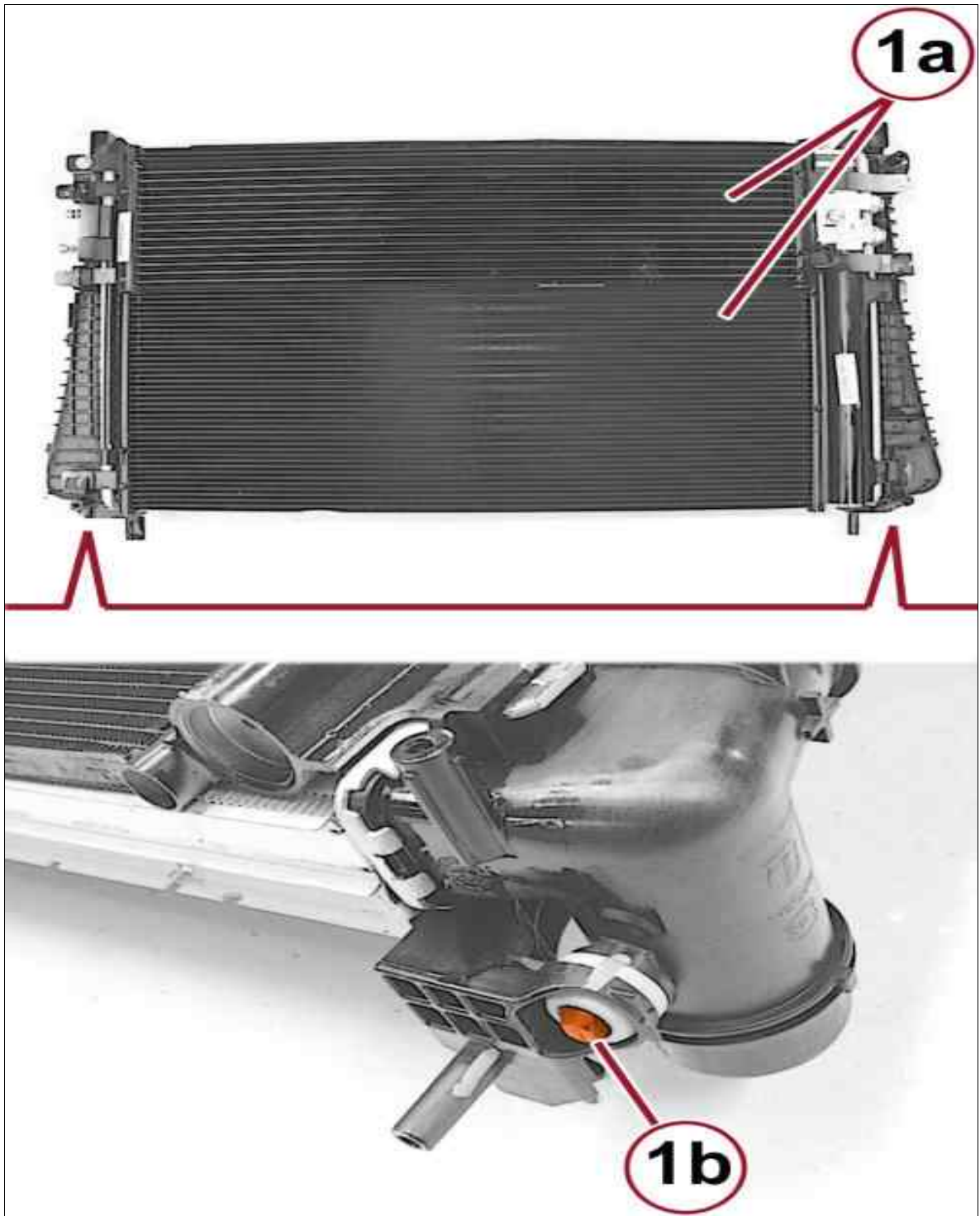
Fig 1: Radiator



Courtesy of CHRYSLER GROUP, LLC

1. Inspect the radiator for damage (1). Remove the bolts (1a) and retaining tab (1b) securing the cooler.

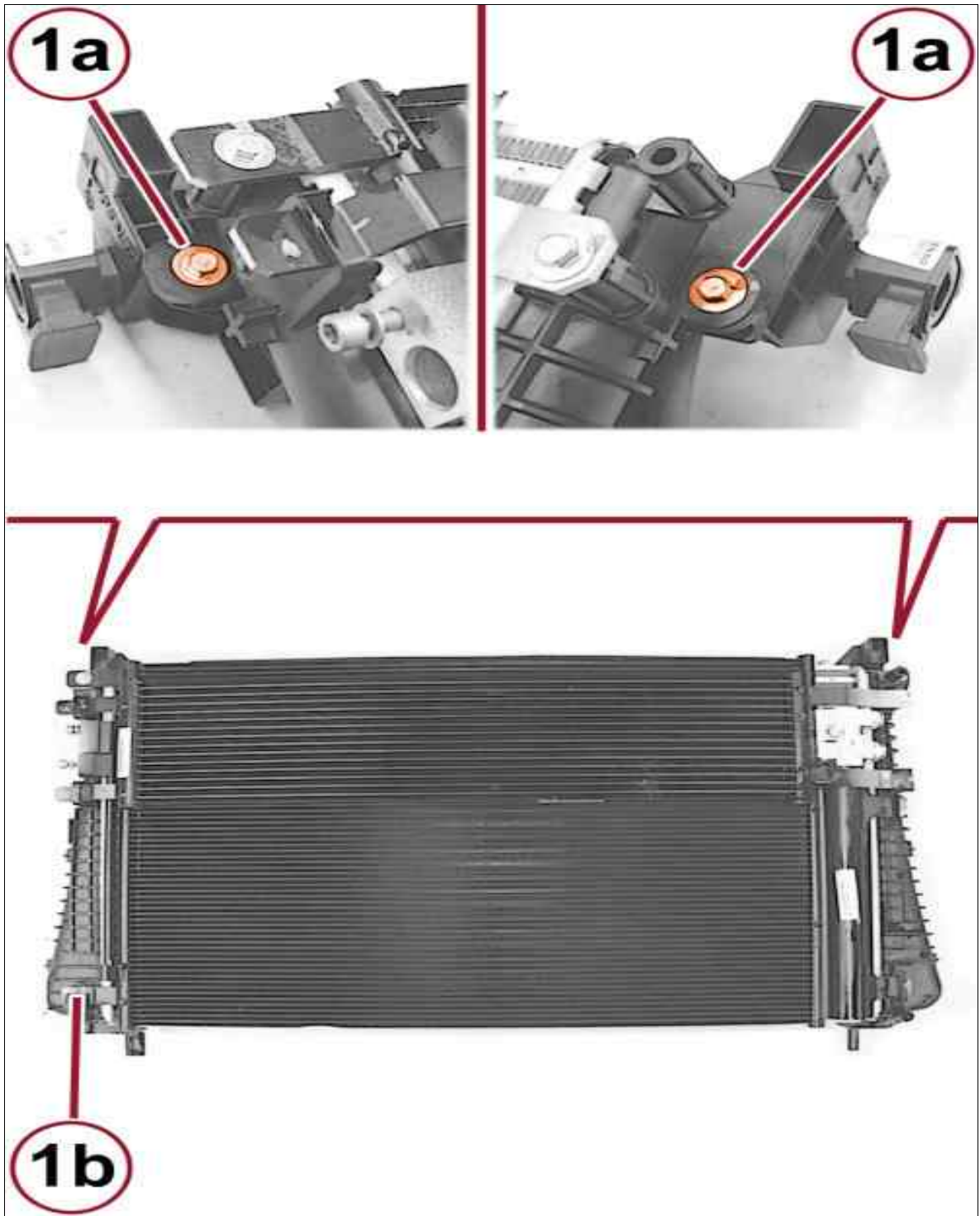
Fig 2: A/C Condenser/Transmission Oil Cooler & Pins



Courtesy of CHRYSLER GROUP, LLC

2. Install the A/C condenser/transmission oil cooler (1a) and engage the lower pins (1b).

Fig 3: Cooler Bolts & Retaining Tab



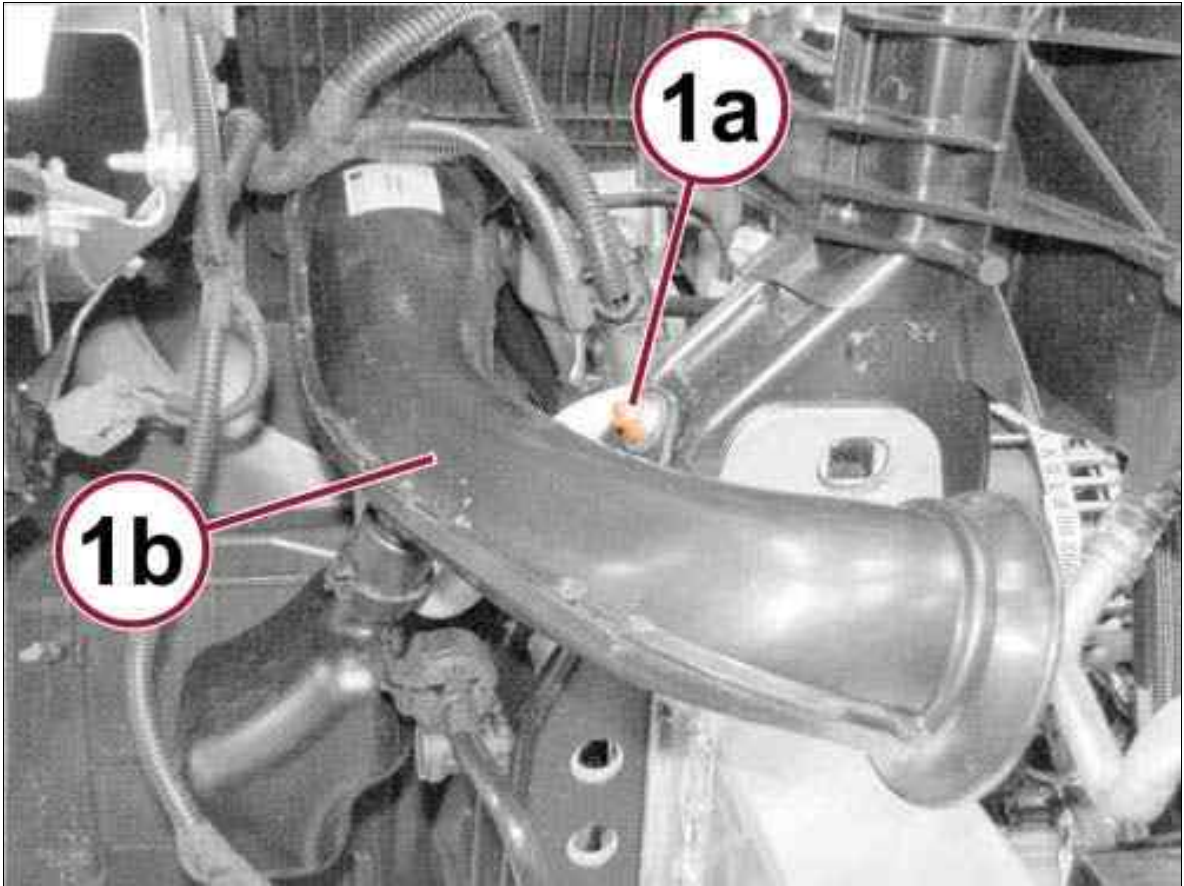
Courtesy of CHRYSLER GROUP, LLC

3. Install the upper bolts (1a) securing the cooler and securely tighten.
4. Install the cooling fan. Refer to FAN, COOLING, REMOVAL AND INSTALLATION .
5. Connect the negative battery cable.

ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.4L MULTIAIR > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
3. Recover the A/C refrigerant. Refer to PLUMBING, STANDARD PROCEDURE .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

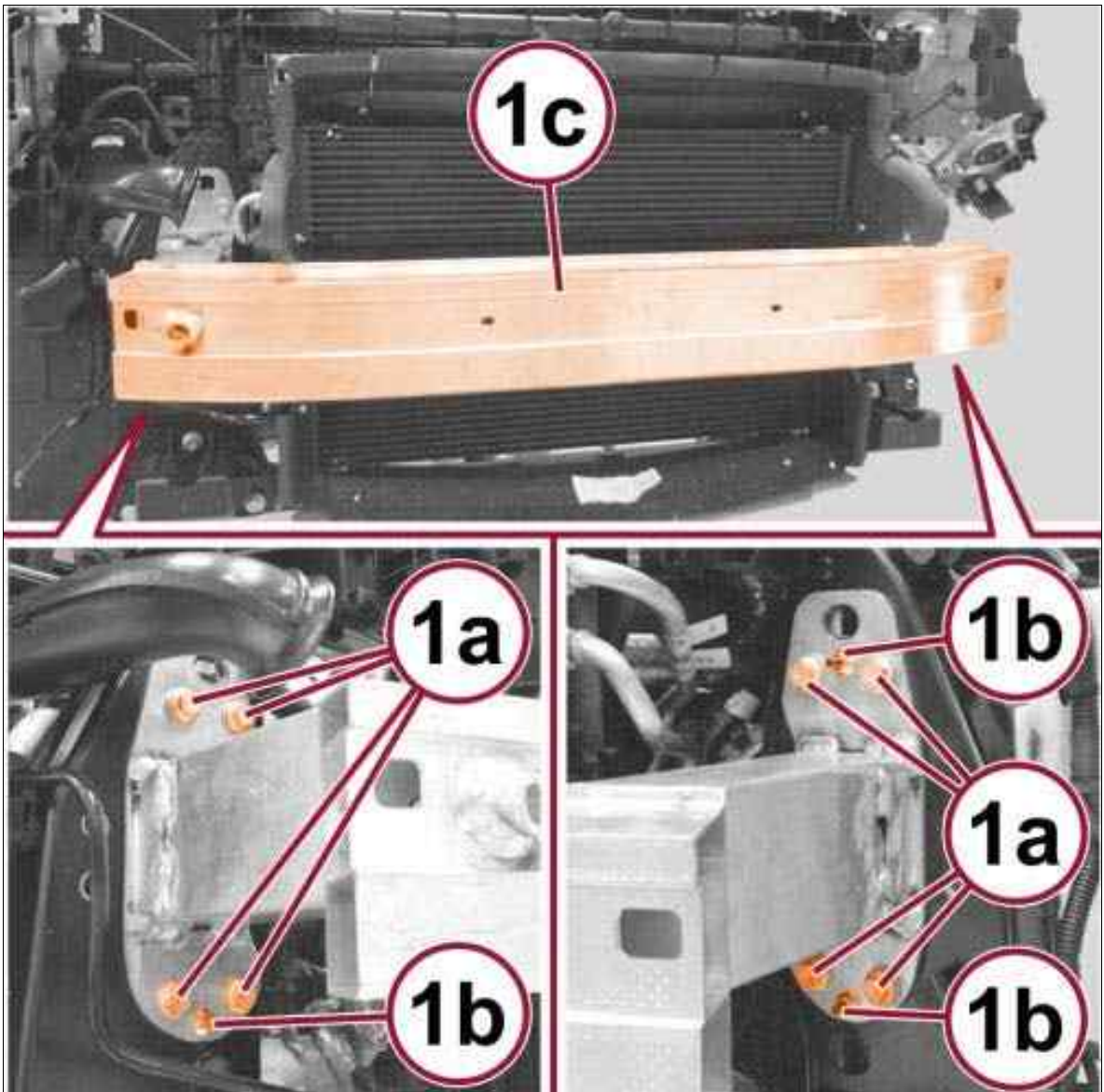
Fig 1: Air Cleaner Inlet Tube & Nut



Courtesy of CHRYSLER GROUP, LLC

5. Remove the nut (1a) and the air cleaner inlet tube (1b).

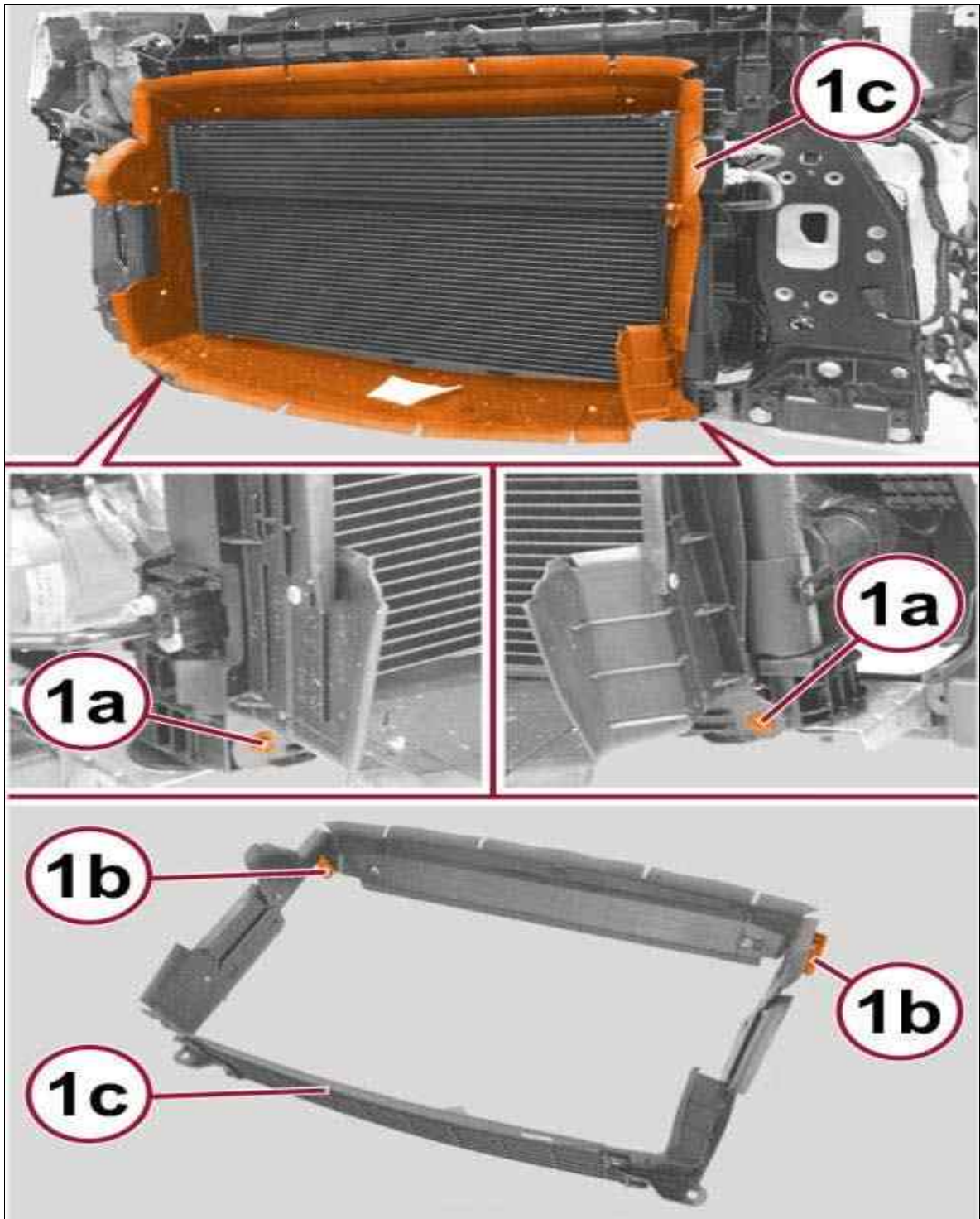
Fig 2: Front Bumper Reinforcement, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

6. Remove the bolts (1a) and the nuts (1b) and the front bumper reinforcement (1c).

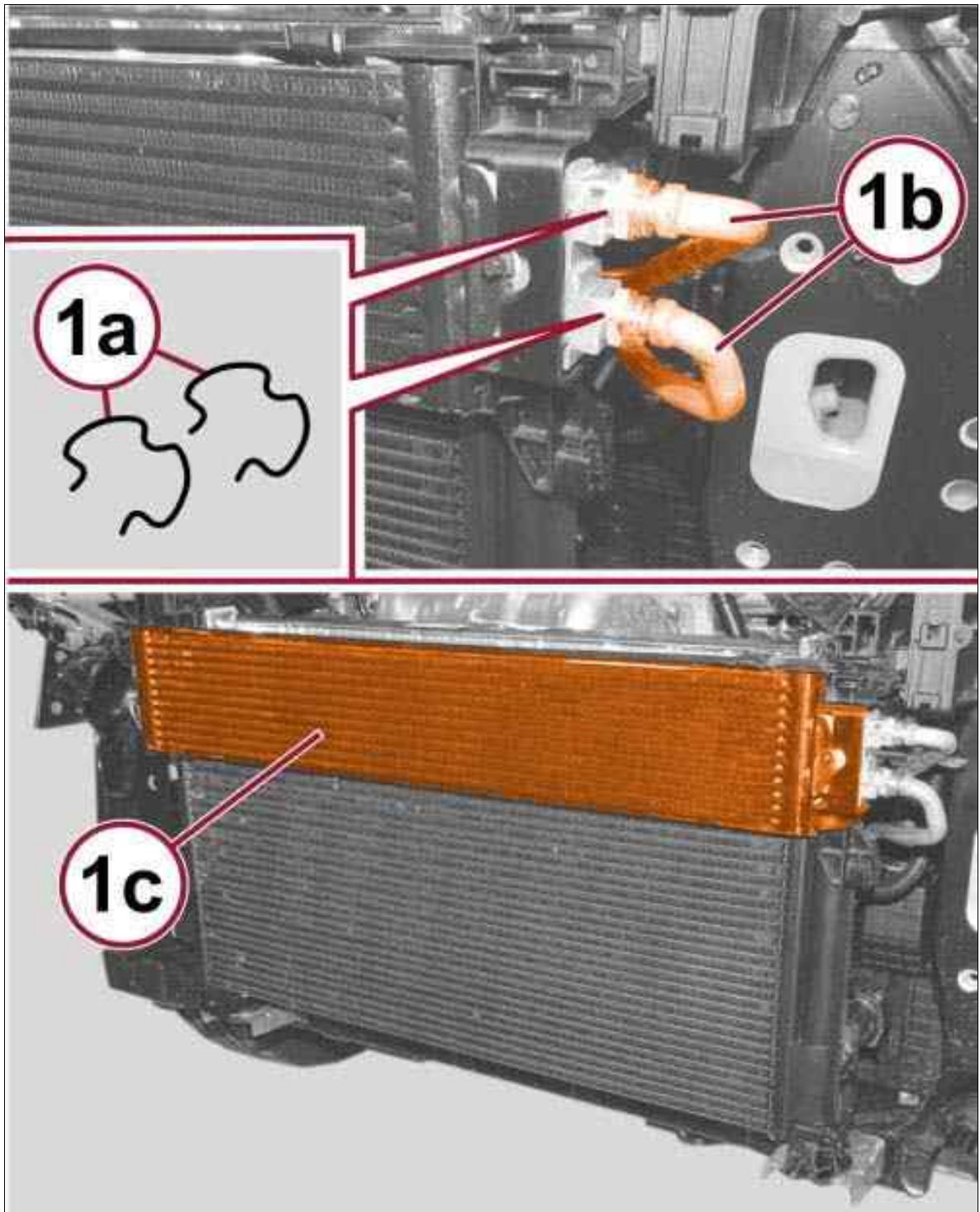
Fig 3: Radiator Air Deflector, Retainers & Bolts



Courtesy of CHRYSLER GROUP, LLC

7. Remove the bolts (1a) and disengage the retainers side (1b) and remove the radiator air deflector (1c).

Fig 4: Transmission Cooler, Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

 NOTE:

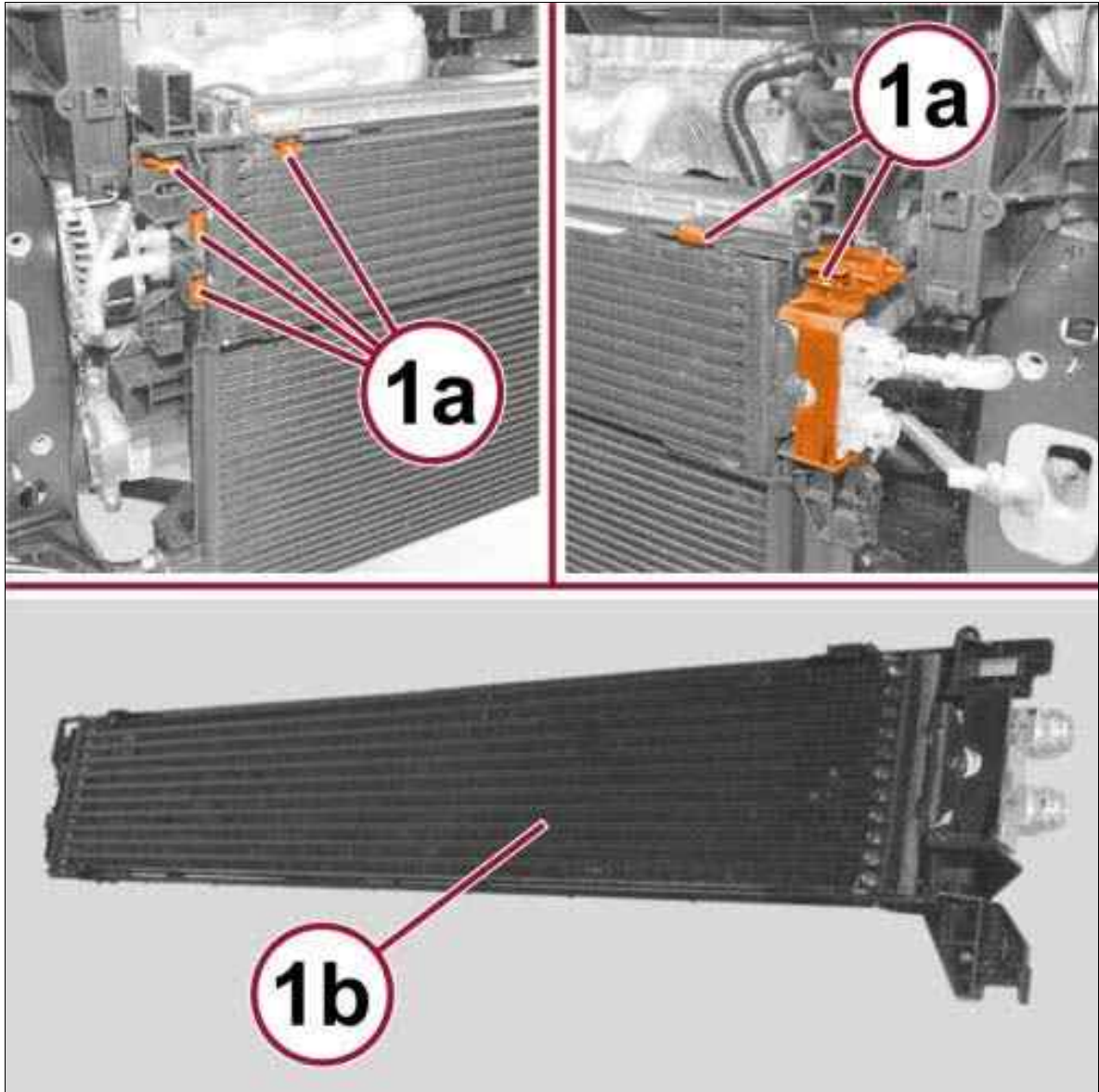
Plug and seal the ends of the transmission cooler and the transmission cooler lines to prevent leakage of oil, or moisture, contaminants, or impurities from entering into the system.

 **NOTE:**

Clean any transmission fluid the may have leaked out during the removal process.

8. Remove the retaining clips (1a) and the transmission cooler lines (1b) from the transmission cooler (1c).

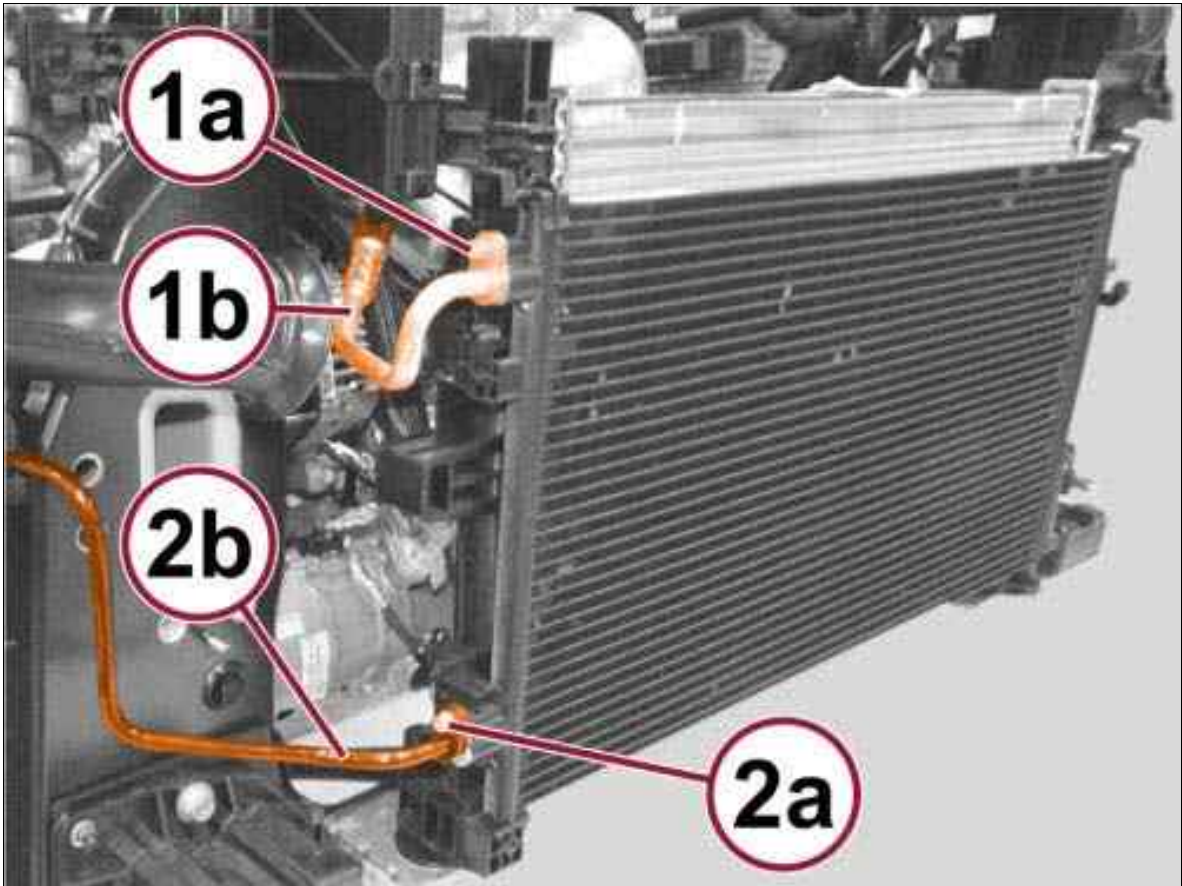
Fig 5: Transmission Oil Cooler & Retainers



Courtesy of CHRYSLER GROUP, LLC

9. Disengage the retainers (1a) and remove the transmission oil cooler (1b).

Fig 6: A/C Lines & Bolts

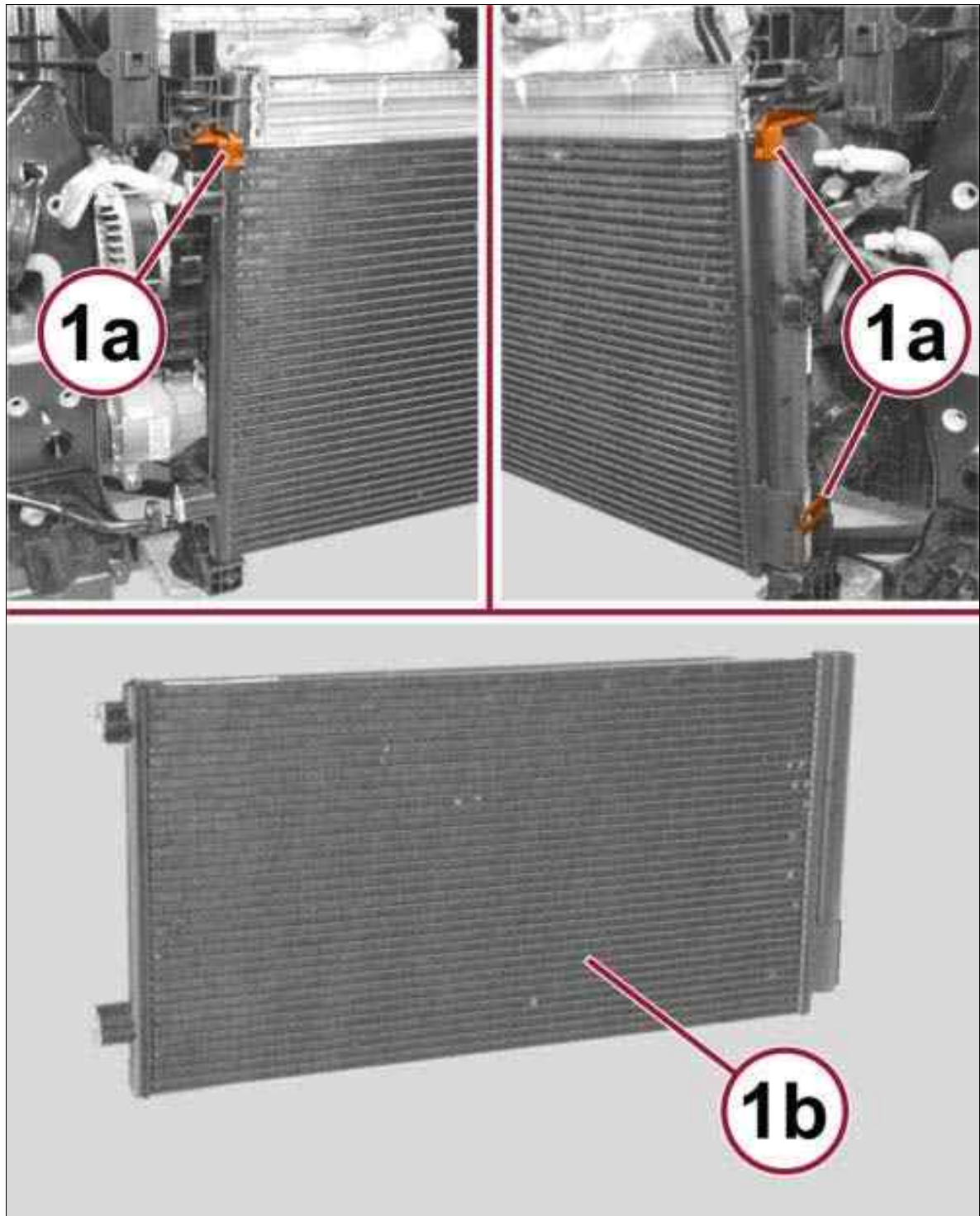


Courtesy of CHRYSLER GROUP, LLC

10. Remove the bolt (1a) and the A/C line (1b) from the condenser.

11. Remove the bolt (2a) and the A/C line (2b) from the condenser.

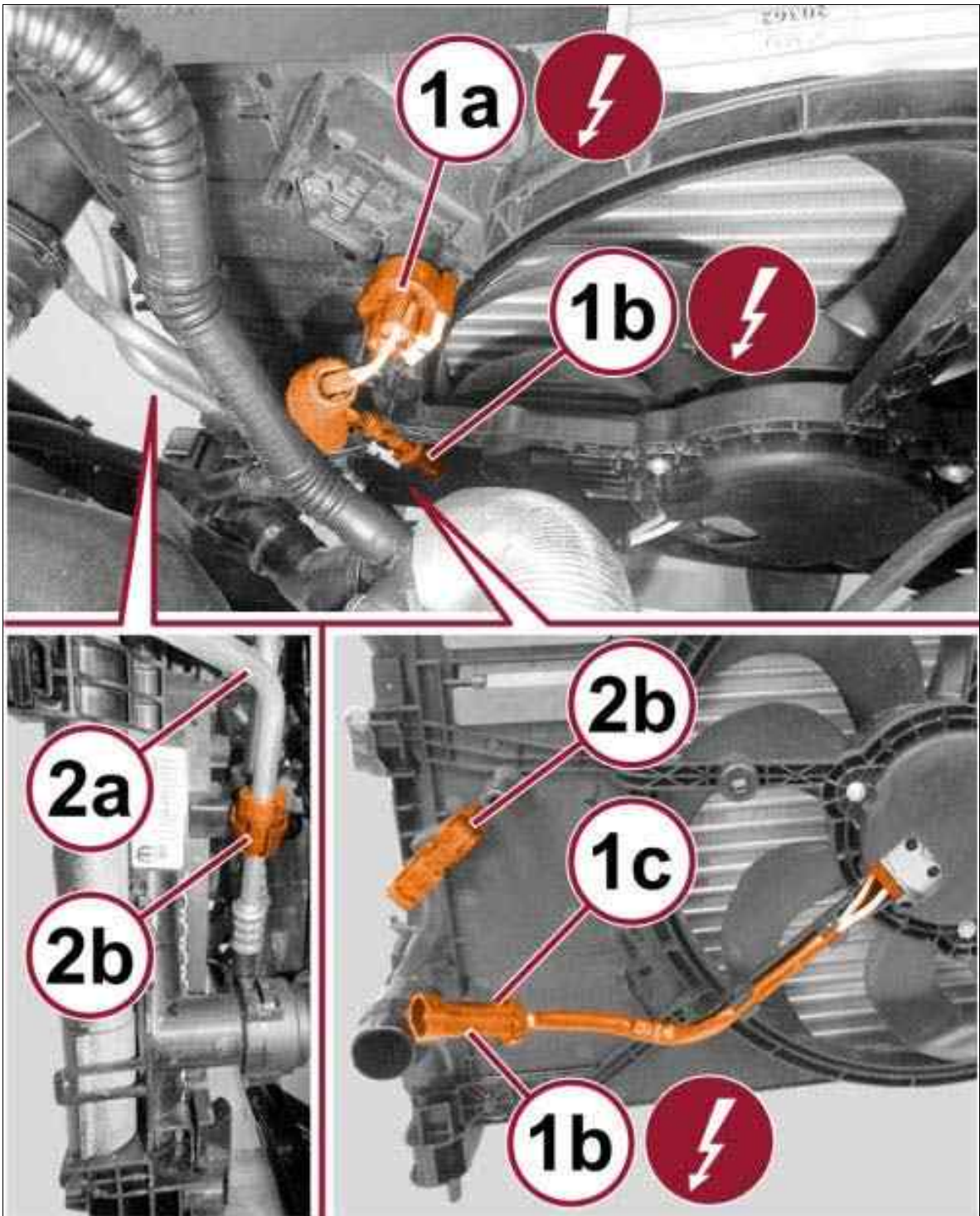
Fig 7: A/C Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

12. Remove the retaining clips (1a) and the A/C condenser (1b).

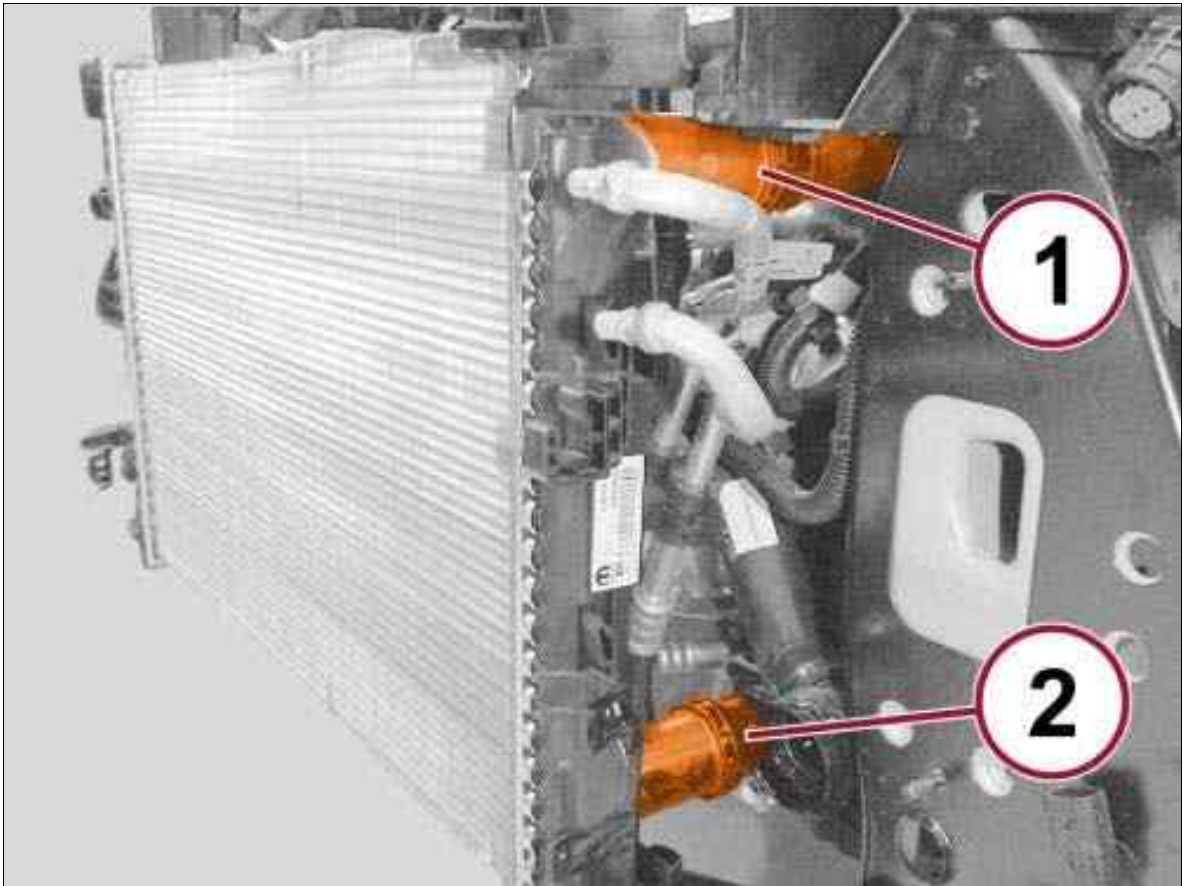
Fig 8: Wiring Harnesses, Connectors & Clip



Courtesy of CHRYSLER GROUP, LLC

13. Disconnect the cooling fan wire harness connector (1b) and the cooling fan resistor wire harness connector (1a). and detach the wire harness (1c).
14. Open the retaining clip (2b) and detach the lines.

Fig 9: Upper And Lower Radiator Hoses

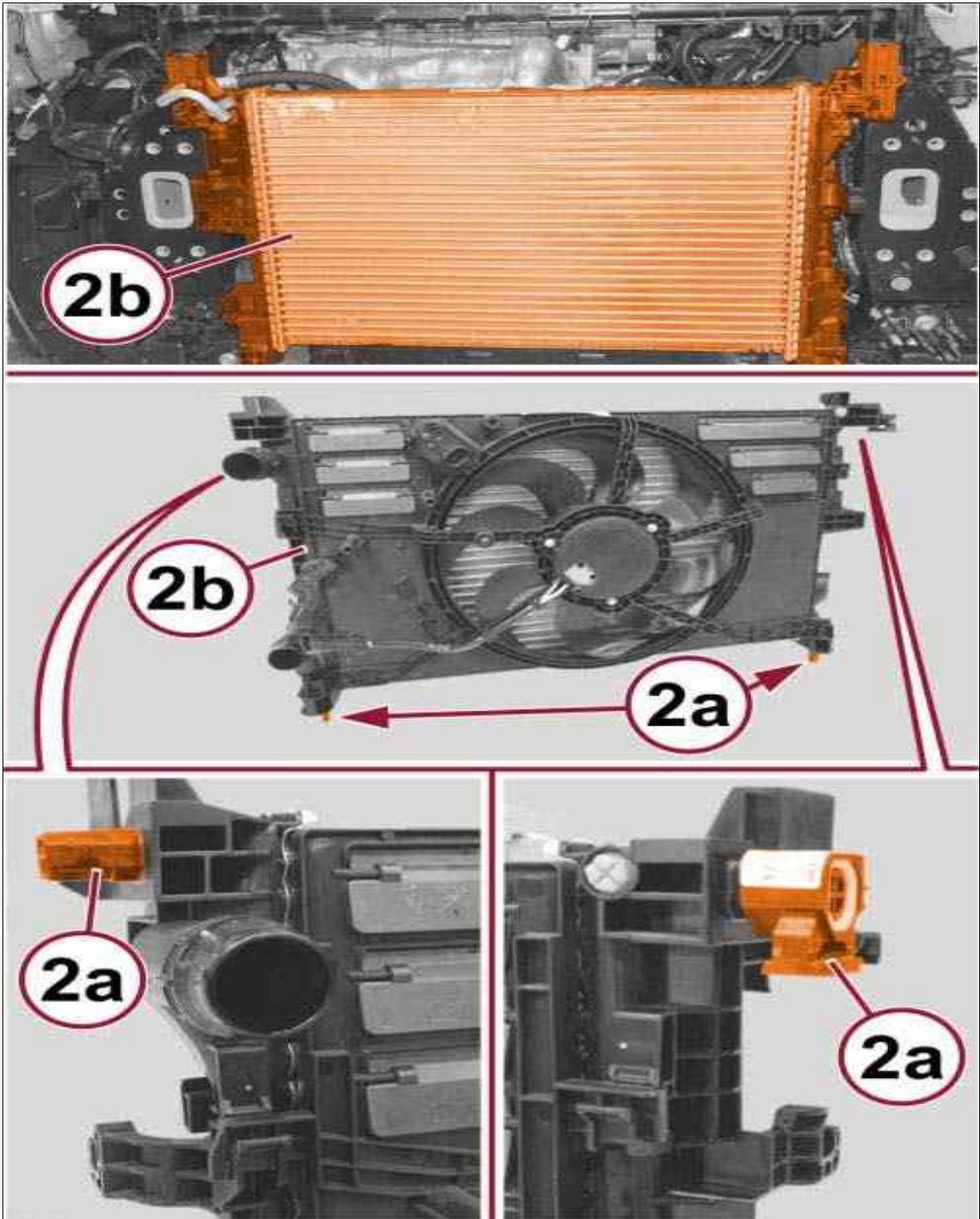


Courtesy of CHRYSLER GROUP, LLC

15. Remove the upper radiator hose (1).

16. Remove the lower radiator hose (2).

Fig 10: Radiator/Cooling Fan Assembly & Brackets



Courtesy of CHRYSLER GROUP, LLC



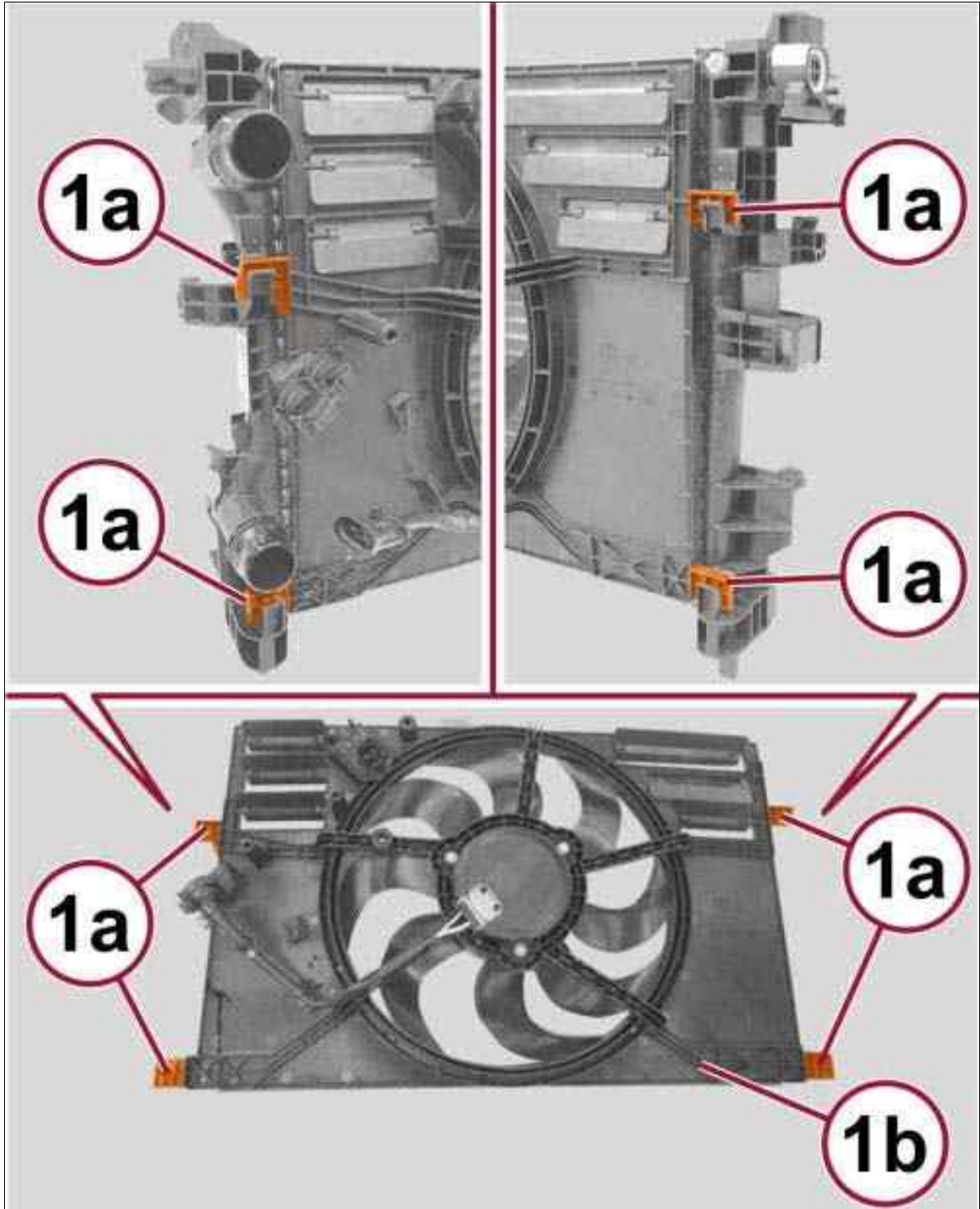
NOTE:

Recover any coolant that may have spilled.

17. Remove the covers.

18. Remove the retaining brackets (2a) and the radiator/cooling fan assembly (2b).

Fig 11: Cooling Fan & Tabs



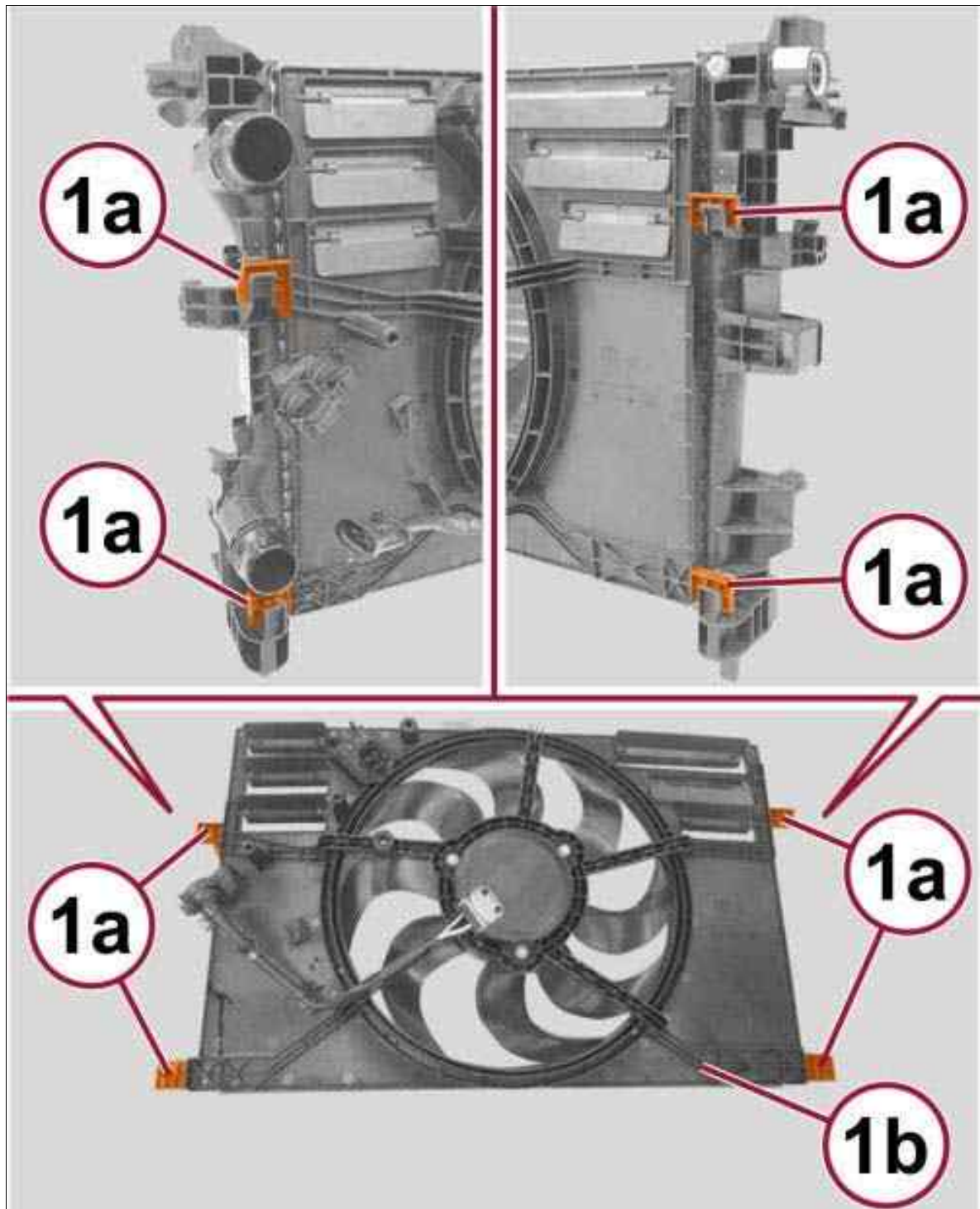
Courtesy of CHRYSLER GROUP, LLC

19. Disengage the retaining tabs (1a) and remove the cooling fan (1b).

**ENGINE > RADIATOR, ENGINE COOLING > REMOVAL AND INSTALLATION > 2.4L
MULTIAIR > INSTALLATION**

1. Inspect the radiator for damage.

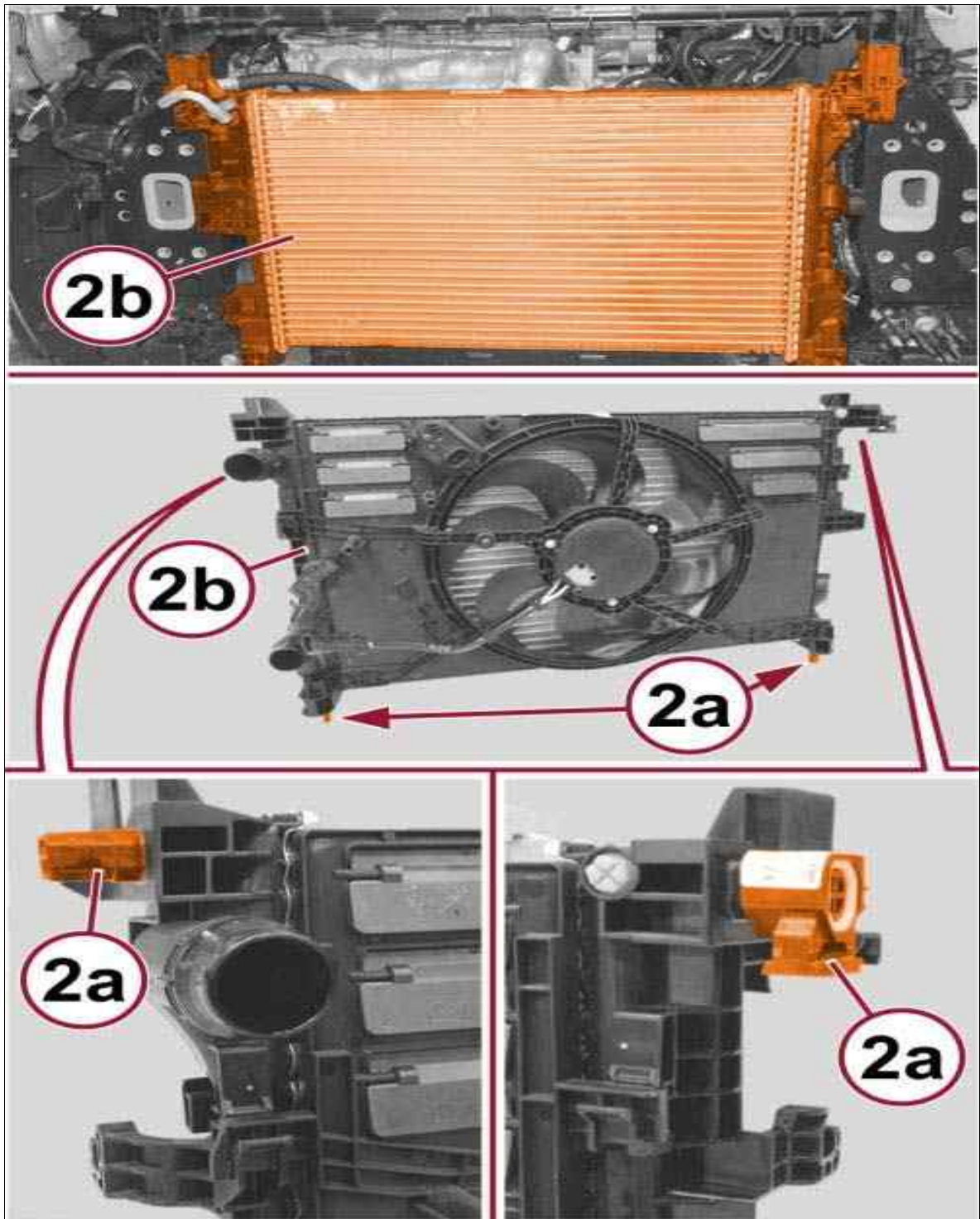
Fig 1: Cooling Fan & Tabs



Courtesy of CHRYSLER GROUP, LLC

2. Install the cooling fan (1b) onto the radiator and engage retaining tabs (1a).

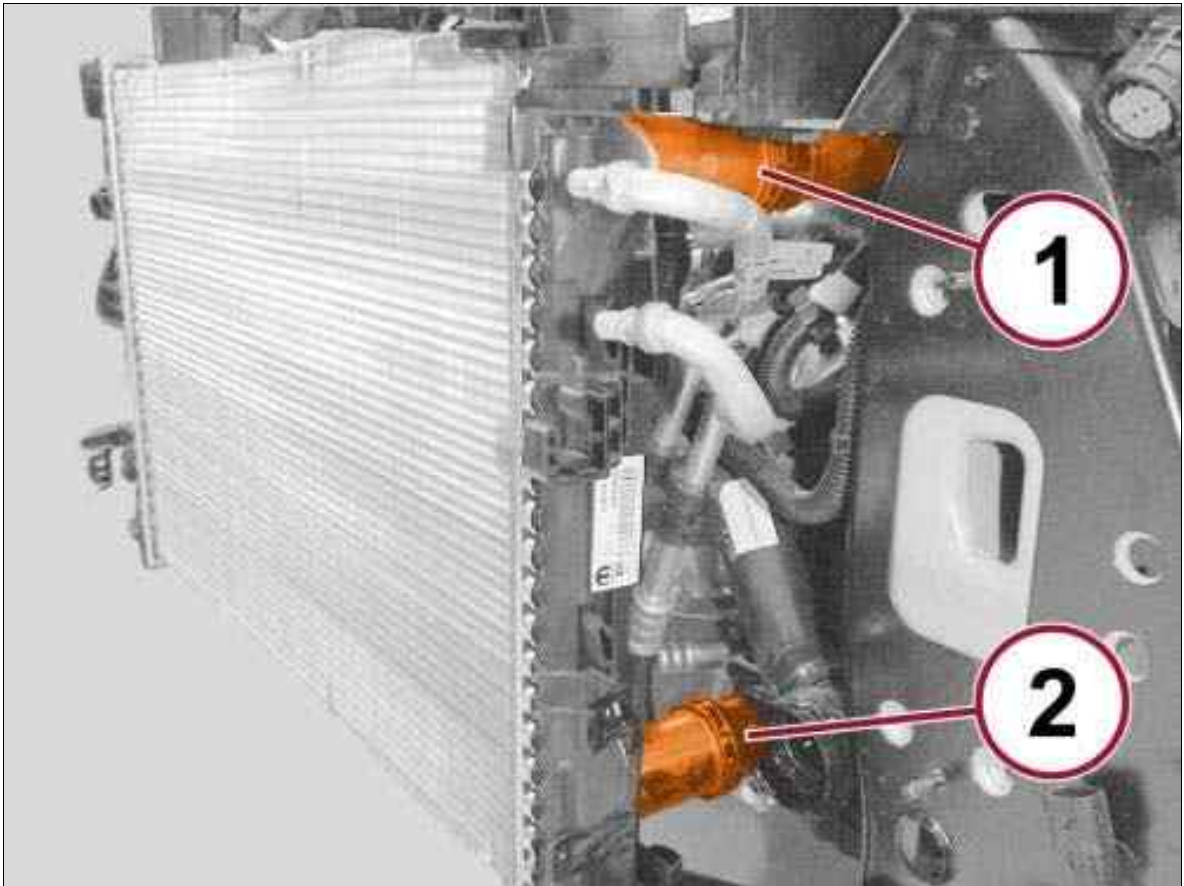
Fig 2: Radiator/Cooling Fan Assembly & Brackets



Courtesy of CHRYSLER GROUP, LLC

3. Install the radiator/cooling fan assembly (2b) and the retaining brackets (2a).
4. Install the covers.

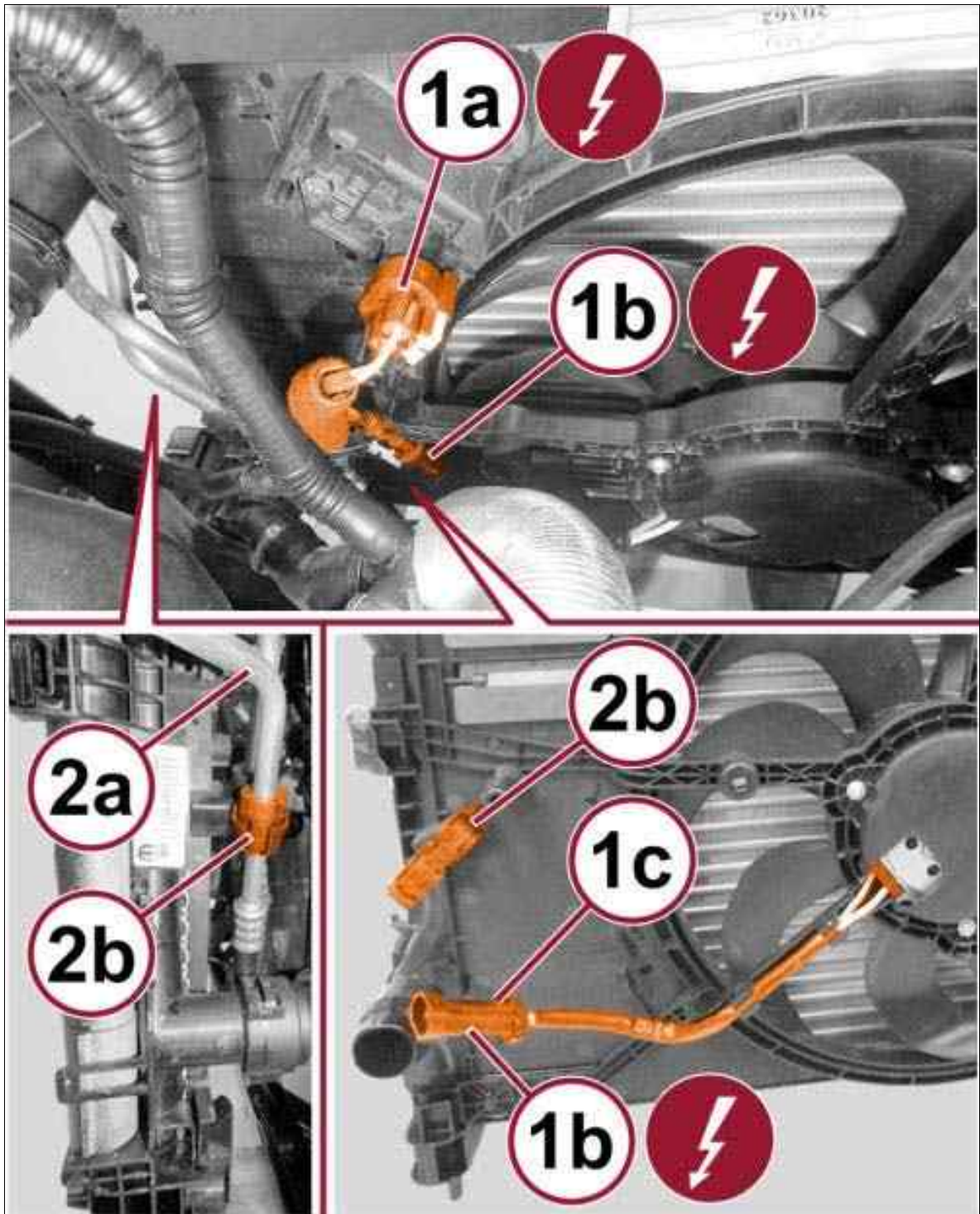
Fig 3: Upper And Lower Radiator Hoses



Courtesy of CHRYSLER GROUP, LLC

5. Install the lower radiator hose (2).
6. Install the upper radiator hose (1).

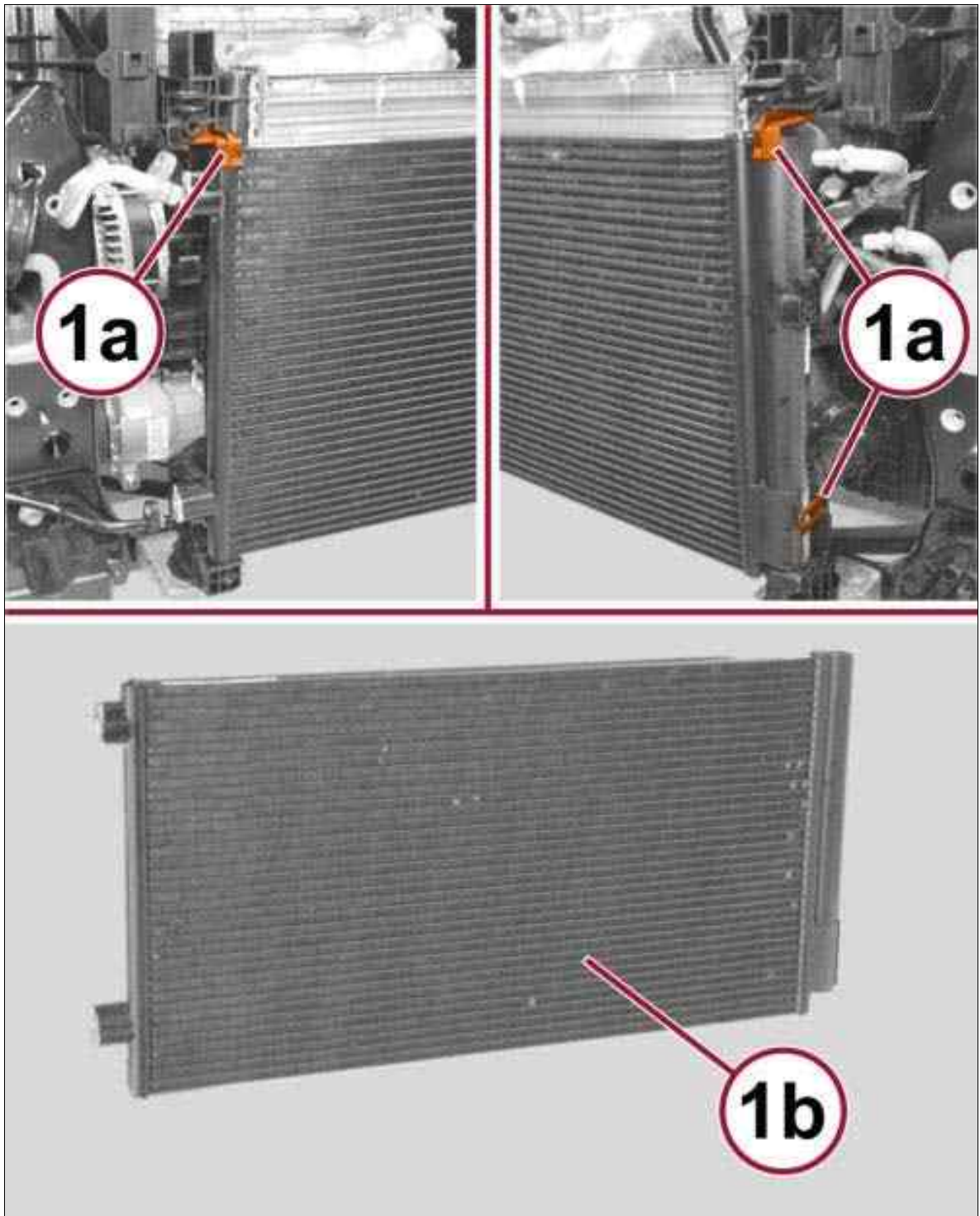
Fig 4: Wiring Harnesses, Connectors & Clip



Courtesy of CHRYSLER GROUP, LLC

7. Attach the lines and close the retaining clips (2b).
8. Attach the wire harness (1c) and connect the cooling fan resistor wire harness connector (1a) and the cooling fan wire harness connector (1b).

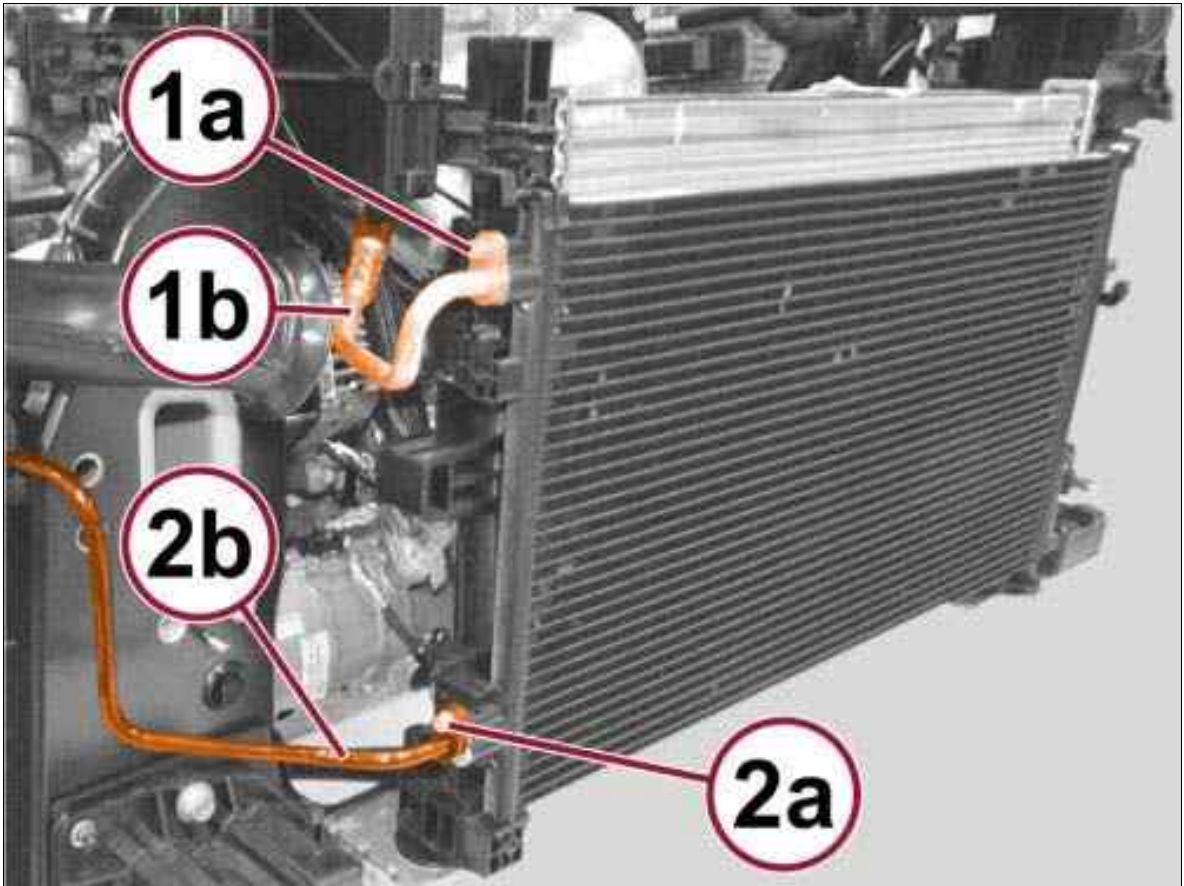
Fig 5: A/C Condenser & Clips



Courtesy of CHRYSLER GROUP, LLC

9. Install the A/C condenser (1b) and the retaining clips (1a).

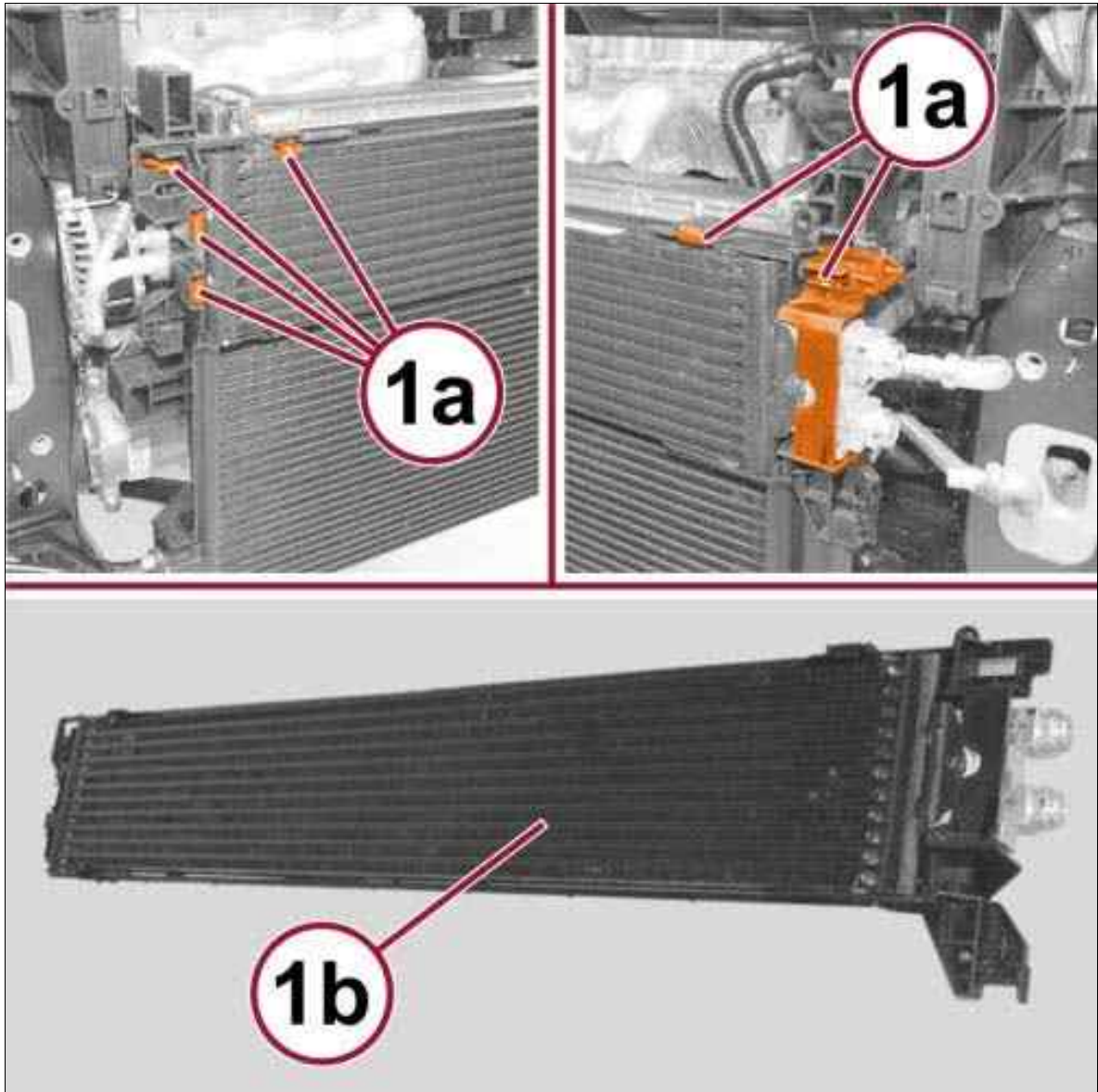
Fig 6: A/C Lines & Bolts



Courtesy of CHRYSLER GROUP, LLC

10. Using **NEW** gasket seals, install the A/C line (2b) to the condenser and securely tighten the bolt (2a)
11. Using **NEW** gasket seals, install the A/C line (1b) to the condenser and securely tighten the bolt (1a). Tighten the bolts (2) to 8 N.m (70 in. lbs.).

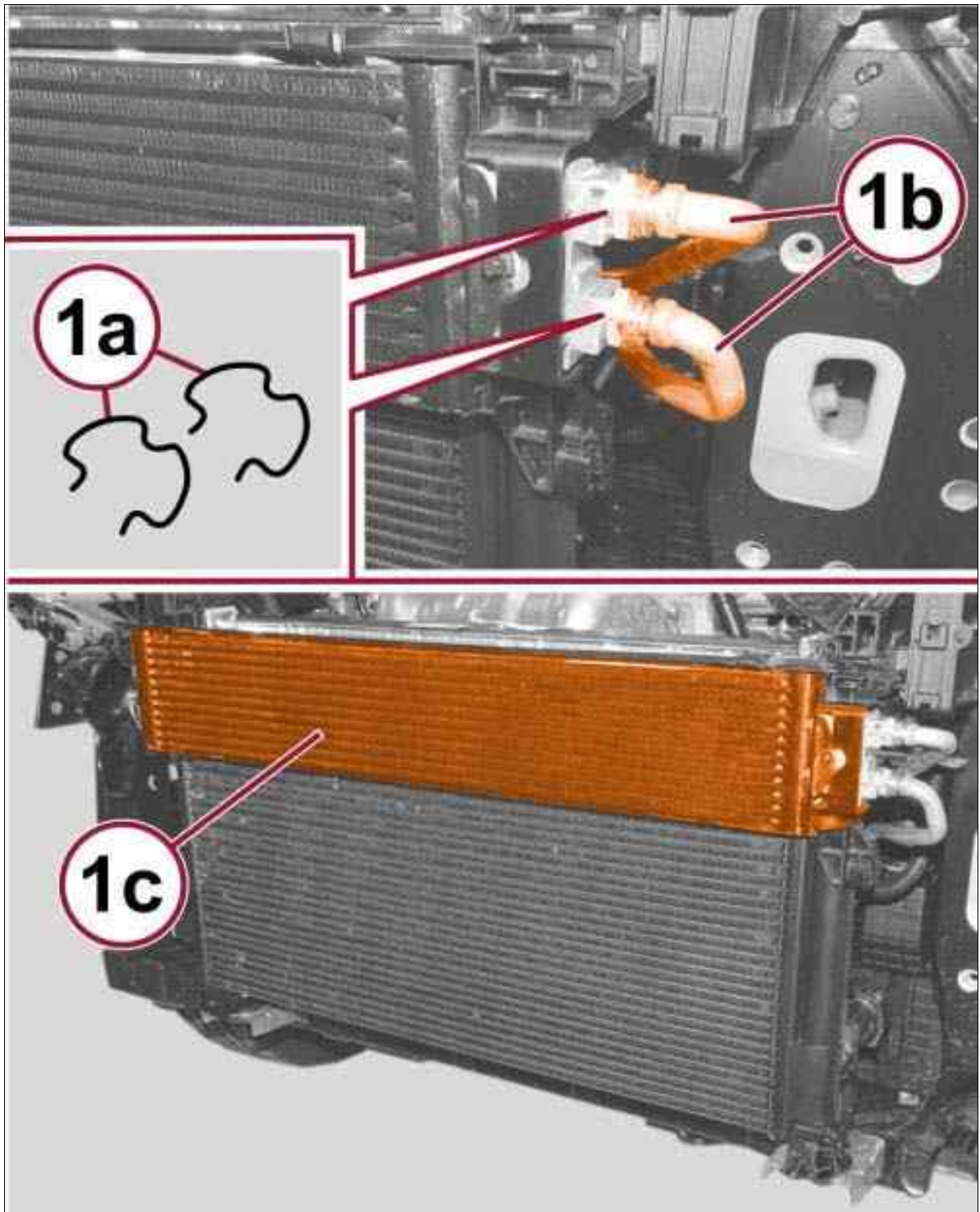
Fig 7: Transmission Oil Cooler & Retainers



Courtesy of CHRYSLER GROUP, LLC

12. Install the transmission oil cooler (1b) and engage the retainers (1a).

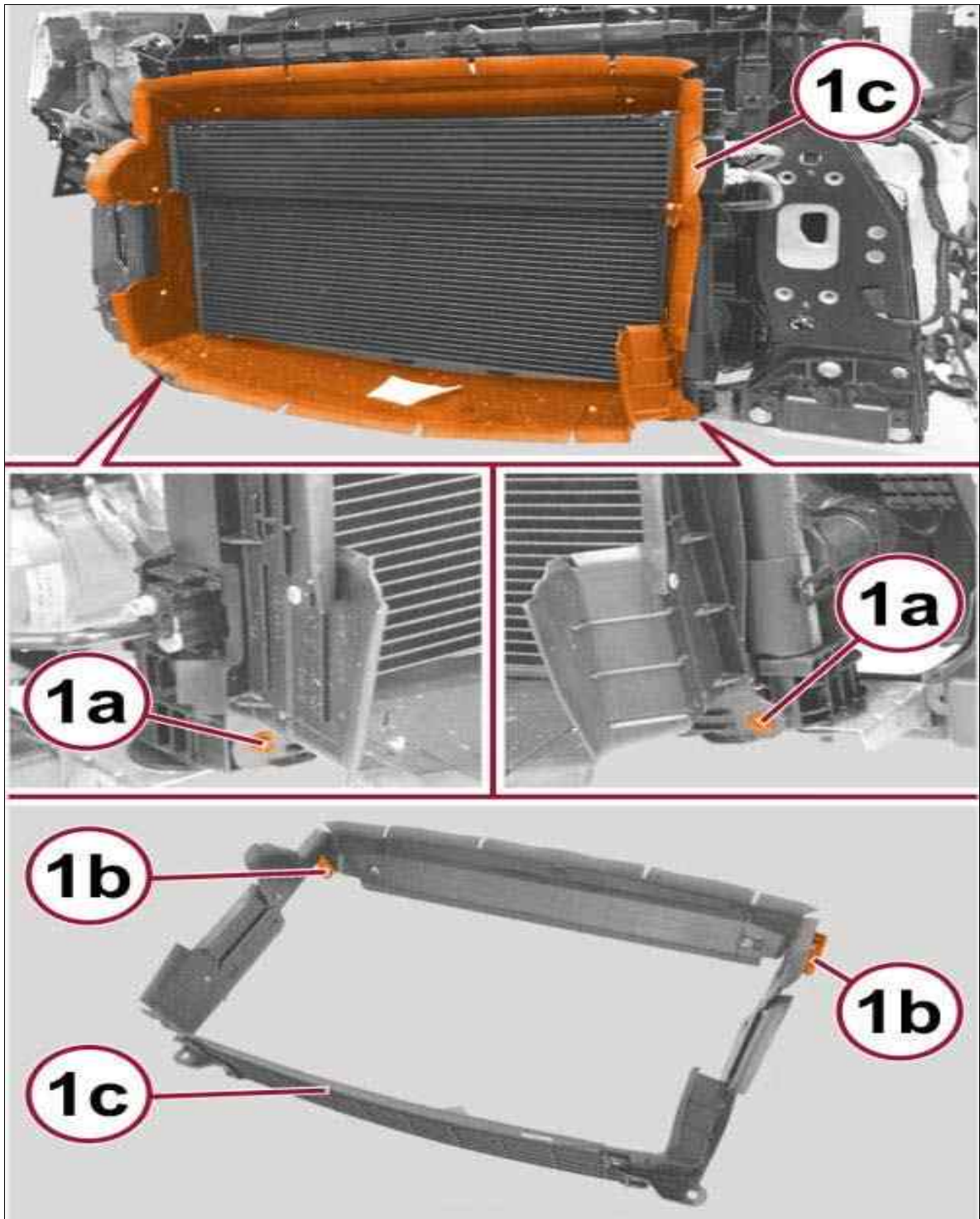
Fig 8: Transmission Cooler, Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

13. Remove the seal and plug from the transmission cooler and the transmission cooler lines.
14. Using **NEW** gasket seals, install the transmission cooler lines (1b) to the transmission cooler (1c) and the retaining clips (1a).

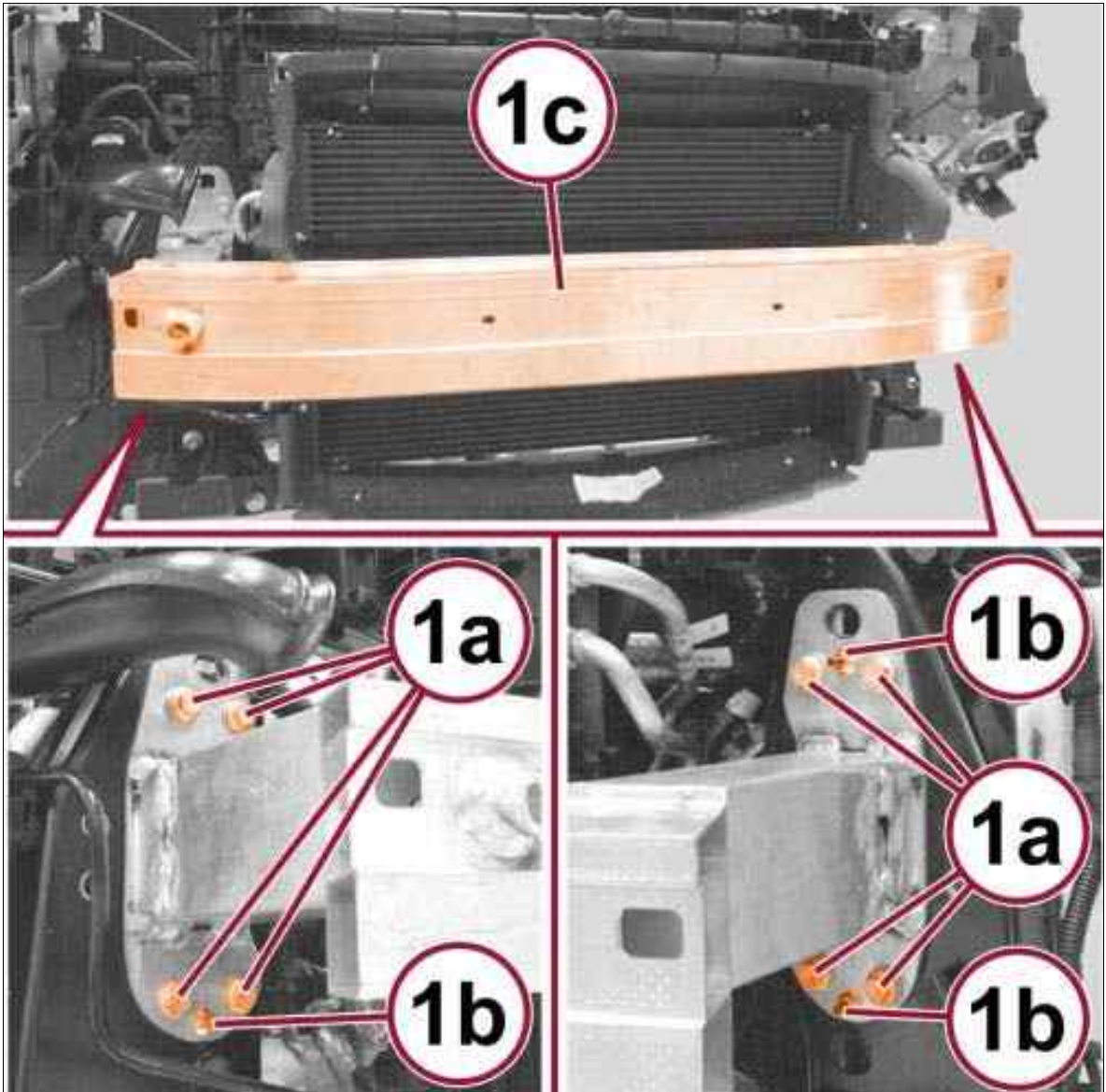
Fig 9: Radiator Air Deflector, Retainers & Bolts



Courtesy of CHRYSLER GROUP, LLC

15. Install the radiator air deflector (1c) and engage the retainers side (1b) and securely tighten the bolts (1a).

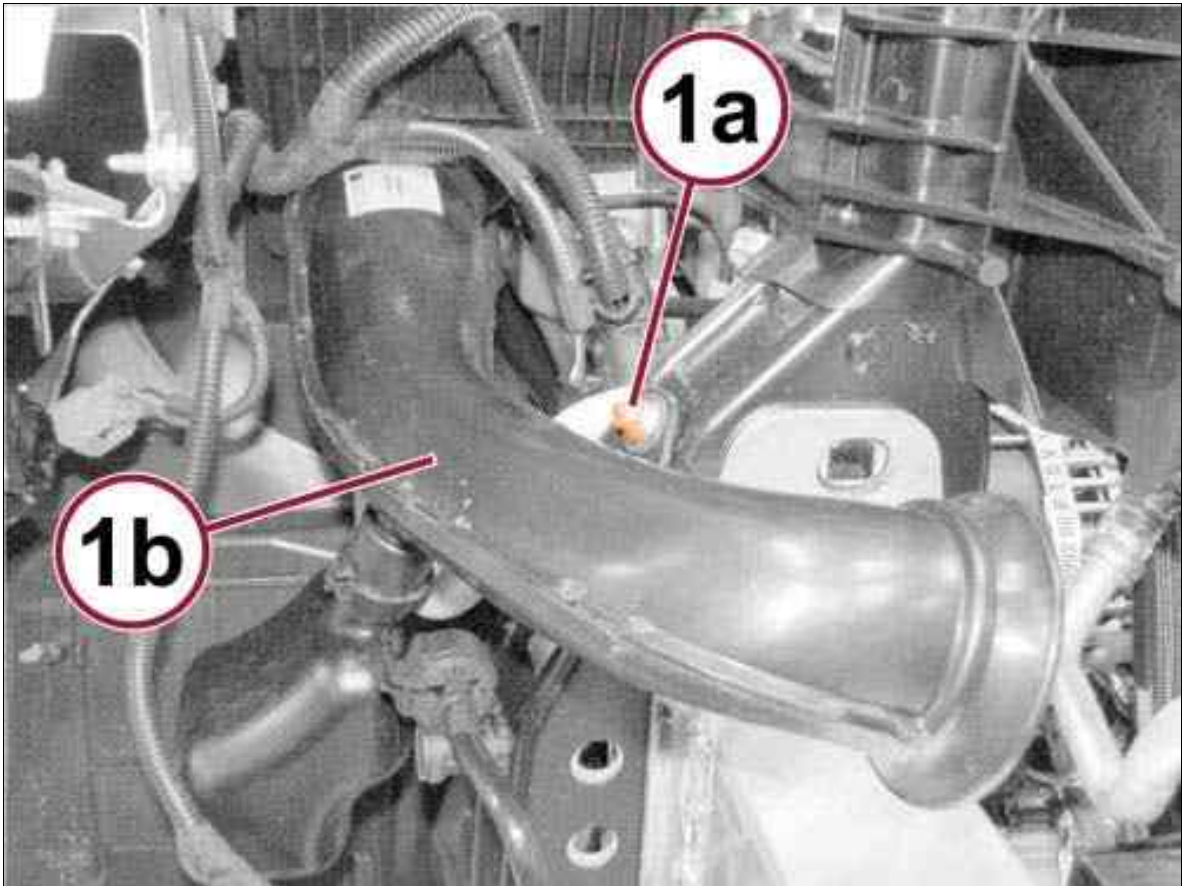
Fig 10: Front Bumper Reinforcement, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

16. Instal the front bumper reinforcement (1c). Tighten the bolts (1a) and the nuts (1b) to the proper specification. Refer to SPECIFICATIONS .

Fig 11: Air Cleaner Inlet Tube & Nut



Courtesy of CHRYSLER GROUP, LLC

17. Install the air cleaner inlet tube (1b) and securely tighten the nut (1a).
18. Fill the cooling system. Refer to STANDARD PROCEDURE .
19. Evacuate and charge the refrigerant system. Refer to PLUMBING, STANDARD PROCEDURE .
20. Install the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
21. Connect the negative battery cable.

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 1.4L TURBO MULTI AIR > REMOVAL

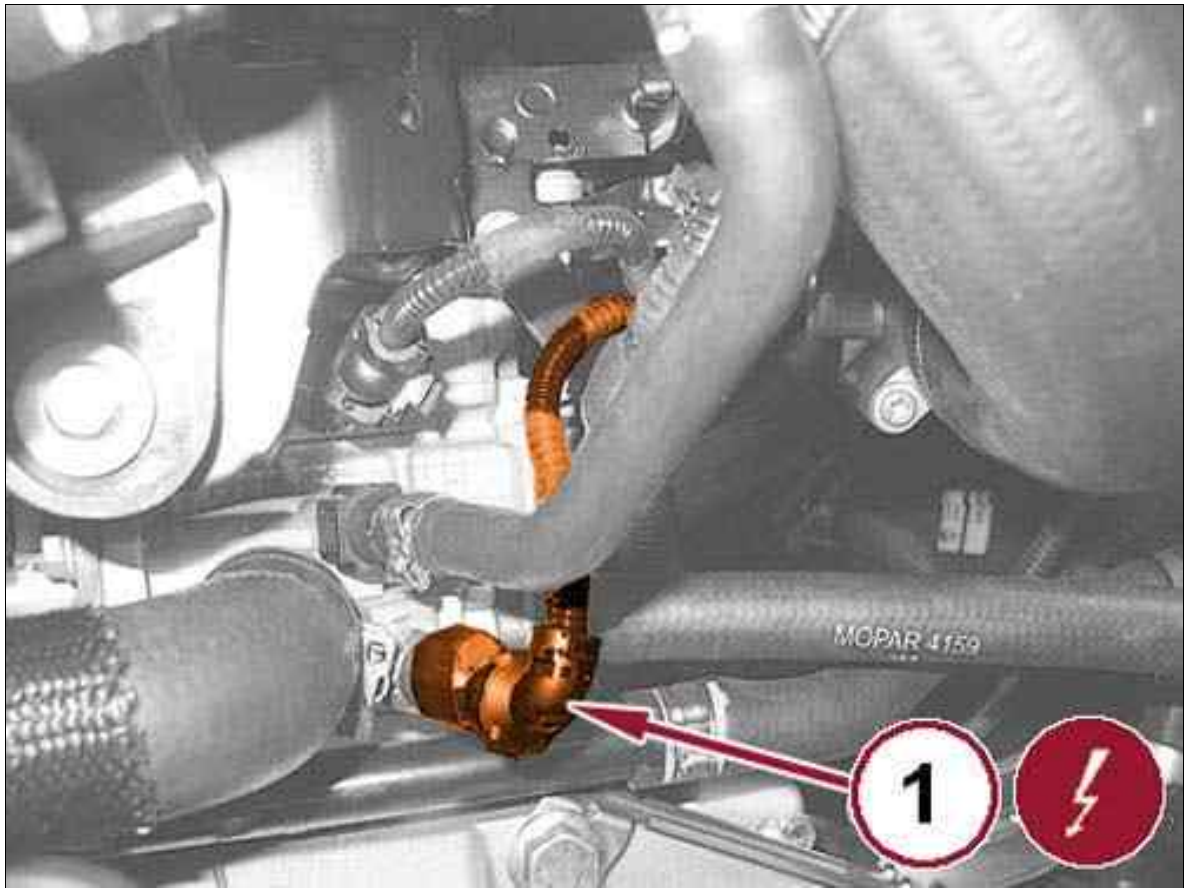
CAUTION:

Do not loosen radiator draincock with system hot and pressurized. Serious burns from coolant can occur.

1. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .

2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

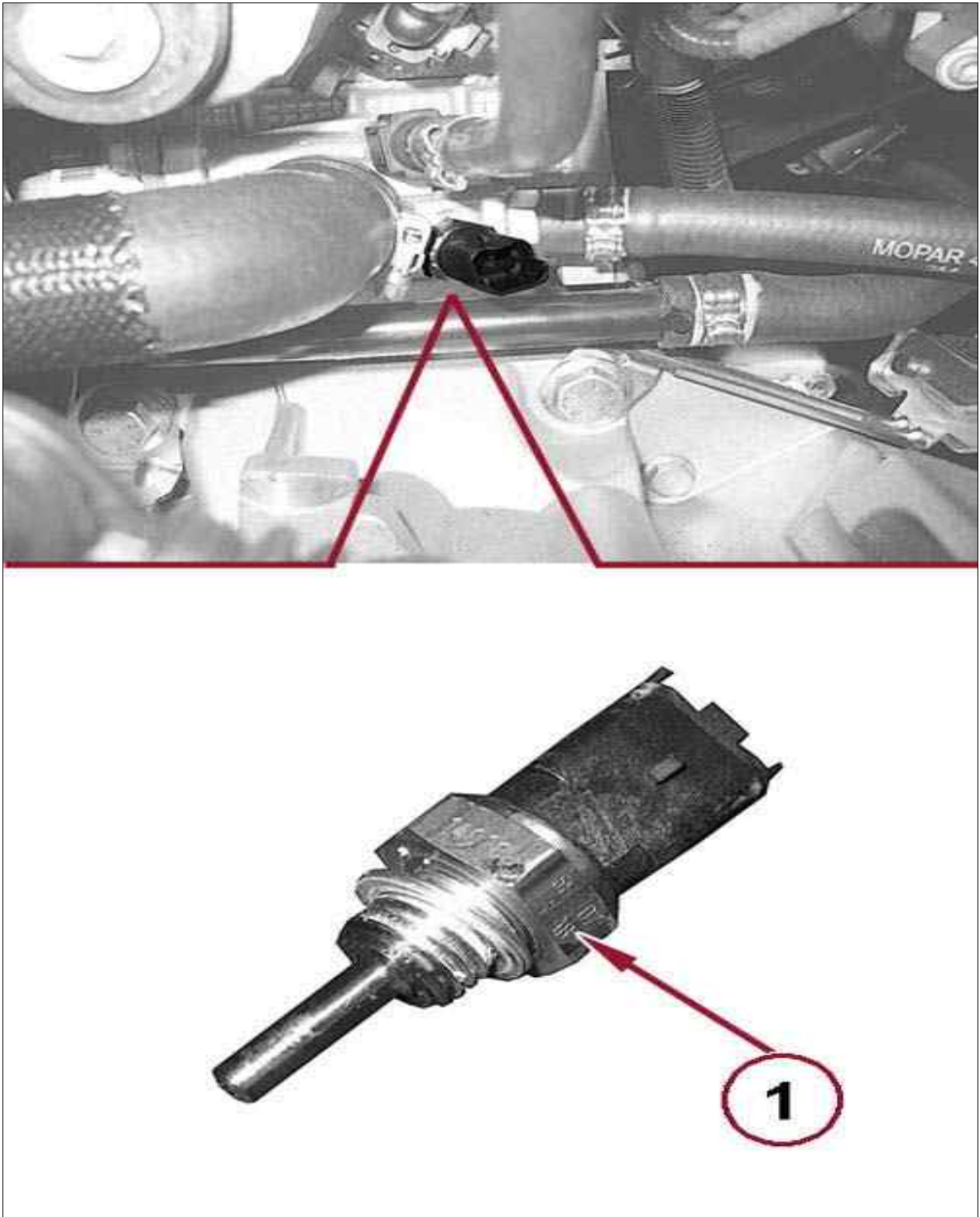
Fig 1: Coolant Temperature Sensor Connector



Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the engine coolant temperature sensor wire harness connector (1).

Fig 2: Coolant Temperature Sensor

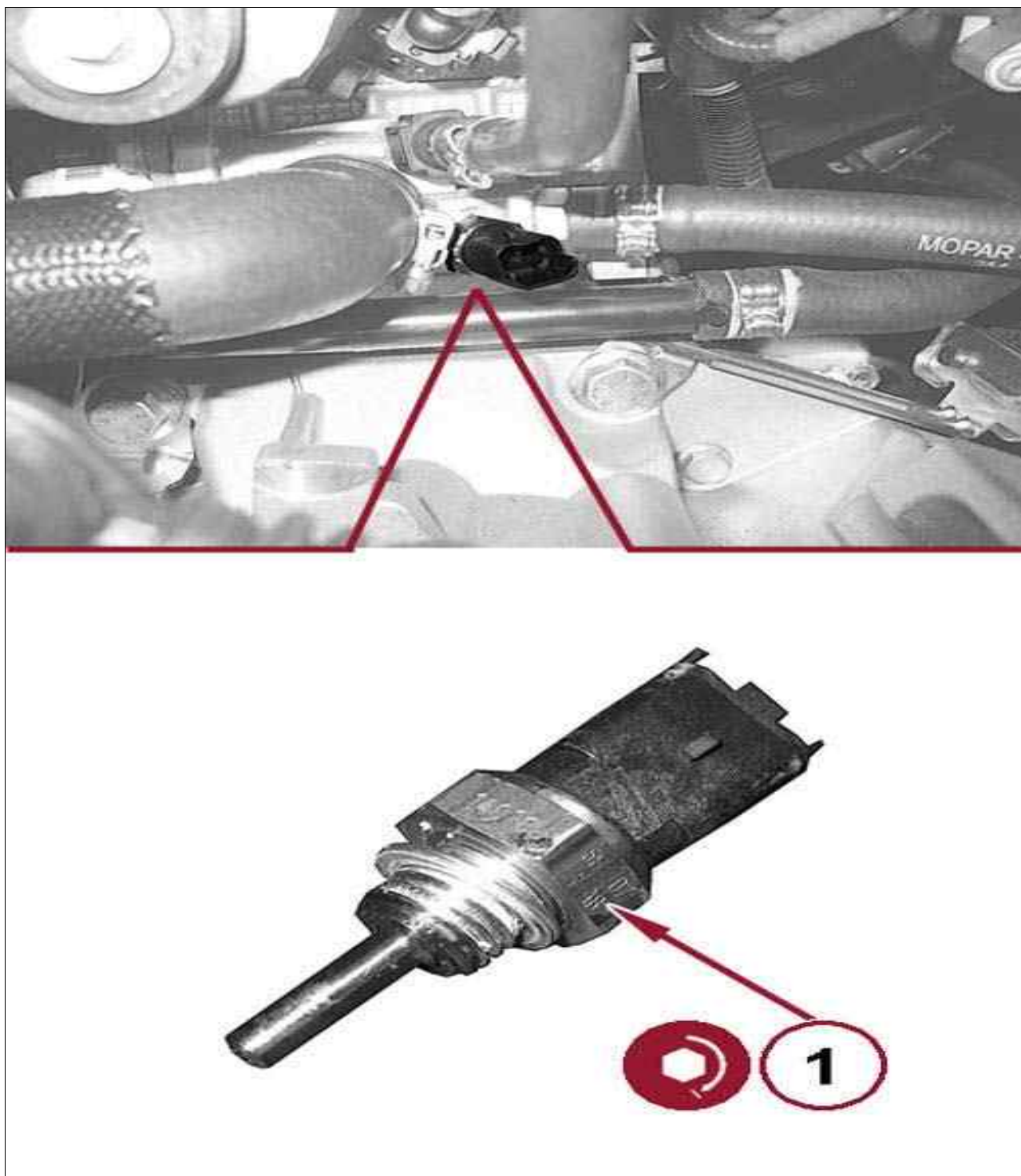


Courtesy of CHRYSLER GROUP, LLC

6. Remove the engine coolant temperature sensor (1).

**ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION >
1.4L TURBO MULTI AIR > INSTALLATION**

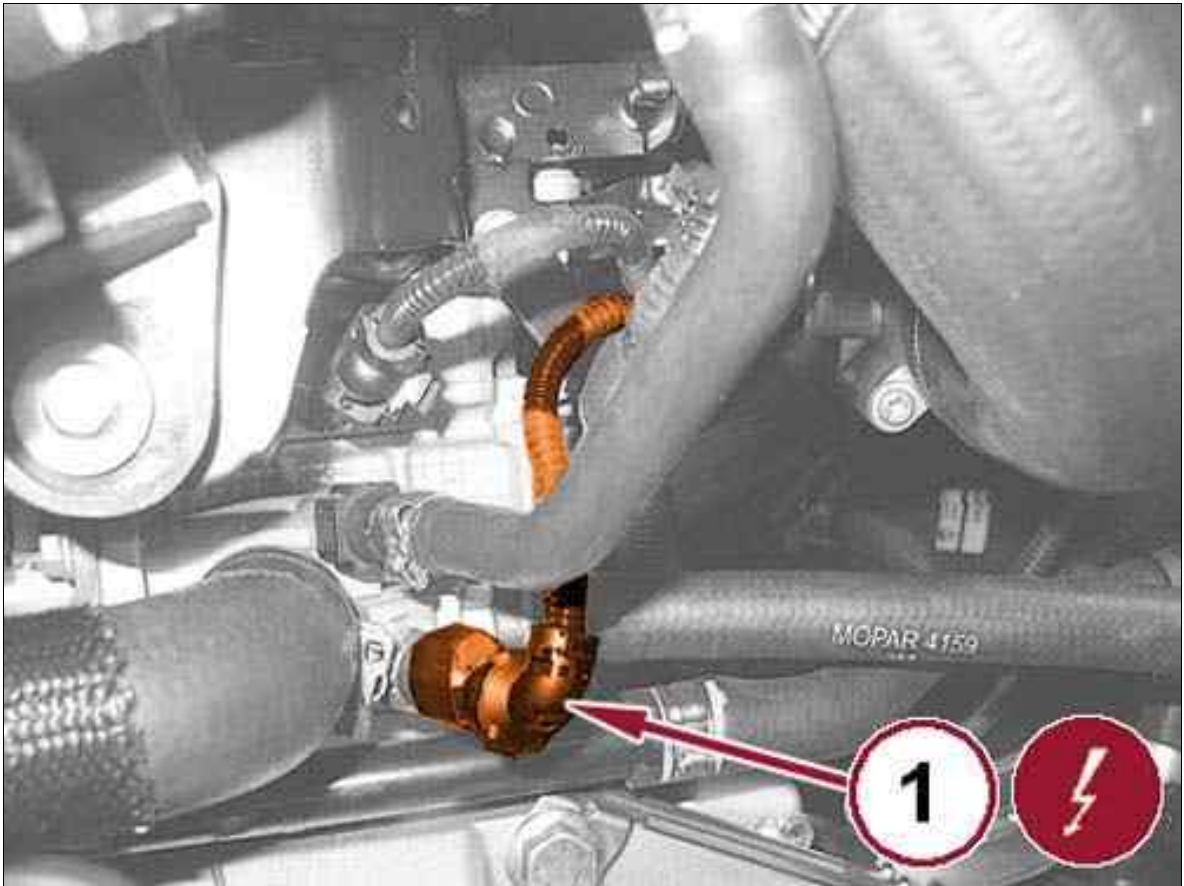
Fig 1: Coolant Temperature Sensor



Courtesy of CHRYSLER GROUP, LLC

1. Install the engine coolant temperature sensor (2) and tighten the sensor to the proper specification. Refer to SPECIFICATIONS .

Fig 2: Coolant Temperature Sensor Connector



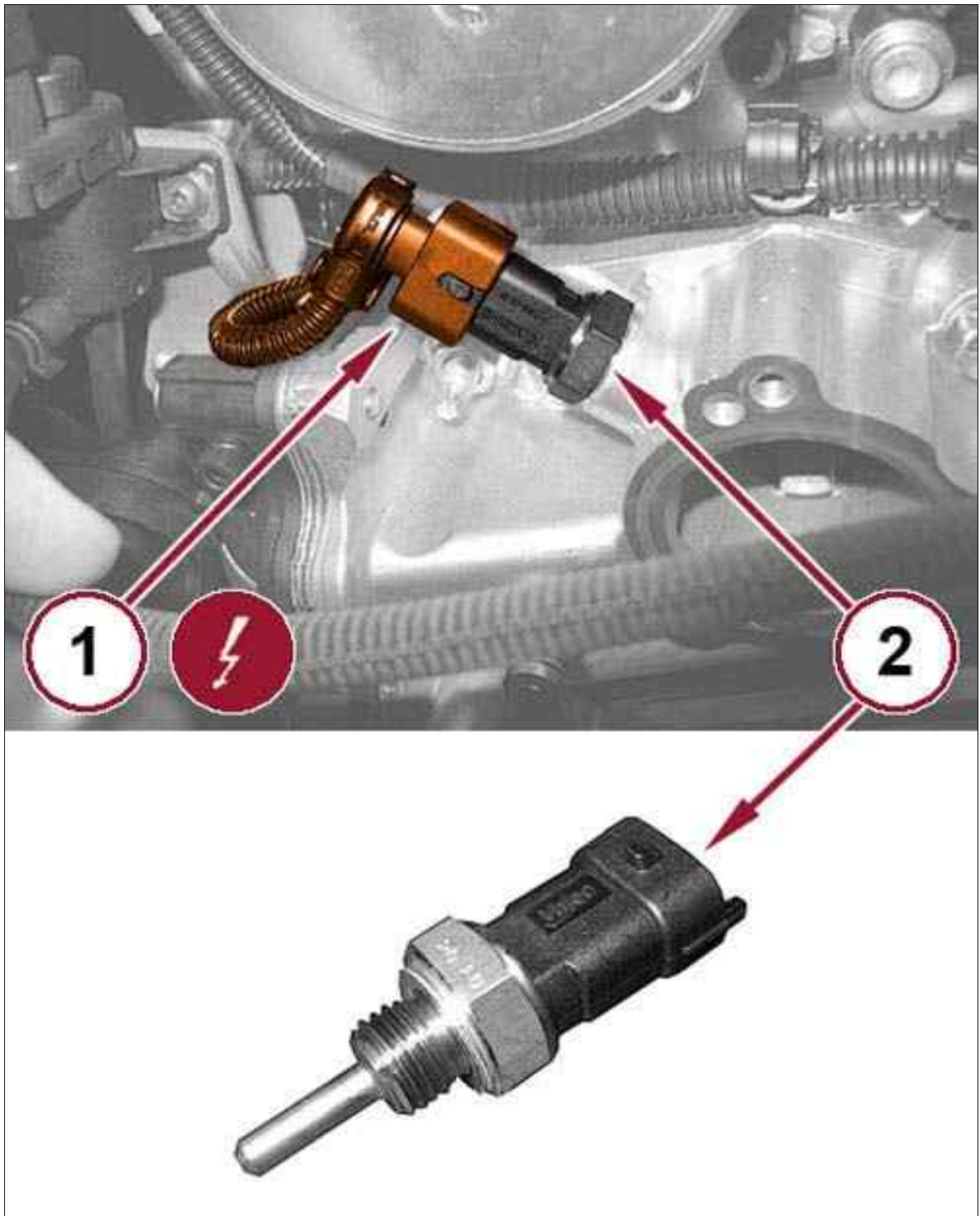
Courtesy of CHRYSLER GROUP, LLC

2. Connect the engine coolant temperature sensor wire harness connector (1).
3. Fill the cooling system. Refer to STANDARD PROCEDURE .
4. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 1.6L DIESEL > REMOVAL

1. Remove the thermostat housing. Refer to THERMOSTAT, REMOVAL AND INSTALLATION .

Fig 1: Engine Cooling Temperature Sensor & Connector



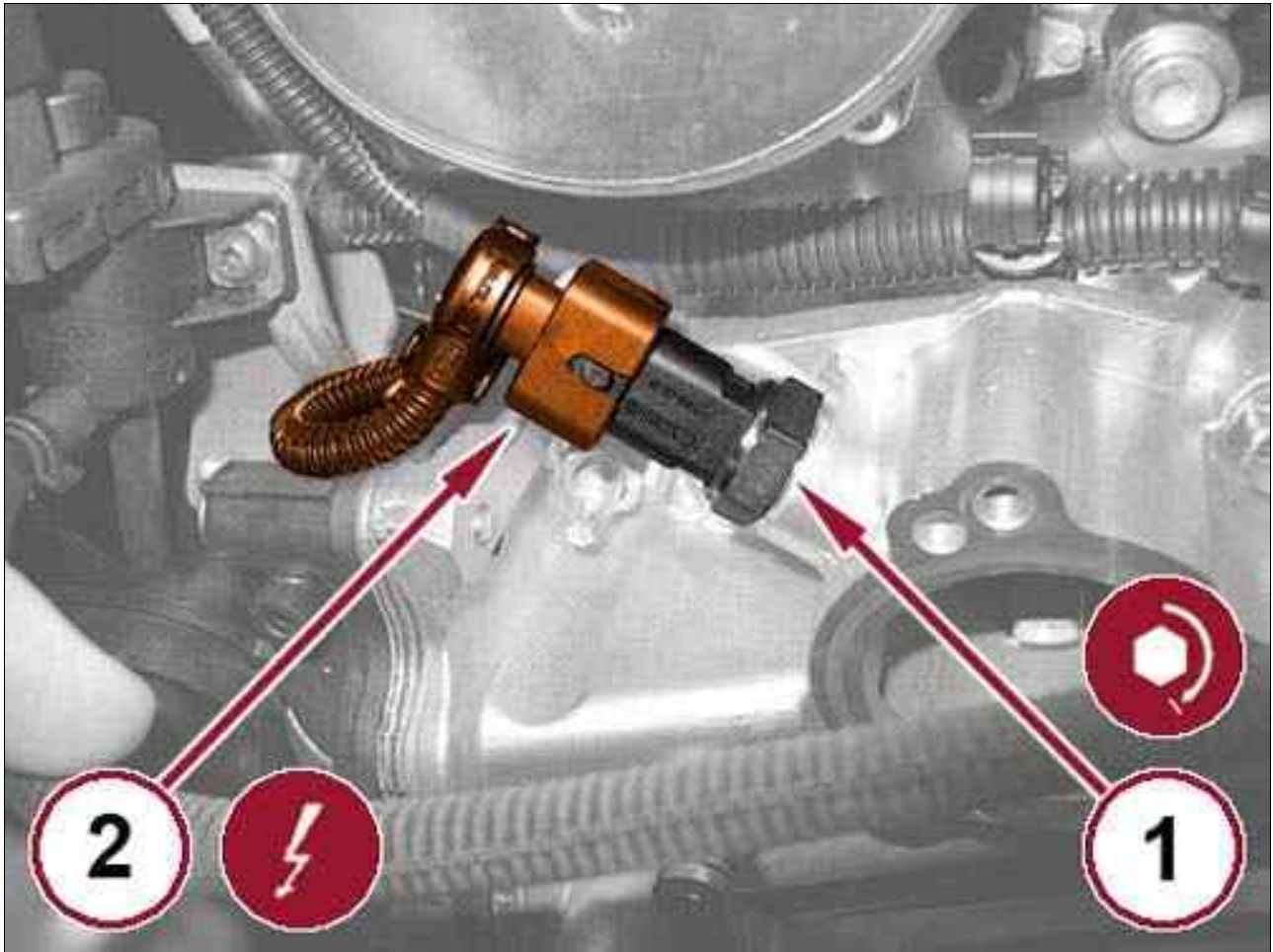
Courtesy of CHRYSLER GROUP, LLC

2. Disconnect the Engine Cooling Temperature (ECT) sensor wire harness connector (1).
3. Remove the ECT sensor (2).

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION >

1.6L DIESEL > INSTALLATION

Fig 1: Engine Cooling Temperature Sensor & Connector



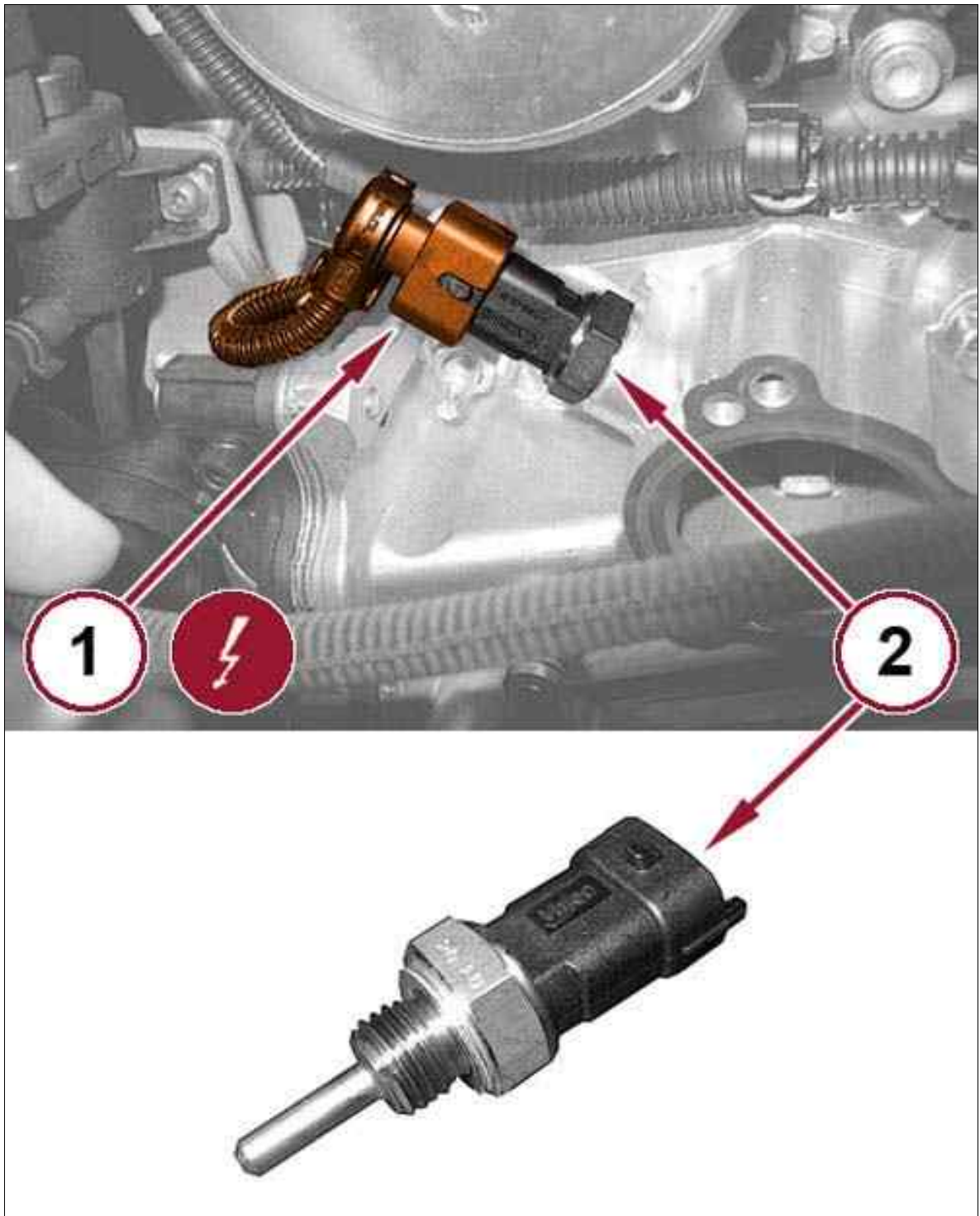
Courtesy of CHRYSLER GROUP, LLC

1. Install the Engine Cooling Temperature (ECT) sensor (1) and tighten to the proper specification. Refer to SPECIFICATIONS .
2. Install the ECT sensor wire harness connector (2).
3. Install the thermostat housing. Refer to THERMOSTAT, REMOVAL AND INSTALLATION .

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 2.0L DIESEL 120/140 CV > REMOVAL

1. Remove the thermostat housing. Refer to THERMOSTAT, REMOVAL AND INSTALLATION .

Fig 1: Engine Cooling Temperature Sensor & Connector



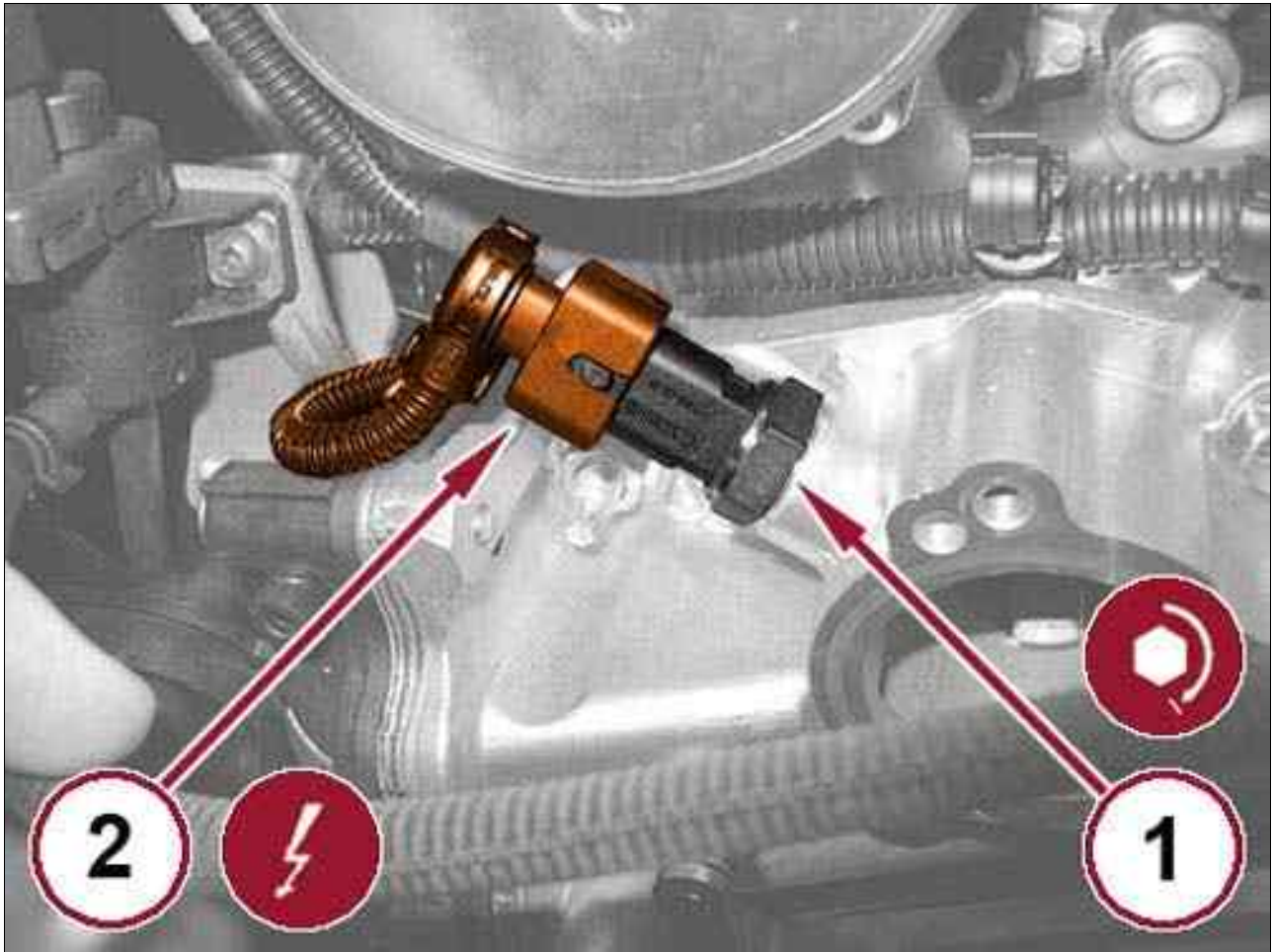
Courtesy of CHRYSLER GROUP, LLC

2. Disconnect the Engine Cooling Temperature (ECT) sensor wire harness connector (1).
3. Remove the ECT sensor (2).

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION >

2.0L DIESEL 120/140 CV > INSTALLATION

Fig 1: Engine Cooling Temperature Sensor & Connector



Courtesy of CHRYSLER GROUP, LLC

1. Install the Engine Cooling Temperature (ECT) sensor (1) and tighten to the proper specification. Refer to SPECIFICATIONS .
2. Install the ECT sensor wire harness connector (2).
3. Install the thermostat housing. Refer to THERMOSTAT, REMOVAL AND INSTALLATION .

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 2.0L DIESEL 170 CV > REMOVAL

1. Disconnect and isolate the negative battery cable.
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

5. Open the retaining clip and disconnect the vacuum brake booster hose quick connect fitting.

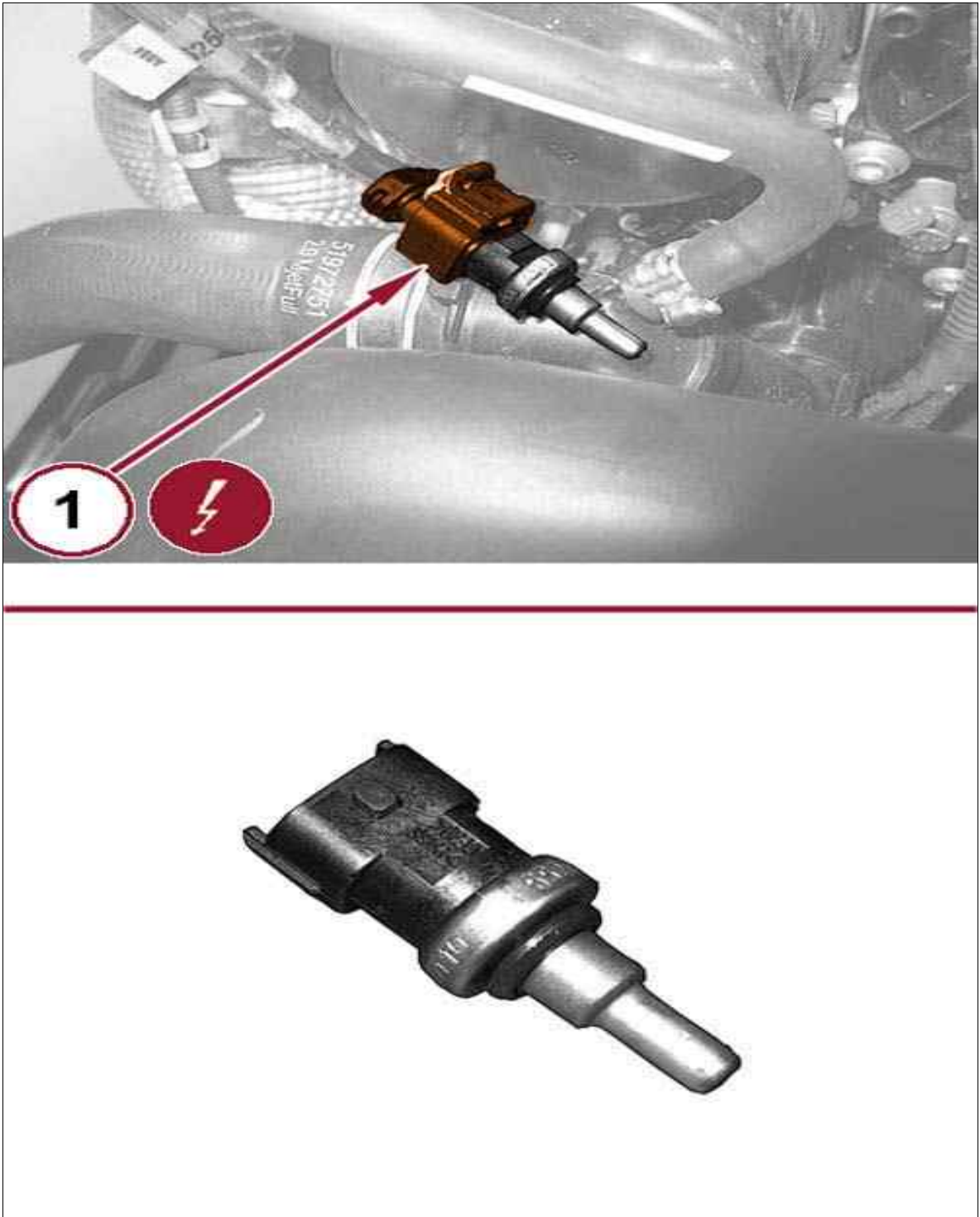
Fig 1: Engine Cooling Temperature (ECT) Sensor & Clip



Courtesy of CHRYSLER GROUP, LLC

6. Lift the spring retainer and remove the Engine Coolant Temperature (ECT) sensor (1) from the thermostat housing.

Fig 2: (ECT) Sensor Wire Harness Connector

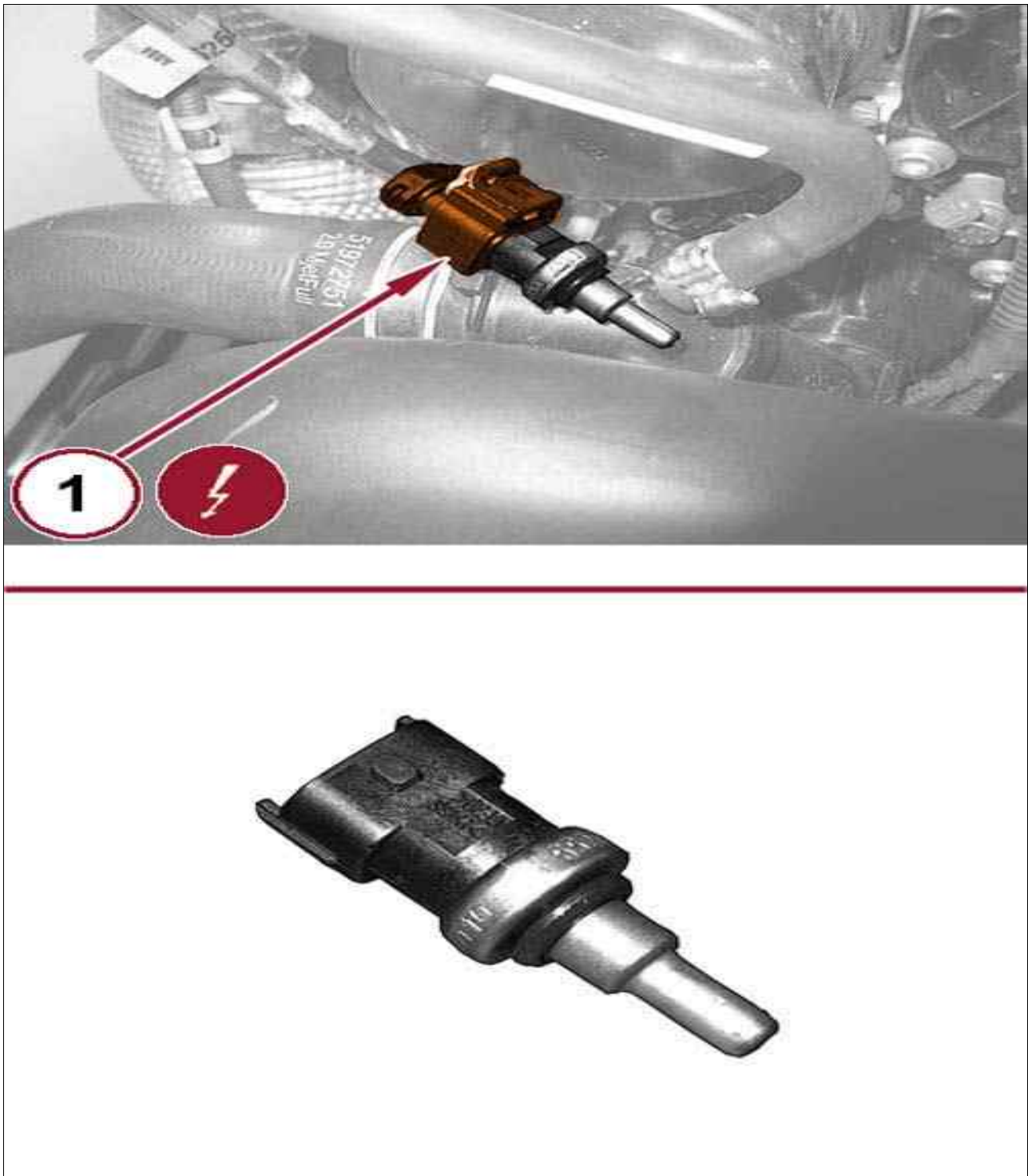


Courtesy of CHRYSLER GROUP, LLC

7. Disconnect the wire harness connector.

**ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION >
2.0L DIESEL 170 CV > INSTALLATION**

Fig 1: (ECT) Sensor Wire Harness Connector



Courtesy of CHRYSLER GROUP, LLC

1. Connect the Engine Cooling Temperature (ECT) sensor wire harness connector (1).

Fig 2: Engine Cooling Temperature (ECT) Sensor & Clip



Courtesy of CHRYSLER GROUP, LLC

2. Using a **NEW** O-ring seal, install the ECT sensor (1) into thermostat housing and push down on spring retainer to lock in place.
3. Connect the vacuum brake booster hose quick connect fitting and close the retaining clip.
4. Fill the coolant system. Refer to STANDARD PROCEDURE .
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
7. Connect the negative battery cable.

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 2.4LTURBO MULTI AIR > REMOVAL

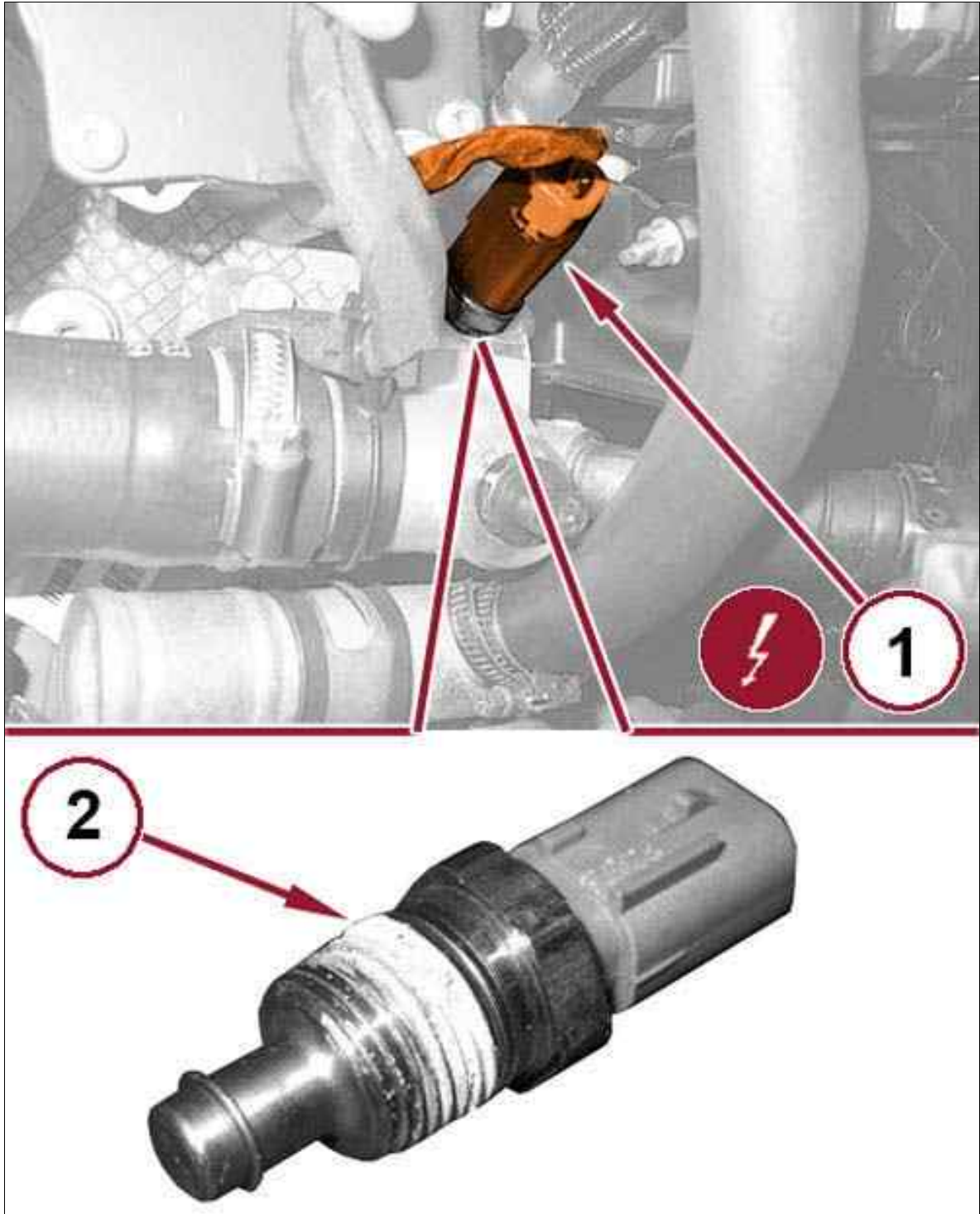


CAUTION:

Do not loosen radiator draincock with system hot and pressurized. Serious burns from coolant can occur.

1. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

Fig 1: Engine Coolant Temperature Sensor & Connector



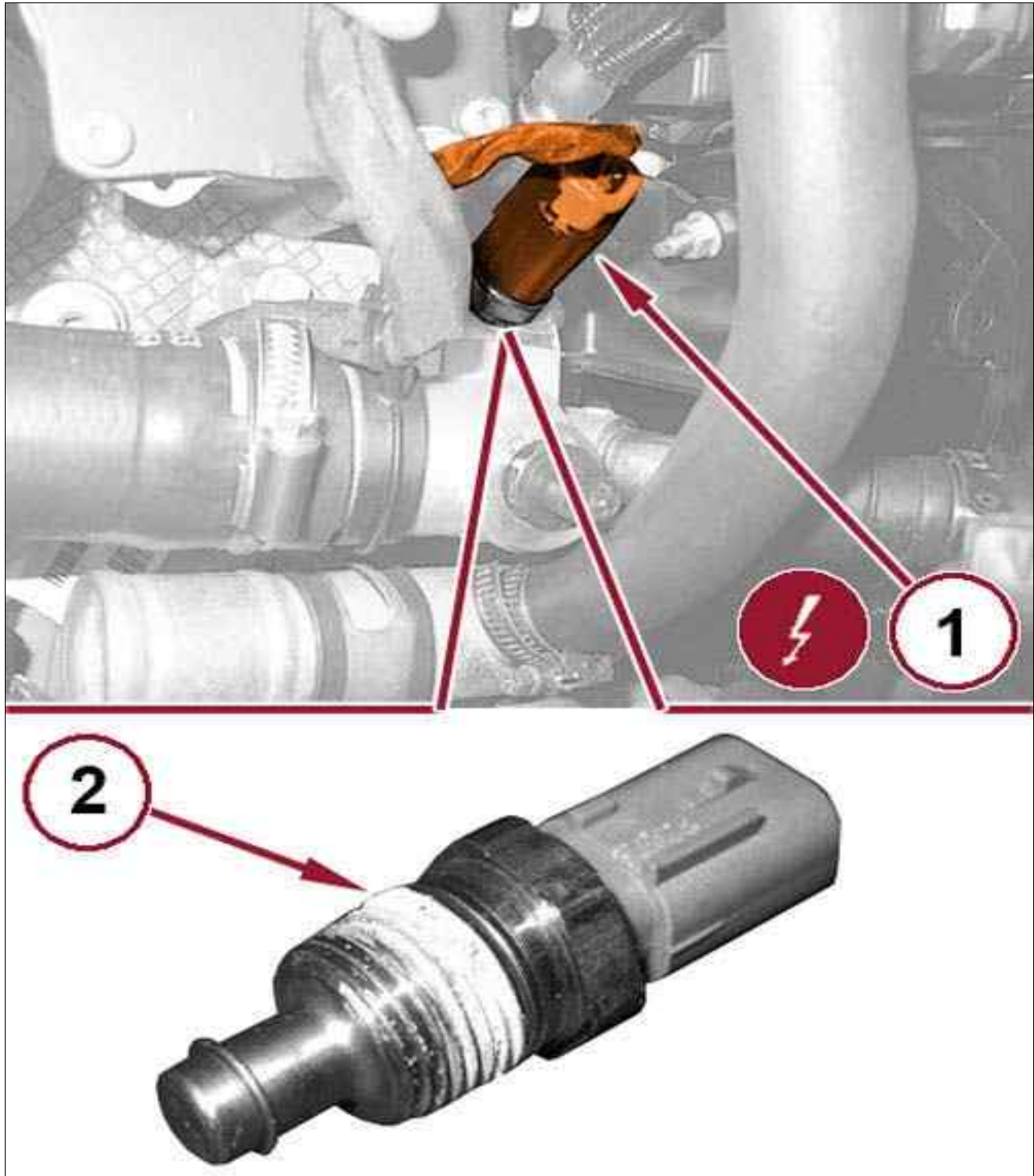
Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the engine coolant temperature sensor wire harness connector (1).

6. Remove the engine coolant temperature sensor (2).

ENGINE > SENSOR, COOLANT TEMPERATURE > REMOVAL AND INSTALLATION > 2.4LTURBO MULTI AIR > INSTALLATION

Fig 1: Engine Coolant Temperature Sensor & Connector



1. Install the engine coolant temperature sensor (2) and tighten the sensor to the proper specification. Refer to SPECIFICATIONS .
2. Connect the engine coolant temperature sensor wire harness connector (1).
3. Fill the cooling system. Refer to STANDARD PROCEDURE .
4. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
5. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
6. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .

ENGINE > THERMOSTAT > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION



CAUTION:

Do not operate an engine without a thermostat, except for servicing or testing.

A pellet-type thermostat controls the operating temperature of the engine by controlling the amount of coolant flow to the radiator and engine oil cooler. The thermostat is closed below, see table below for correct engine application. Above this temperature, coolant is allowed to flow to the radiator and engine oil cooler. This provides quick engine warm up and overall temperature control.

1.4 MultiAir Turbo	1.6 16V Multijet	2.0 16V Multijet	2.4 MultiAir Turbo
176°F (80°C)	190°F (88°C)	190°F (88°C)	195°F (90°C)

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 1.4L MULTI AIR TURBO > REMOVAL



CAUTION:

Do not loosen radiator draincock with system hot and pressurized. Serious burns from coolant can occur.

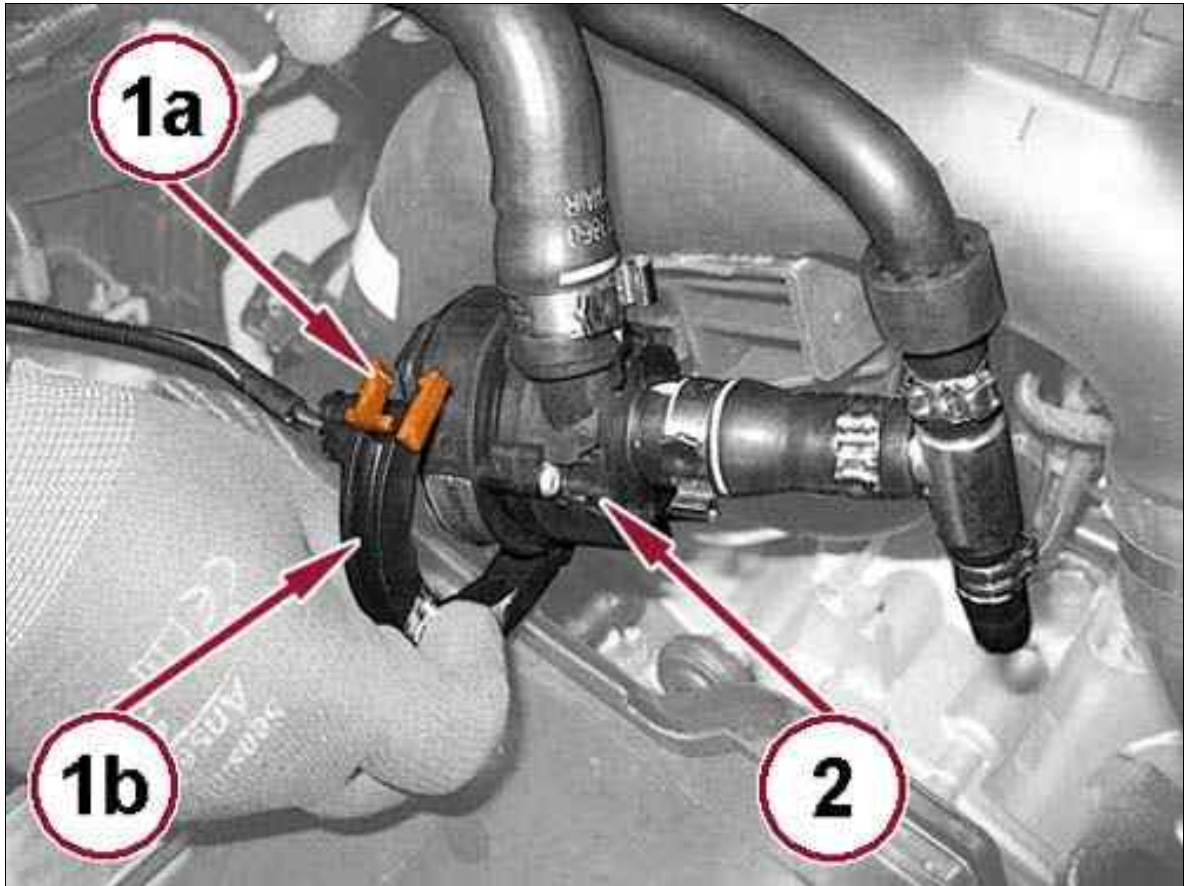


CAUTION:

The Thermostat and housing is serviced as an assembly. Do not remove the thermostat from the housing, damage to the thermostat may occur.

1. Remove the engine cover.
2. Drain the cooling system. Refer to STANDARD PROCEDURE .
3. Disconnect and isolate the battery cables.
4. Remove the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .
5. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .

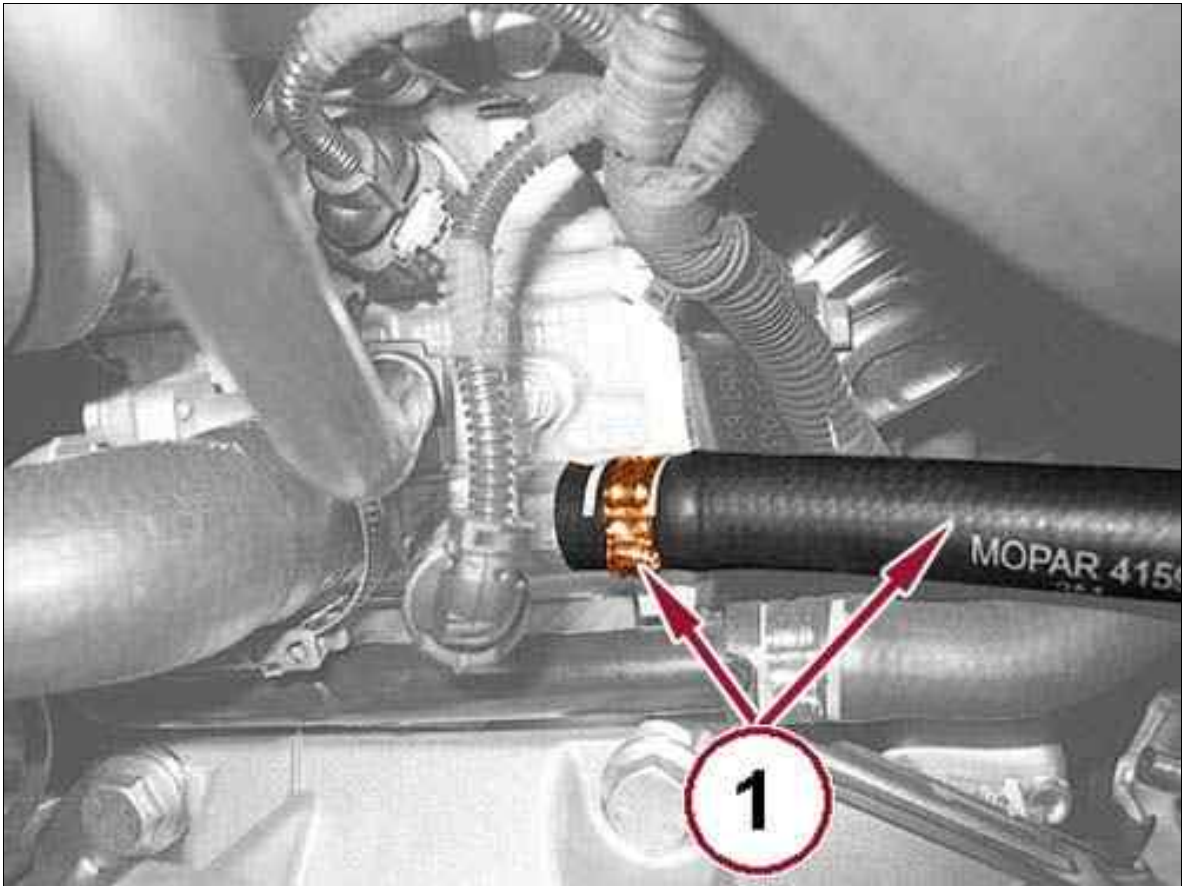
Fig 1: Secondary Water Pump, Retaining Collar & Clip



Courtesy of CHRYSLER GROUP, LLC

6. On 4x4 models, release the clip (1a) and remove the water pump retaining collar (1b). and position aside the secondary water pump (2).

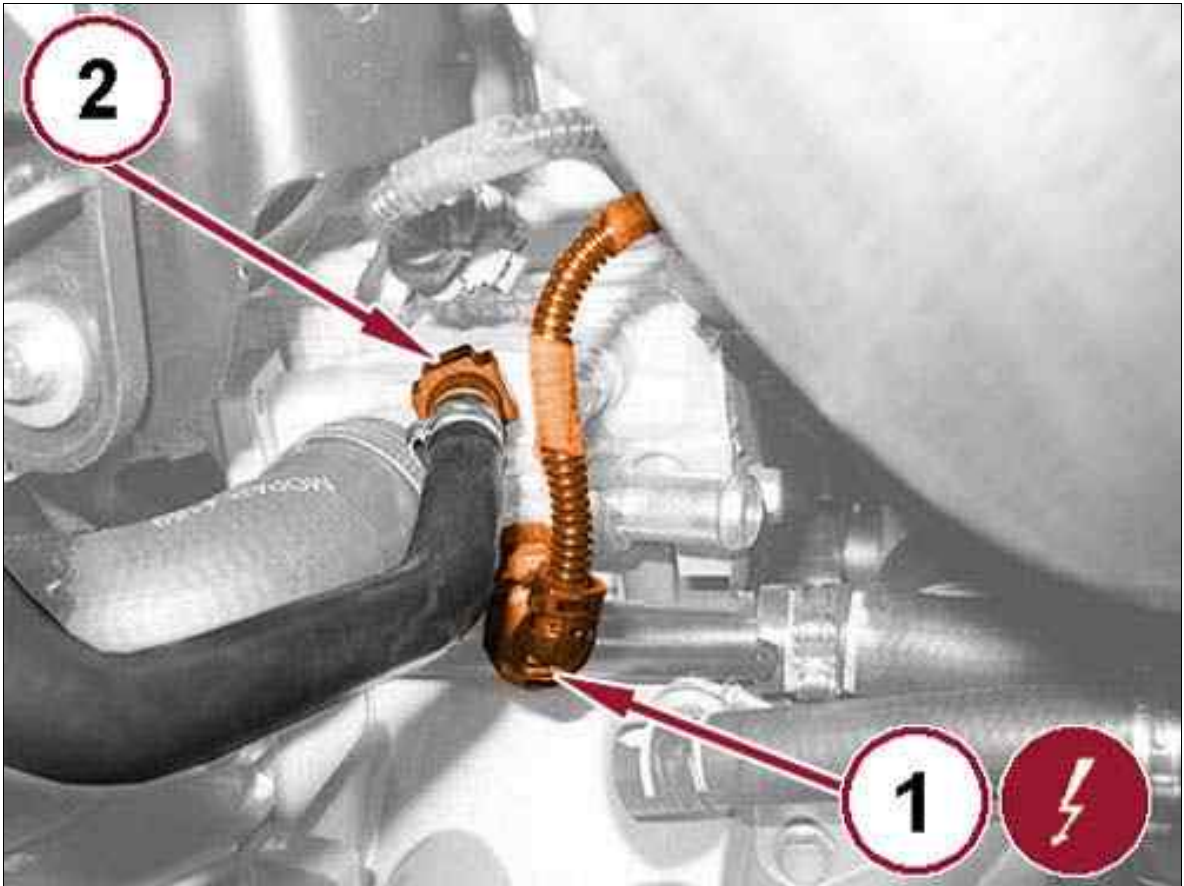
Fig 2: Coolant Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

7. Loosen the clamp and remove the coolant hose (1).

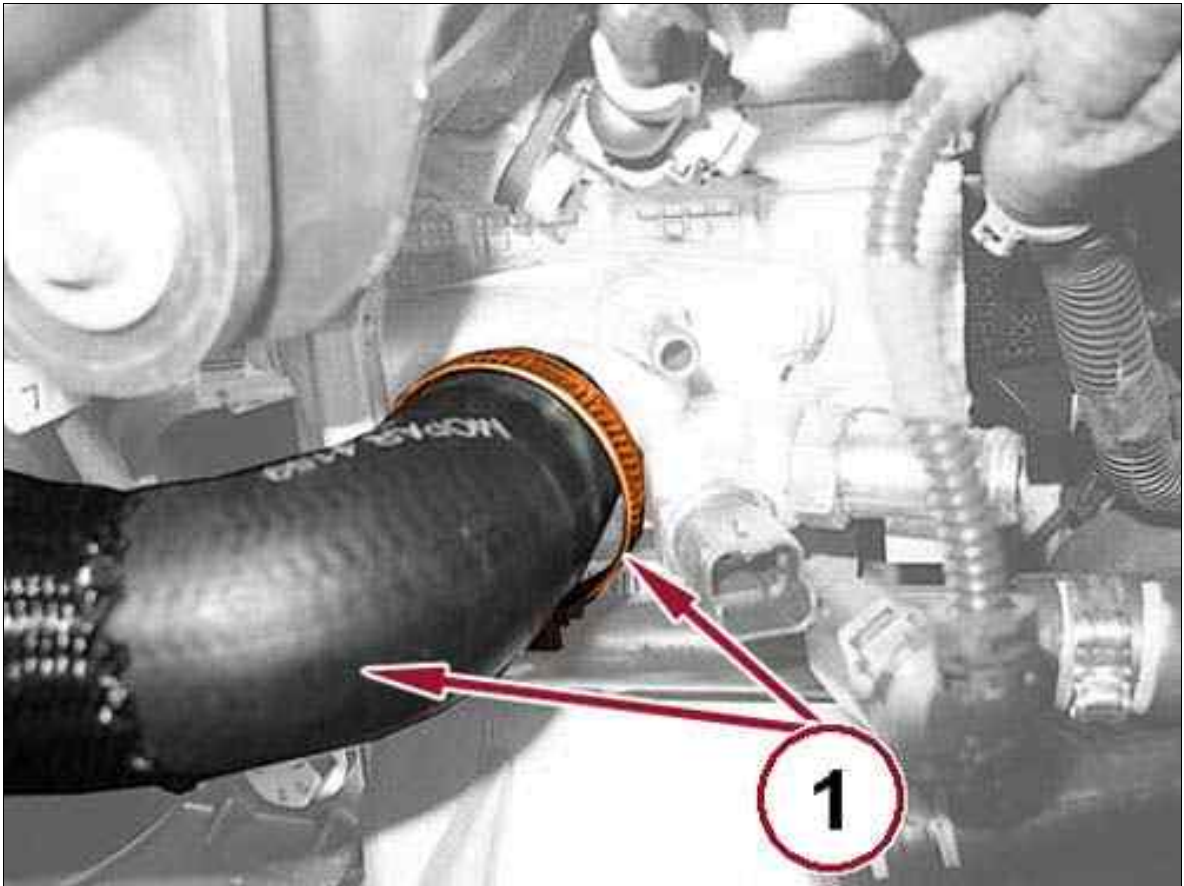
Fig 3: Coolant Temperature Sensor & Quick Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

8. Disconnect the engine coolant temperature sensor wire harness connector (1).
9. Disconnect the degassing hose quick connect coupling (2).

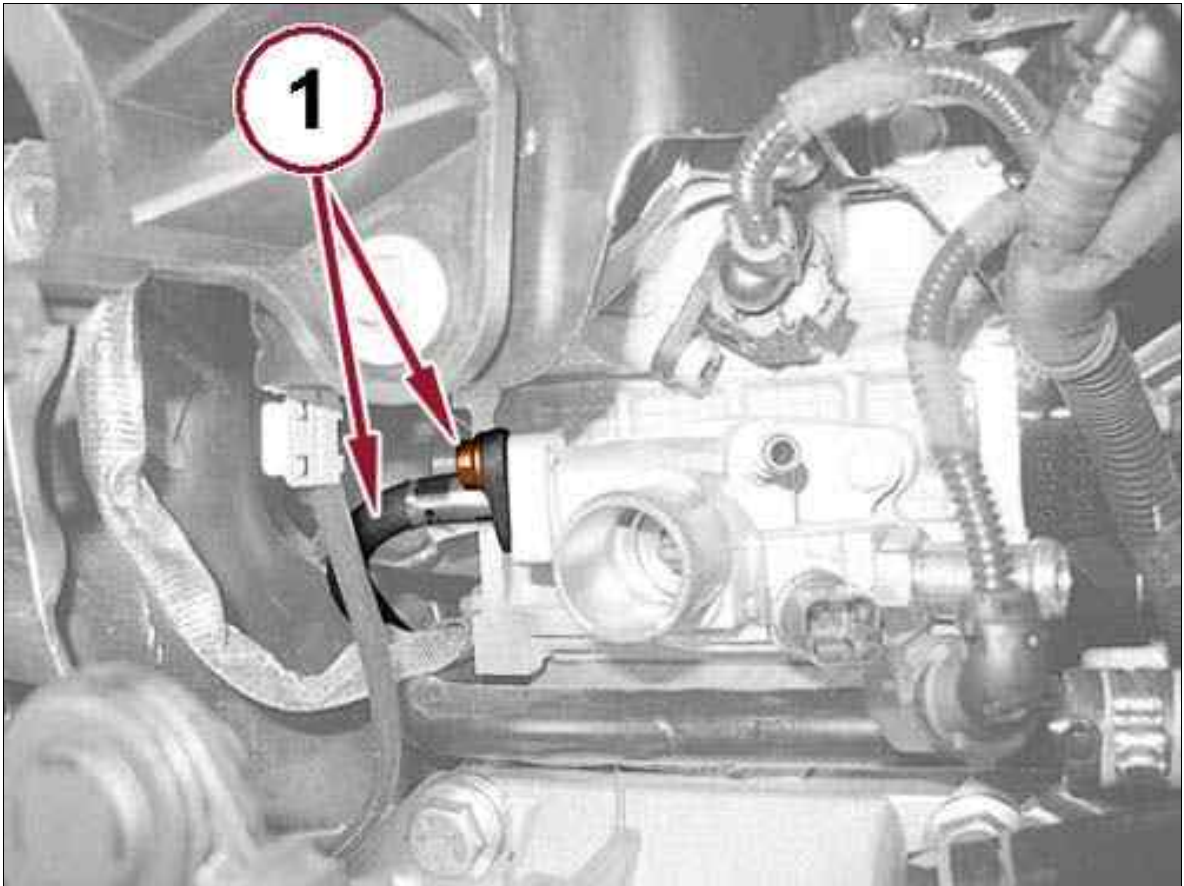
Fig 4: Radiator Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

10. Loosen the clamp and remove the radiator hose (1).

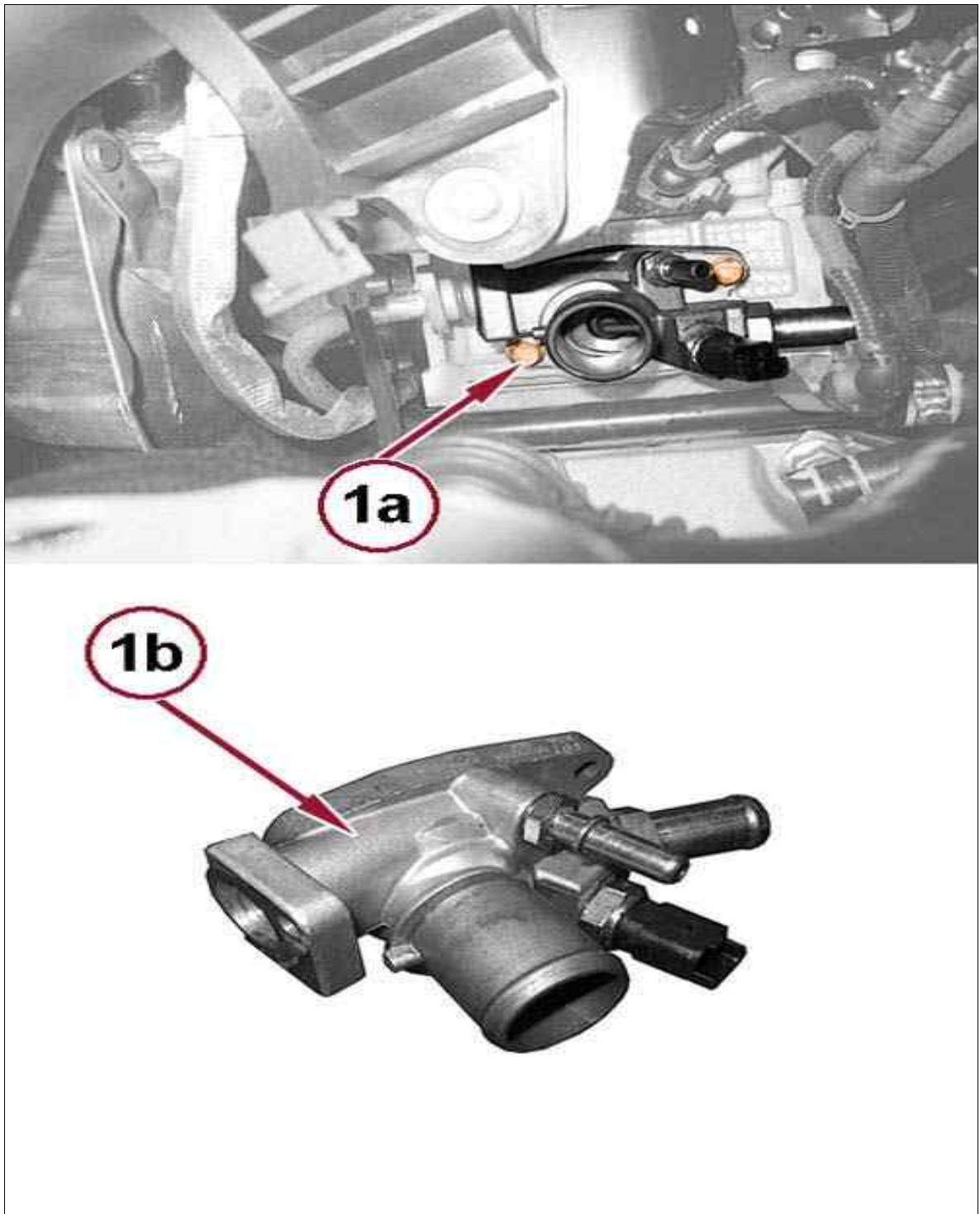
Fig 5: Oil Cooler Pipe & Bolt



Courtesy of CHRYSLER GROUP, LLC

11. Remove the bolts and the oil cooler pipe (1) and discard the O-ring seal.

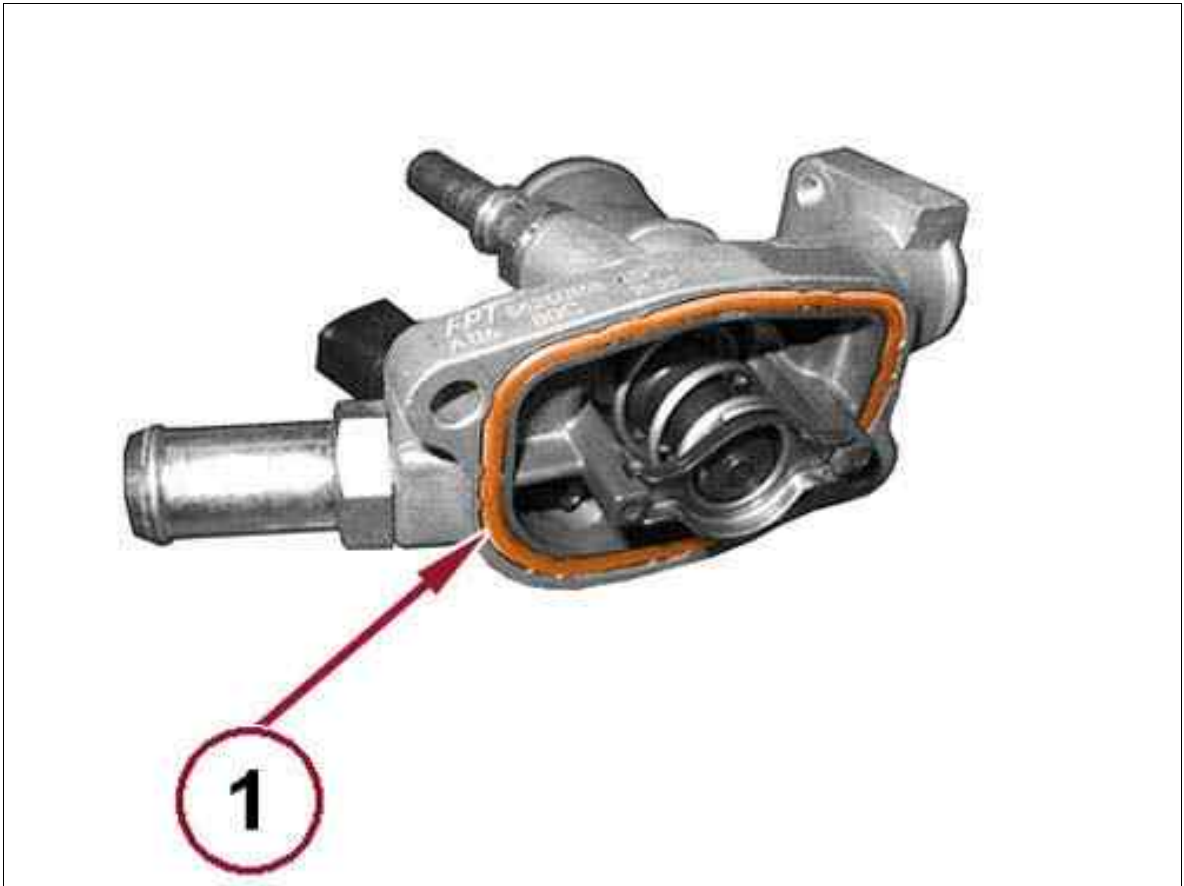
Fig 6: Thermostat Housing & Bolts



Courtesy of CHRYSLER GROUP, LLC

12. Remove the bolts (1a) and the thermostat housing (1b).

Fig 7: O-Ring Gasket

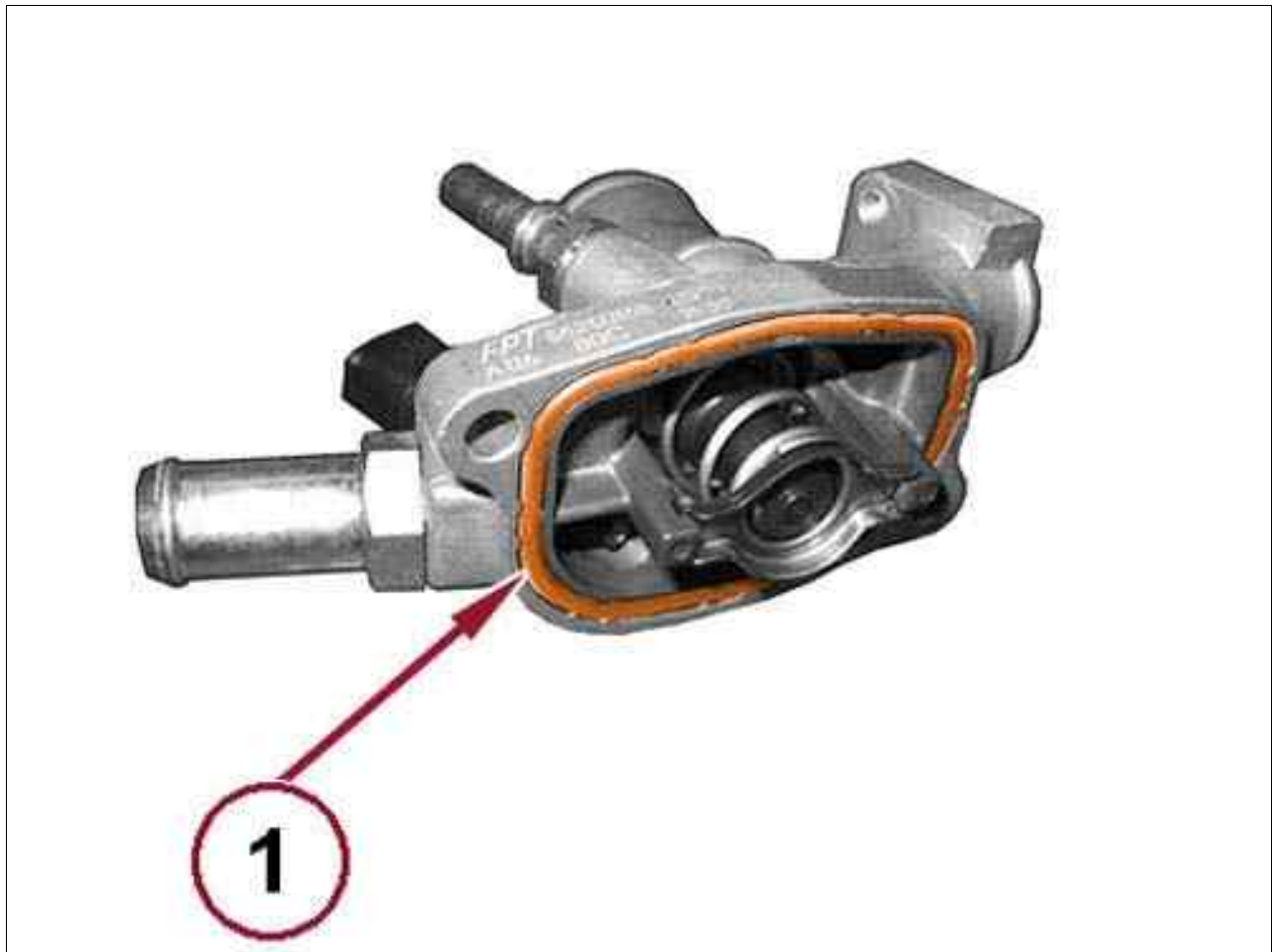


Courtesy of CHRYSLER GROUP, LLC

13. Remove and discard the O-ring gasket seal (1).

**ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 1.4L MULTI AIR TURBO
> INSTALLATION**

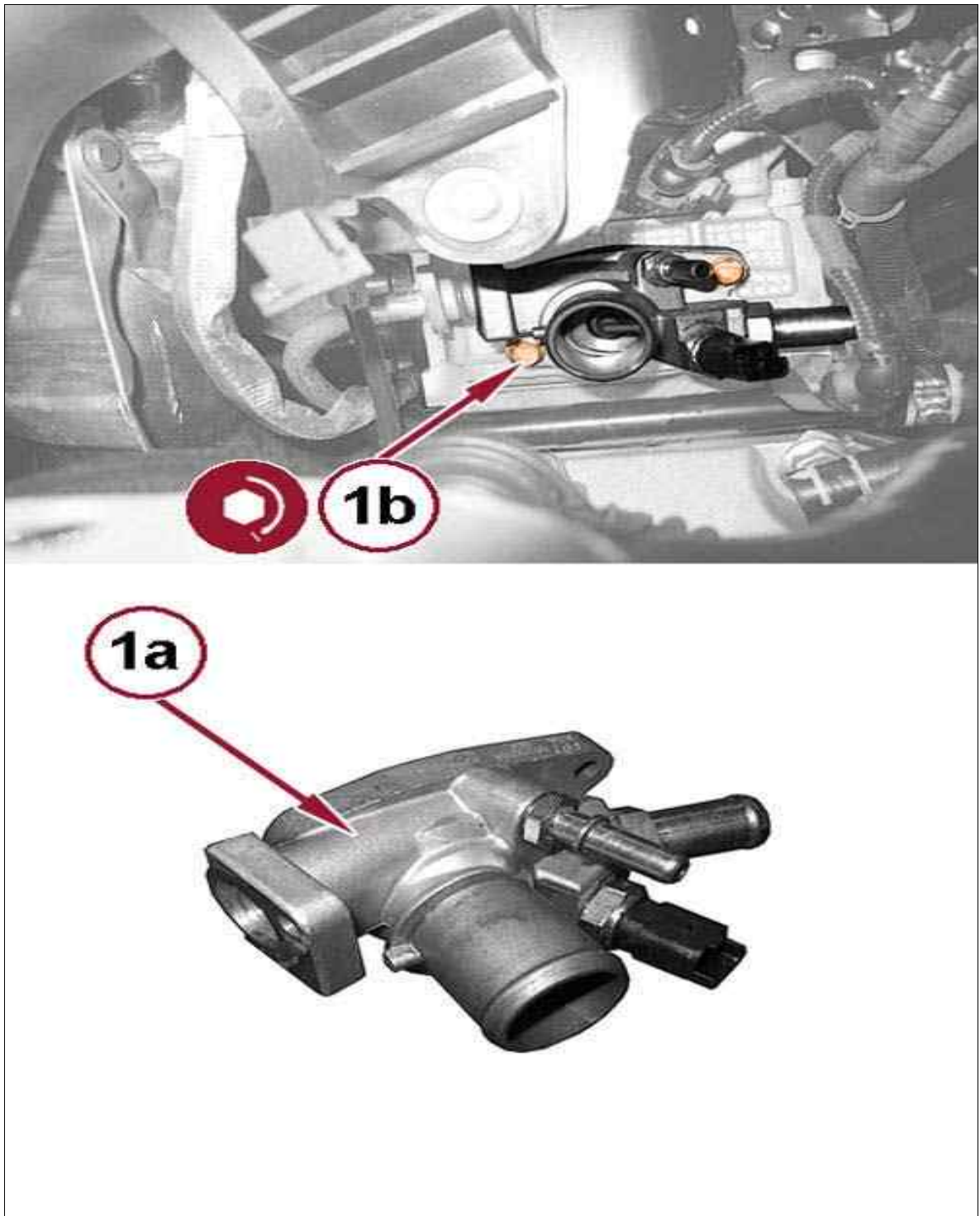
Fig 1: O-Ring Gasket



Courtesy of CHRYSLER GROUP, LLC

1. Clean the mating surfaces on the engine block and thermostat housing.
2. Install **NEW** O-ring gasket seal (1) onto the thermostat housing.

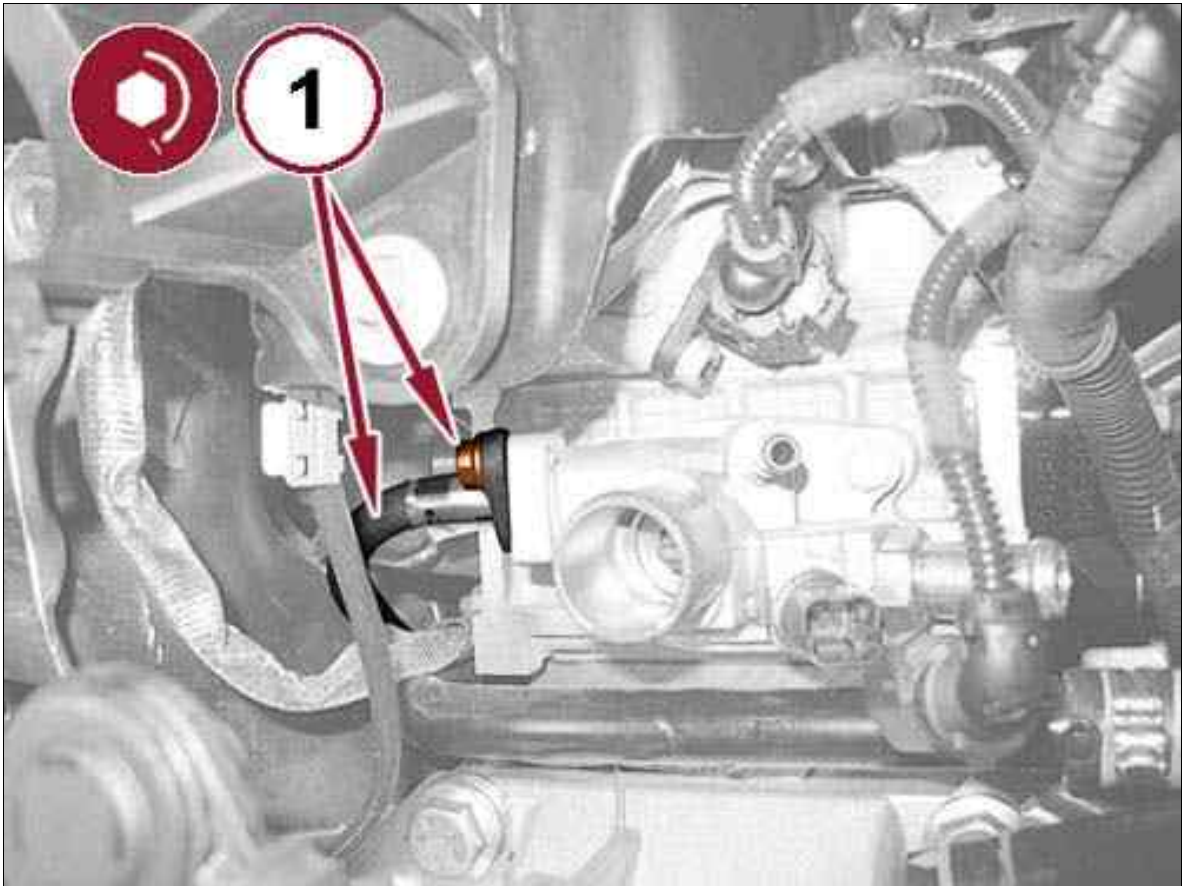
Fig 2: Thermostat Housing & Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Install the thermostat housing mounting bolts (2). Tighten bolts to the proper specification. Refer to SPECIFICATIONS .

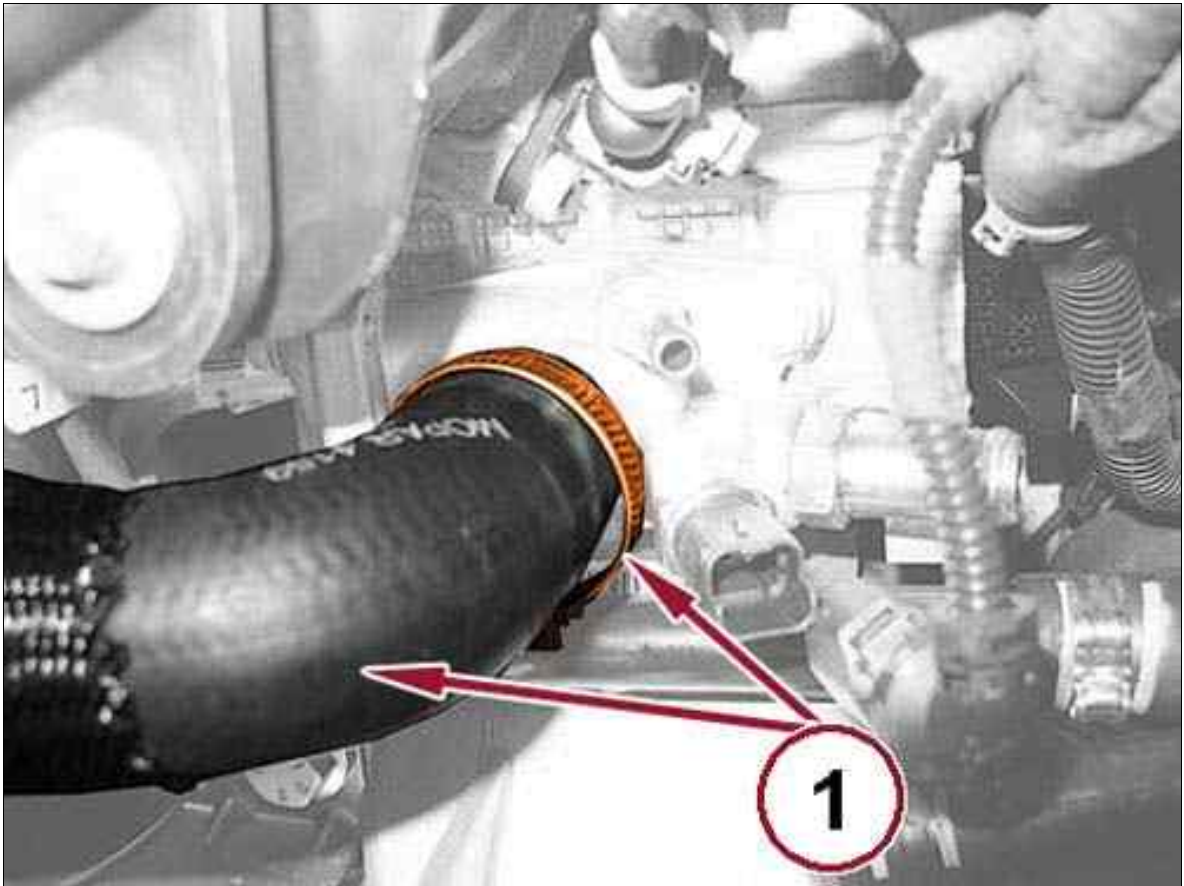
Fig 3: Oil Cooler Pipe & Bolt



Courtesy of CHRYSLER GROUP, LLC

4. Using a **NEW** O-ring seal, install the oil cooler pipe (1). Tighten the bolt to the proper specification. Refer to SPECIFICATIONS .

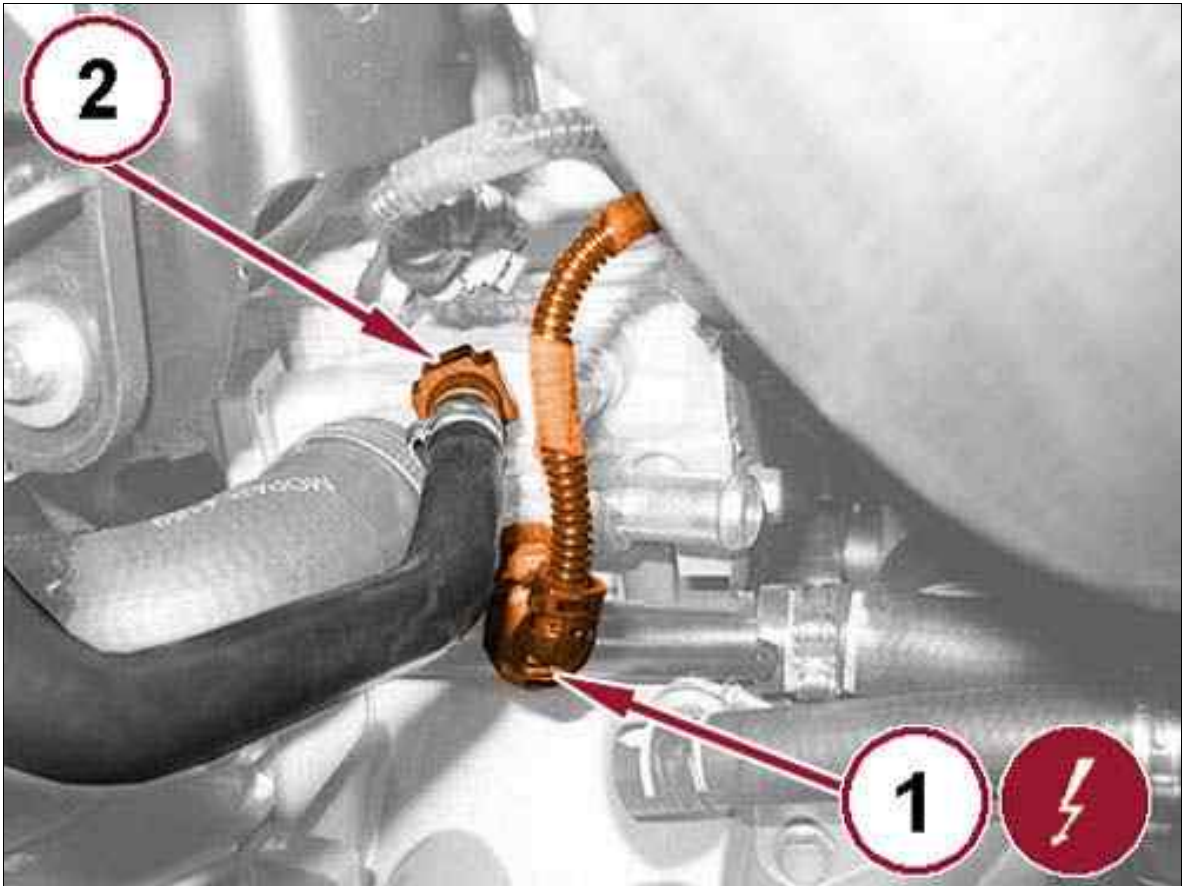
Fig 4: Radiator Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

5. Install the radiator hose (1) and tighten the clamp.

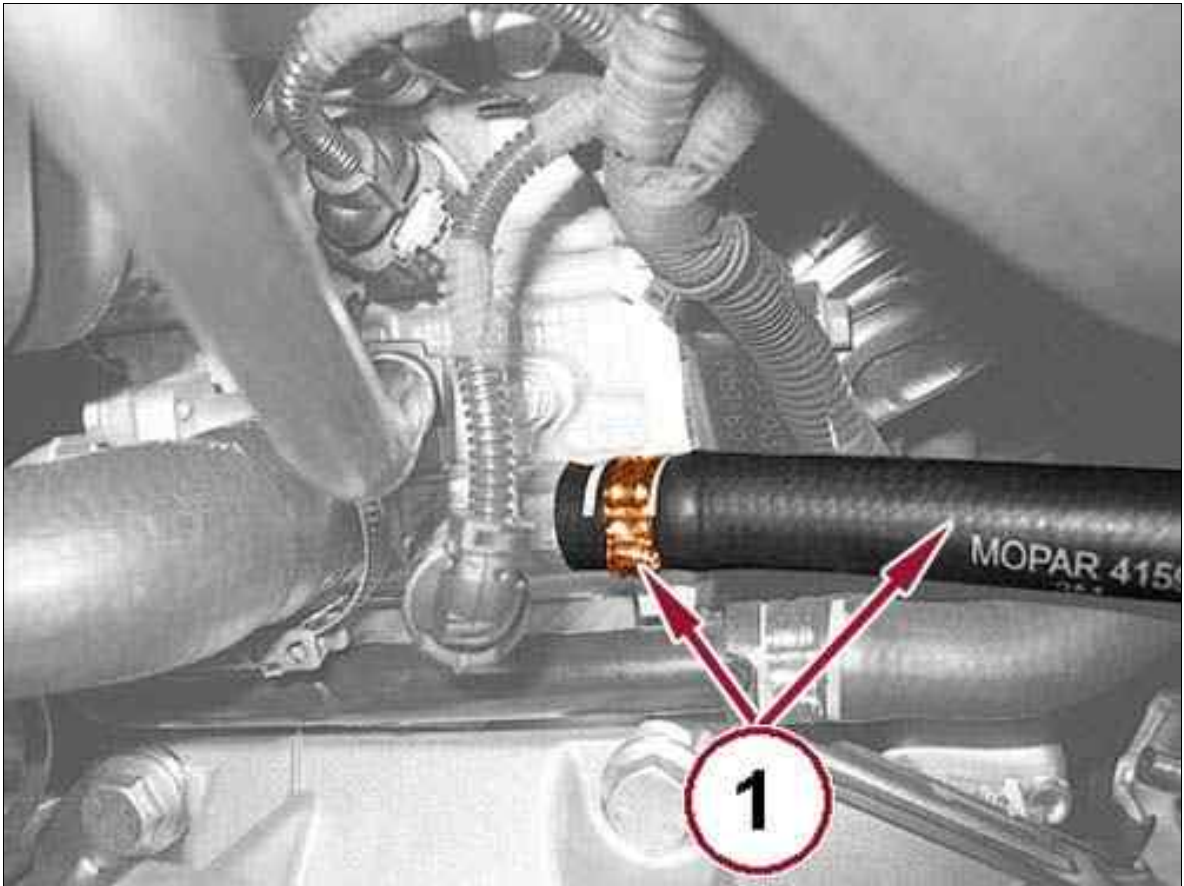
Fig 5: Coolant Temperature Sensor & Quick Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

6. Connect the degassing hose quick connect coupling (2).
7. Connect the engine coolant temperature sensor wire harness connector (1).

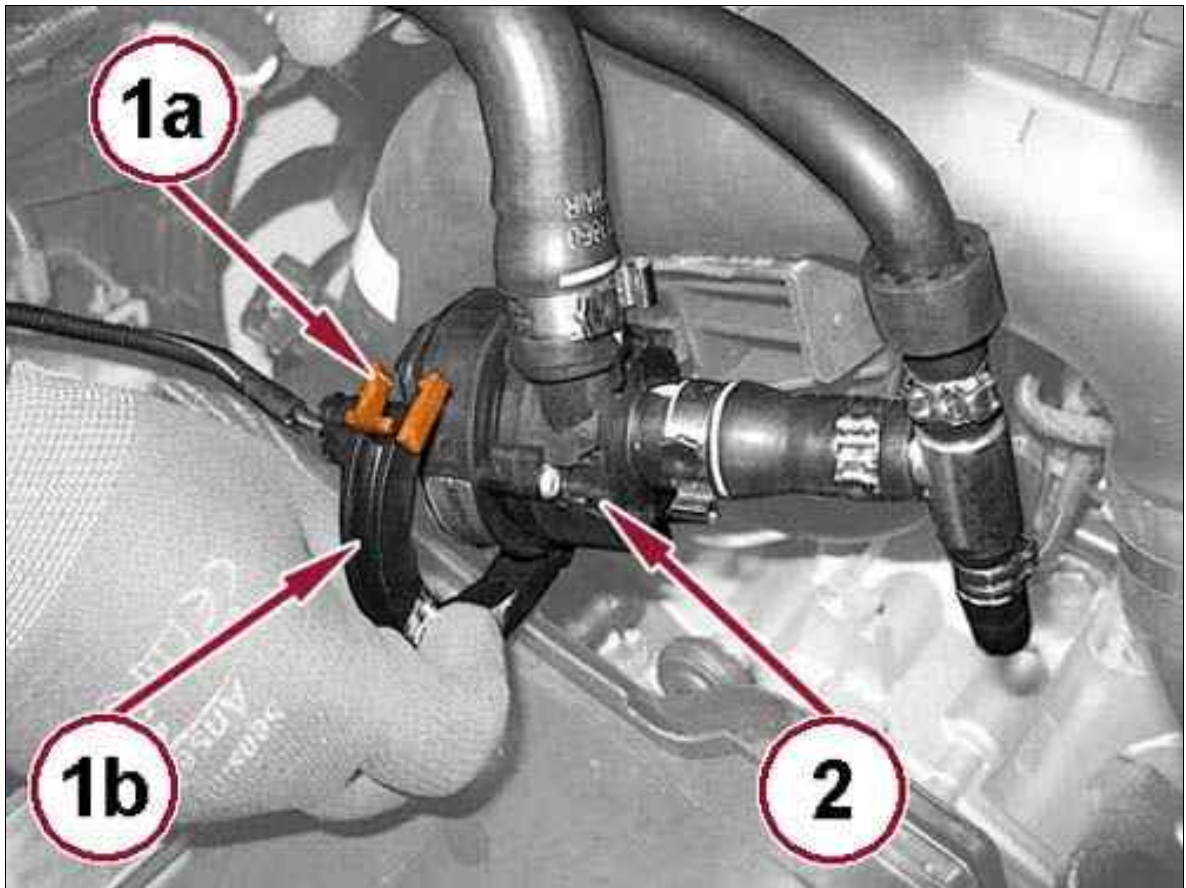
Fig 6: Coolant Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

8. Install the coolant hose and tighten the clamp (3).

Fig 7: Secondary Water Pump, Retaining Collar & Clip



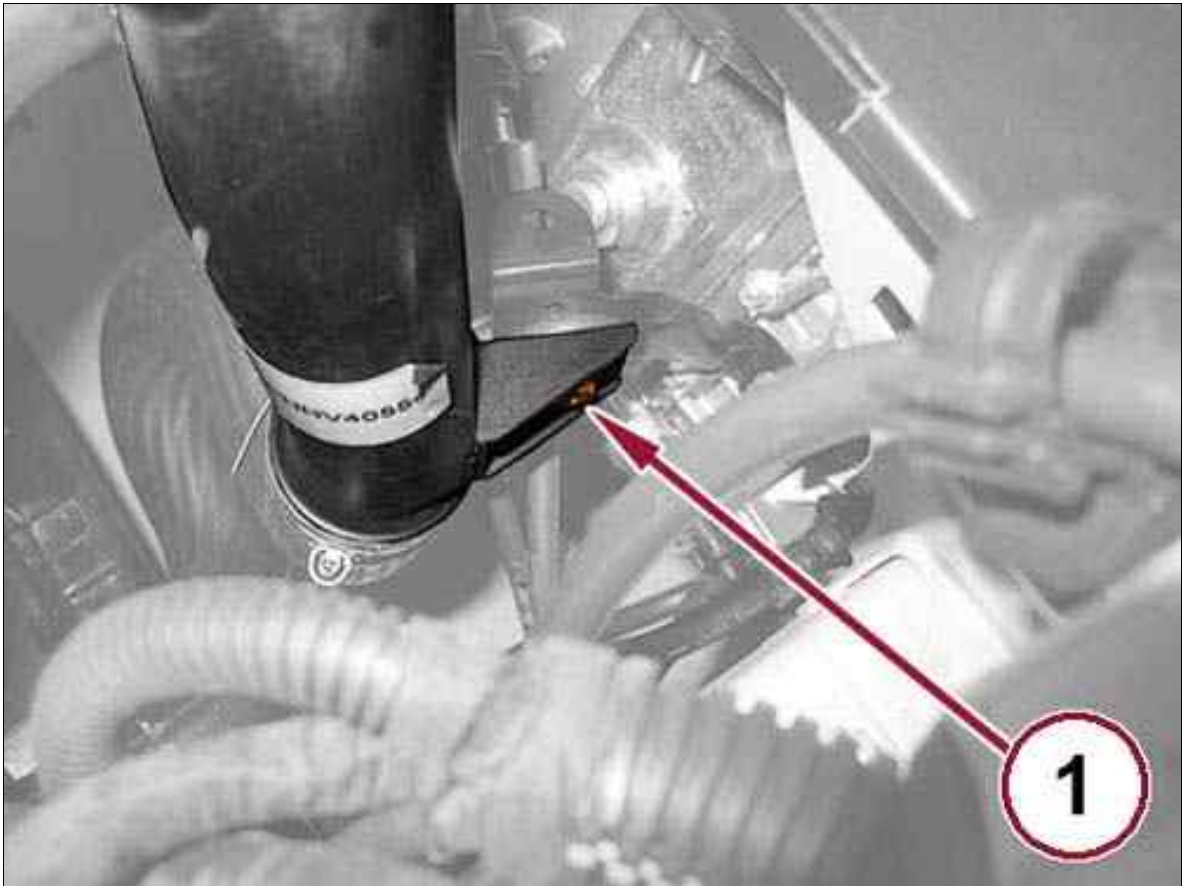
Courtesy of CHRYSLER GROUP, LLC

9. On 4x4 models, install the secondary water pump (2) and the retaining collar (1b) and engage the spring lock (1a).
10. Fill the cooling system. Refer to STANDARD PROCEDURE .
11. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
12. Install the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .
13. Connect the battery cables.
14. Install the engine cover.

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 1.6L DIESEL > REMOVAL

1. Remove the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .
2. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

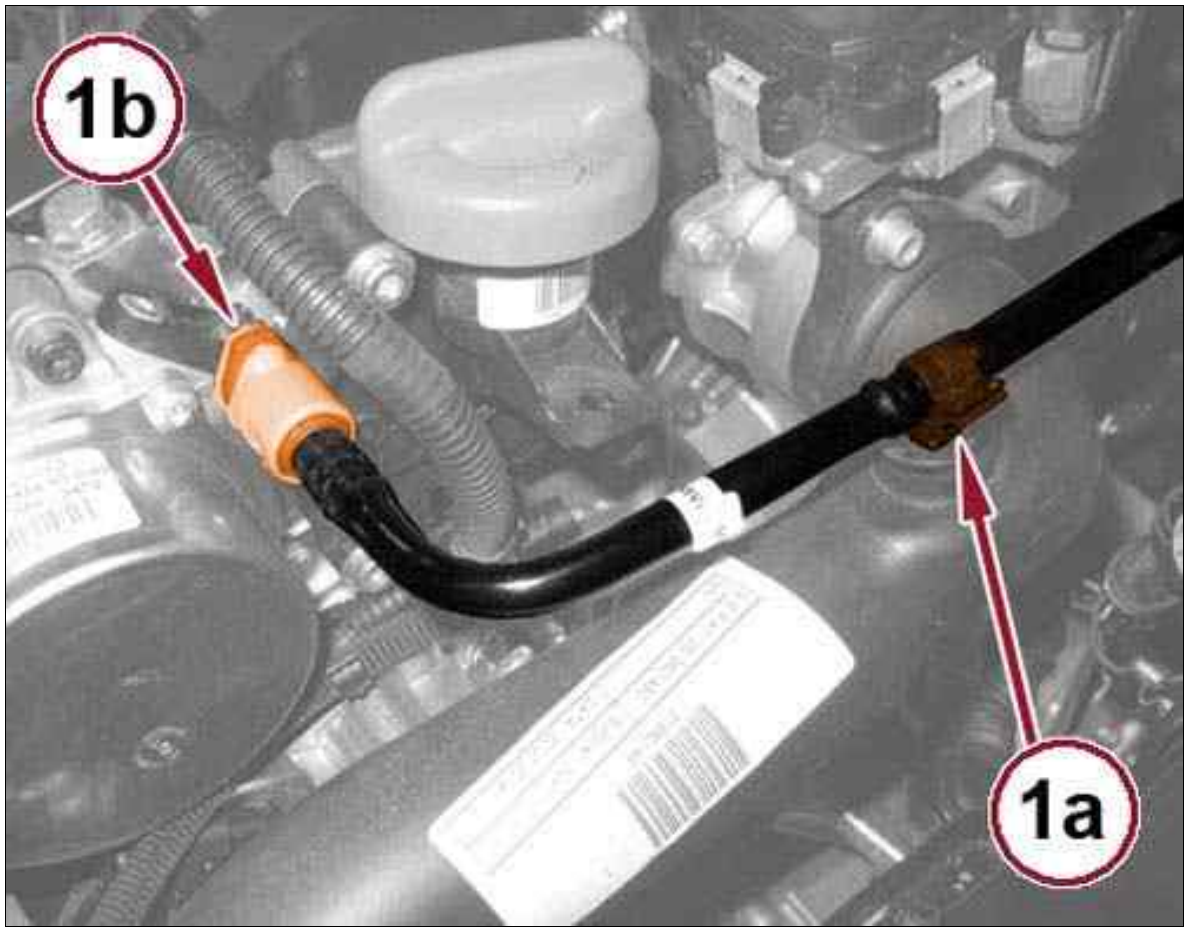
Fig 1: Bolt



Courtesy of CHRYSLER GROUP, LLC

5. Remove the bolt (1) securing the left Charge Air Cooler (CAC) tube.

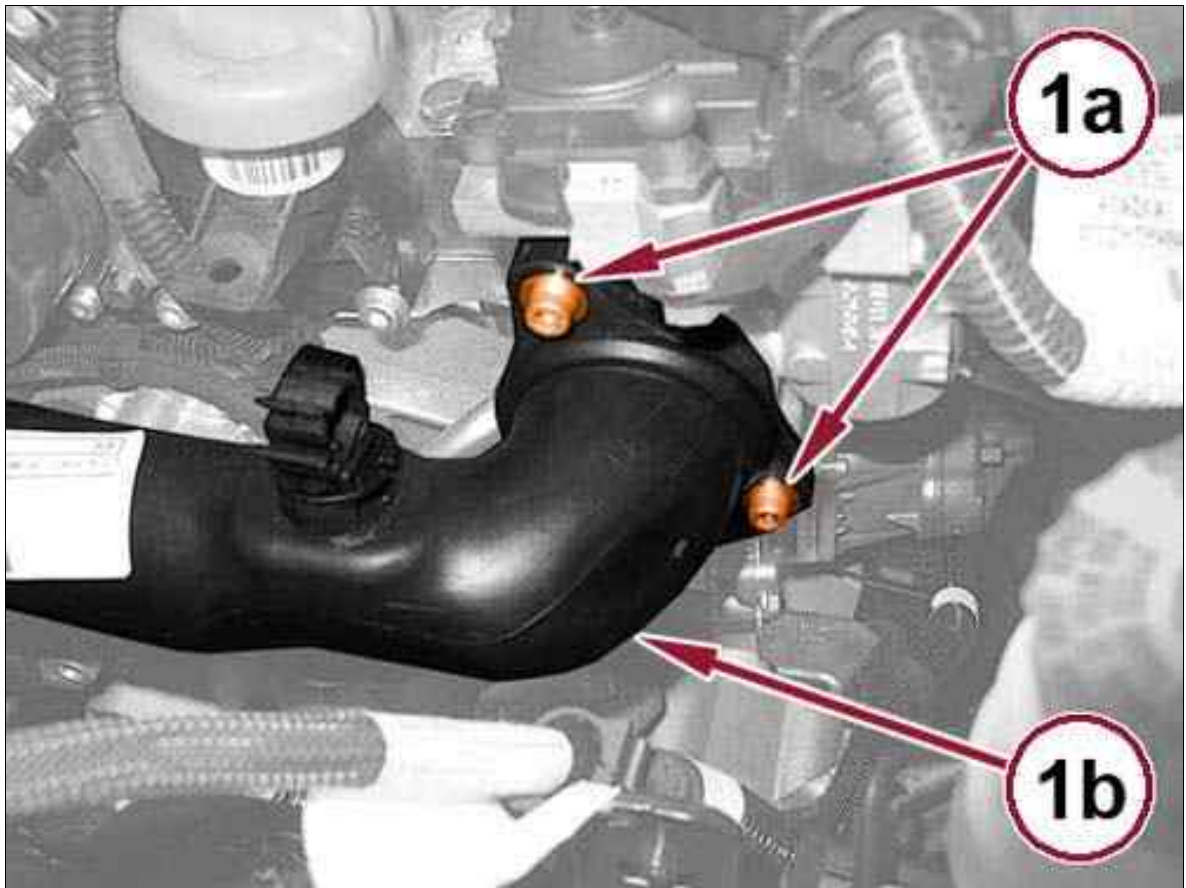
Fig 2: Retaining Clip & Quick-Disconnect Fitting



Courtesy of CHRYSLER GROUP, LLC

6. Open the retaining clip (1a) and disconnect the vacuum brake booster hose (1b) quick-disconnect fitting (1b).

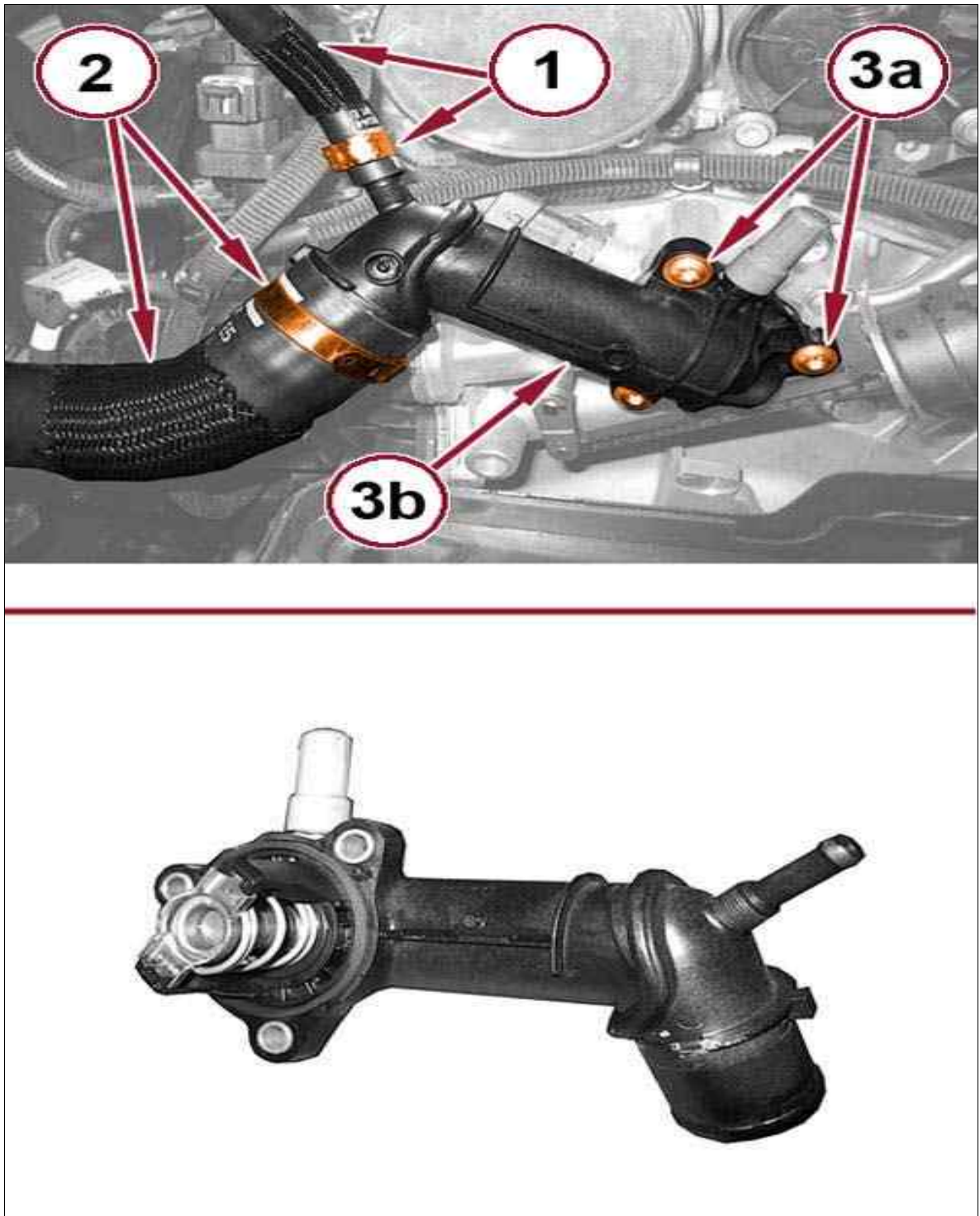
Fig 3: Bolts & CAC Tube



Courtesy of CHRYSLER GROUP, LLC

7. Remove the bolts (1a) and the CAC tube (1b).

Fig 4: Thermostat Housing, Bolts, Hoses & Clamps

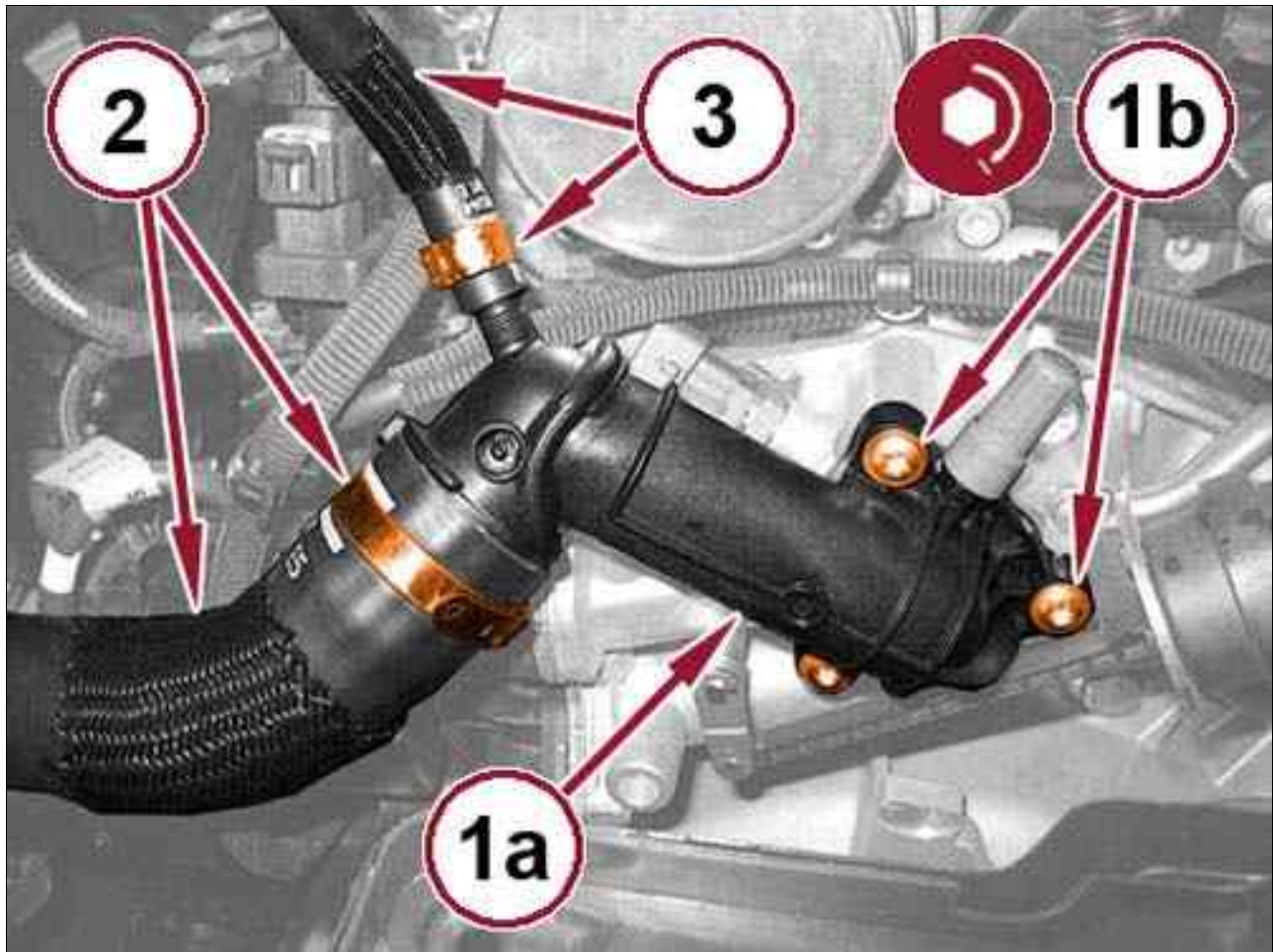


Courtesy of CHRYSLER GROUP, LLC

8. Loosen the clamp and remove the coolant hose (1) from the thermostat housing.
9. Loosen the clamp and remove the radiator hose (2) from the thermostat housing.
10. Remove bolts (3a) and the thermostat housing (3b).

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 1.6L DIESEL > INSTALLATION

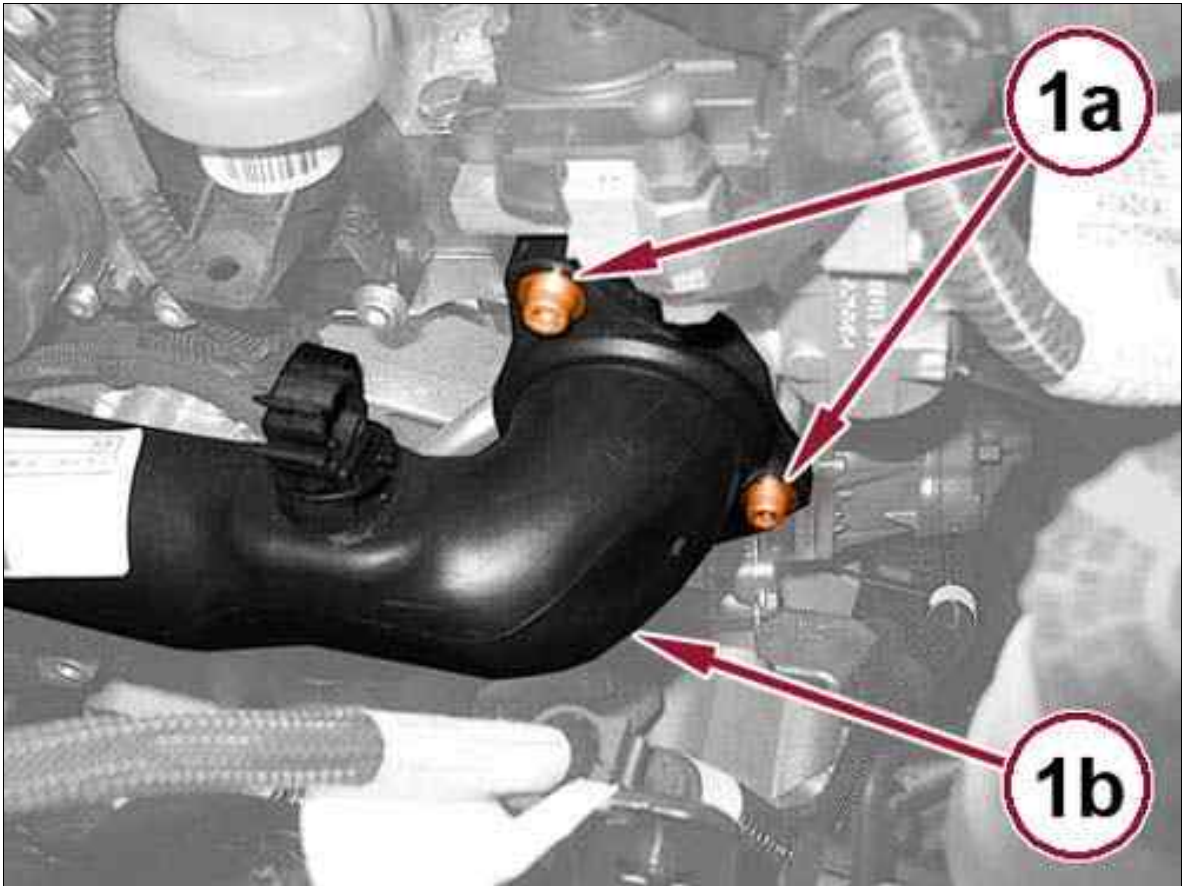
Fig 1: Thermostat Housing, Bolts, Hoses & Clamps



Courtesy of CHRYSLER GROUP, LLC

1. Using a **NEW** gasket, install the thermostat housing (1a) Tighten the bolts (1b) to the proper specification. Refer to SPECIFICATIONS .
2. Install the radiator hose (2) onto the thermostat housing and tighten the clamp.
3. Install the coolant hose (3) onto the thermostat housing and tighten the clamp.

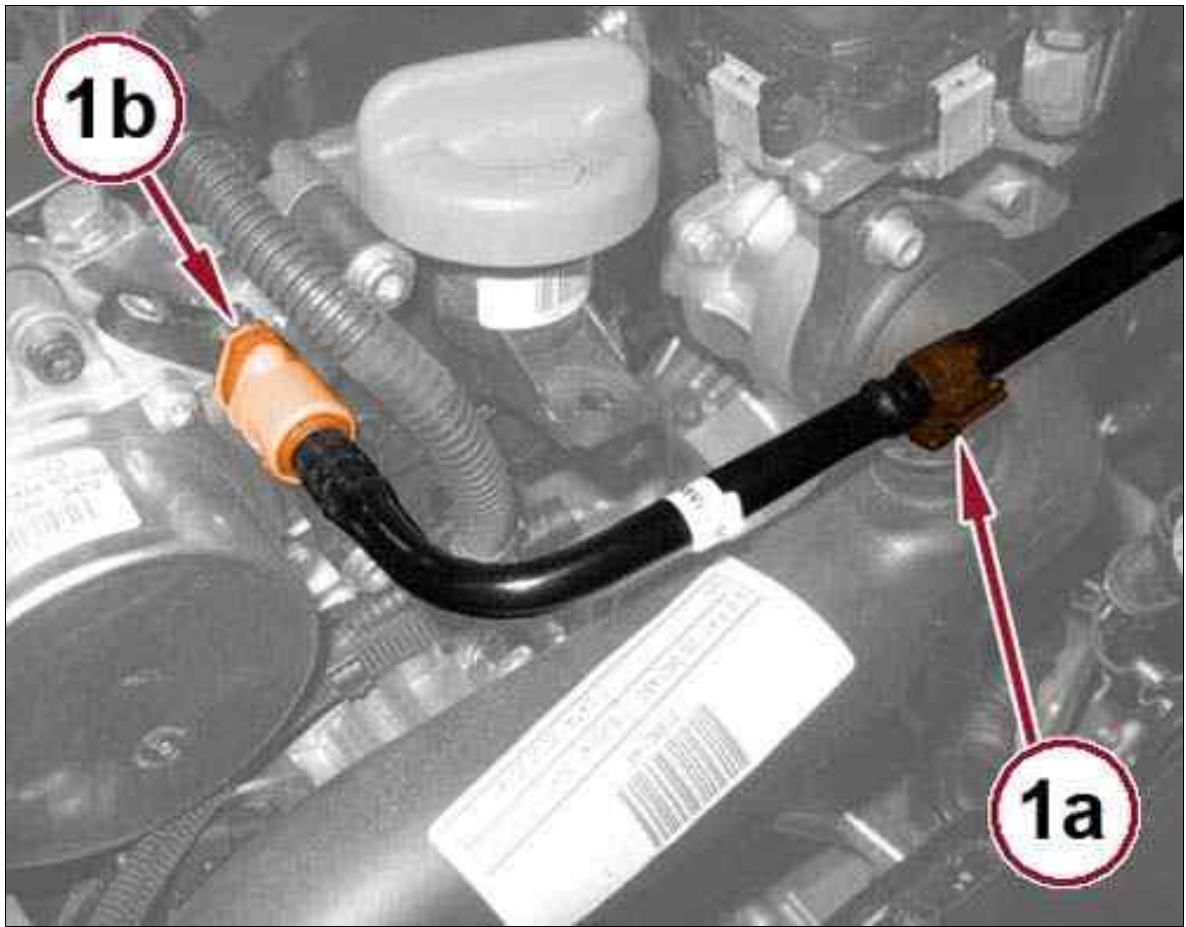
Fig 2: Bolts & CAC Tube



Courtesy of CHRYSLER GROUP, LLC

4. Using a **NEW** O-ring seal, install the left charge Air Cooler (CAC) tube (1b). Tighten the bolts (1a) to the proper specification. Refer to TORQUE SPECIFICATIONS .

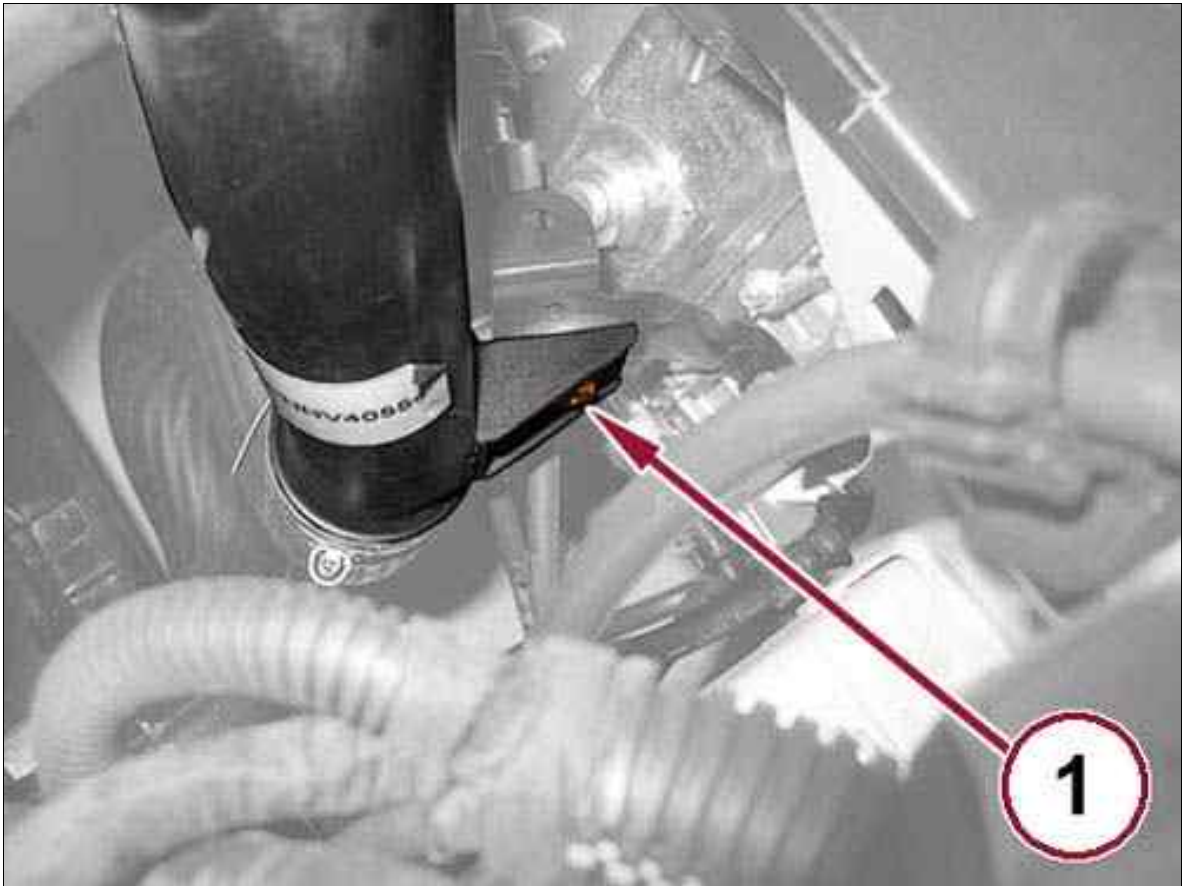
Fig 3: Retaining Clip & Quick-Disconnect Fitting



Courtesy of CHRYSLER GROUP, LLC

5. Connect the vacuum brake booster hose (1b) quick-disconnect fitting (1b) and close the retaining clip (1a).

Fig 4: Bolt



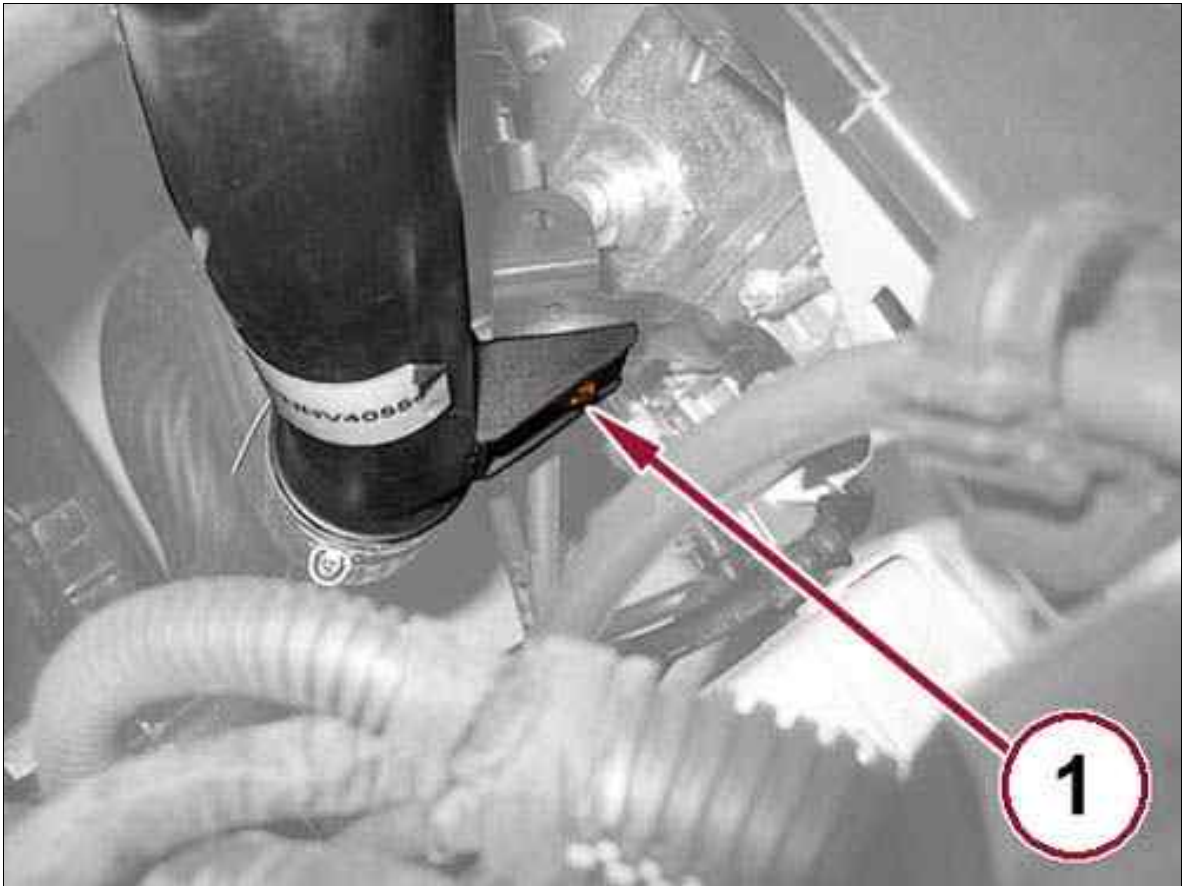
Courtesy of CHRYSLER GROUP, LLC

6. Install the bolt securing the left CAC tube. Tighten the bolts to the proper specification. Refer to TORQUE SPECIFICATIONS .
7. Fill the cooling system. Refer to STANDARD PROCEDURE .
8. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
9. Install the battery. Refer to BATTERY, REMOVAL AND INSTALLATION .
10. Run engine to operating temperature and check for leaks.

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 2.0L DIESEL > REMOVAL

1. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
2. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION .
3. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
4. Drain the cooling system. Refer to STANDARD PROCEDURE .

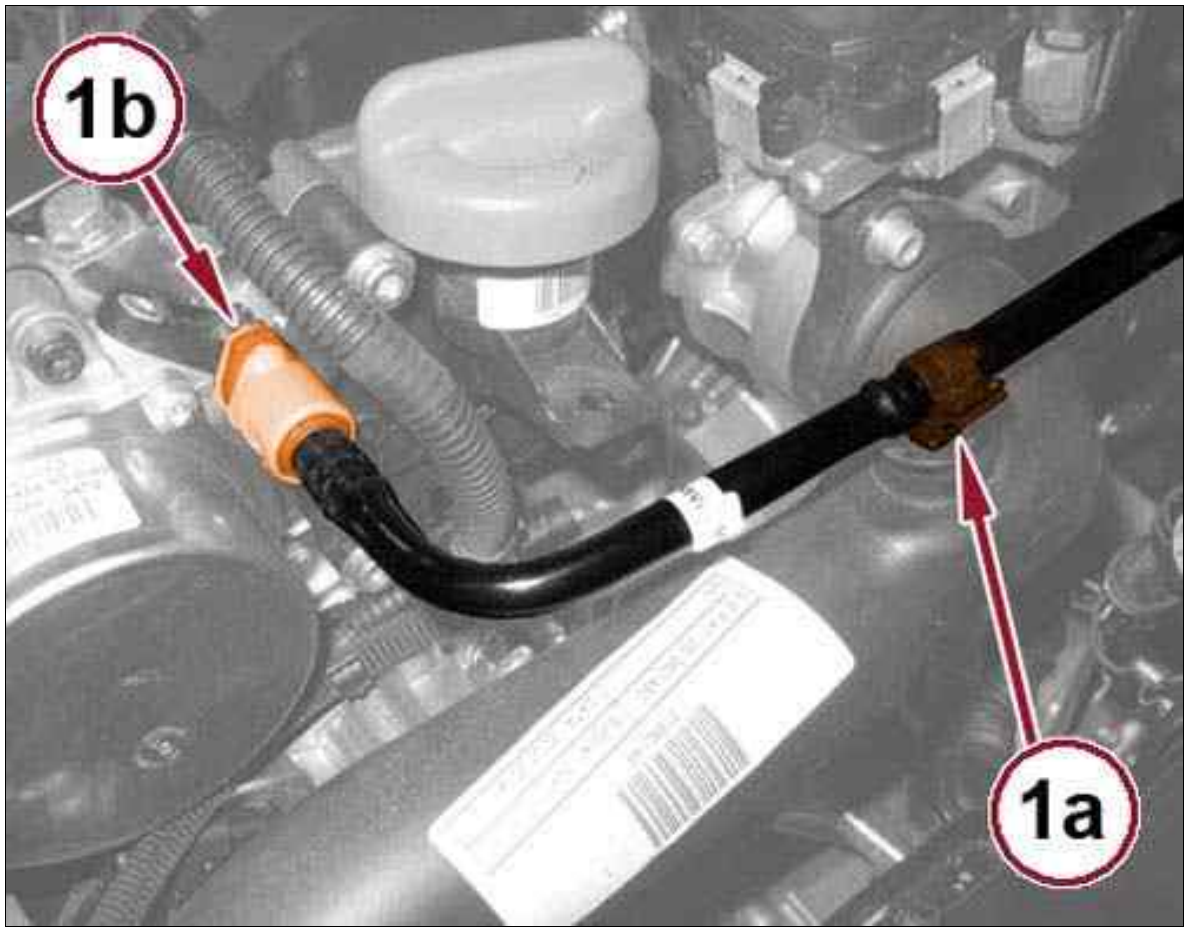
Fig 1: Bolt



Courtesy of CHRYSLER GROUP, LLC

5. Remove the bolt (1) securing the left Charge Air Cooler (CAC) tube.

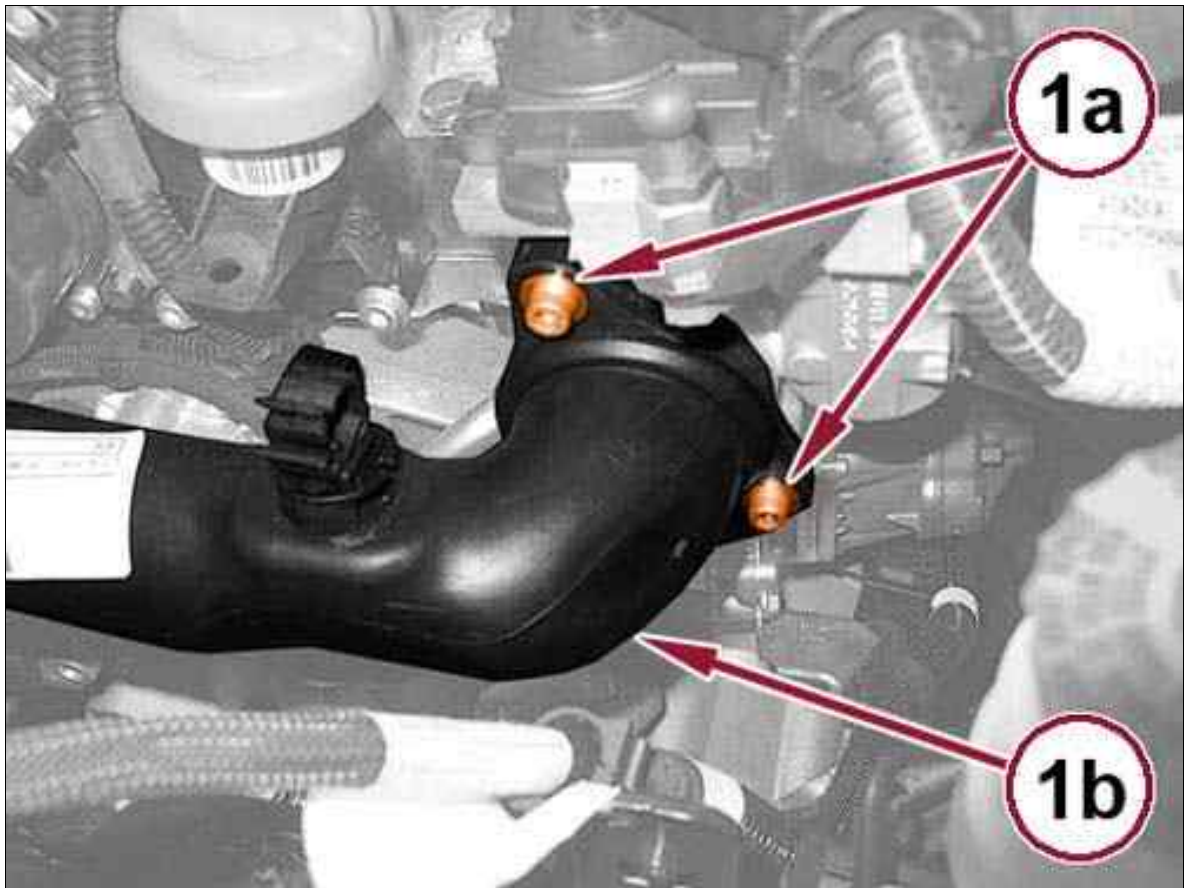
Fig 2: Retaining Clip & Quick-Disconnect Fitting



Courtesy of CHRYSLER GROUP, LLC

6. Open the retaining clip (1a) and disconnect the vacuum brake booster hose (1b) quick-disconnect fitting (1b).

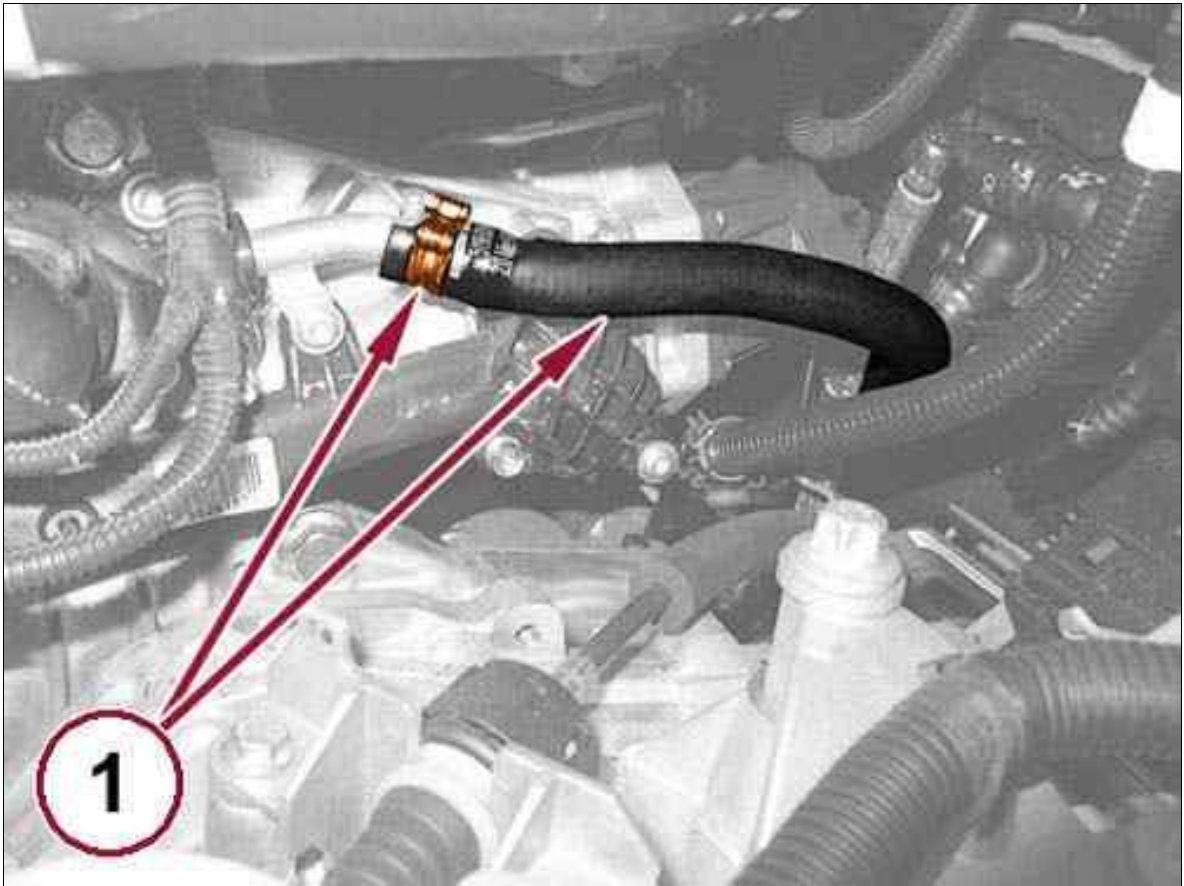
Fig 3: Bolts & CAC Tube



Courtesy of CHRYSLER GROUP, LLC

7. Remove the bolts (1a) and the CAC tube (1b).

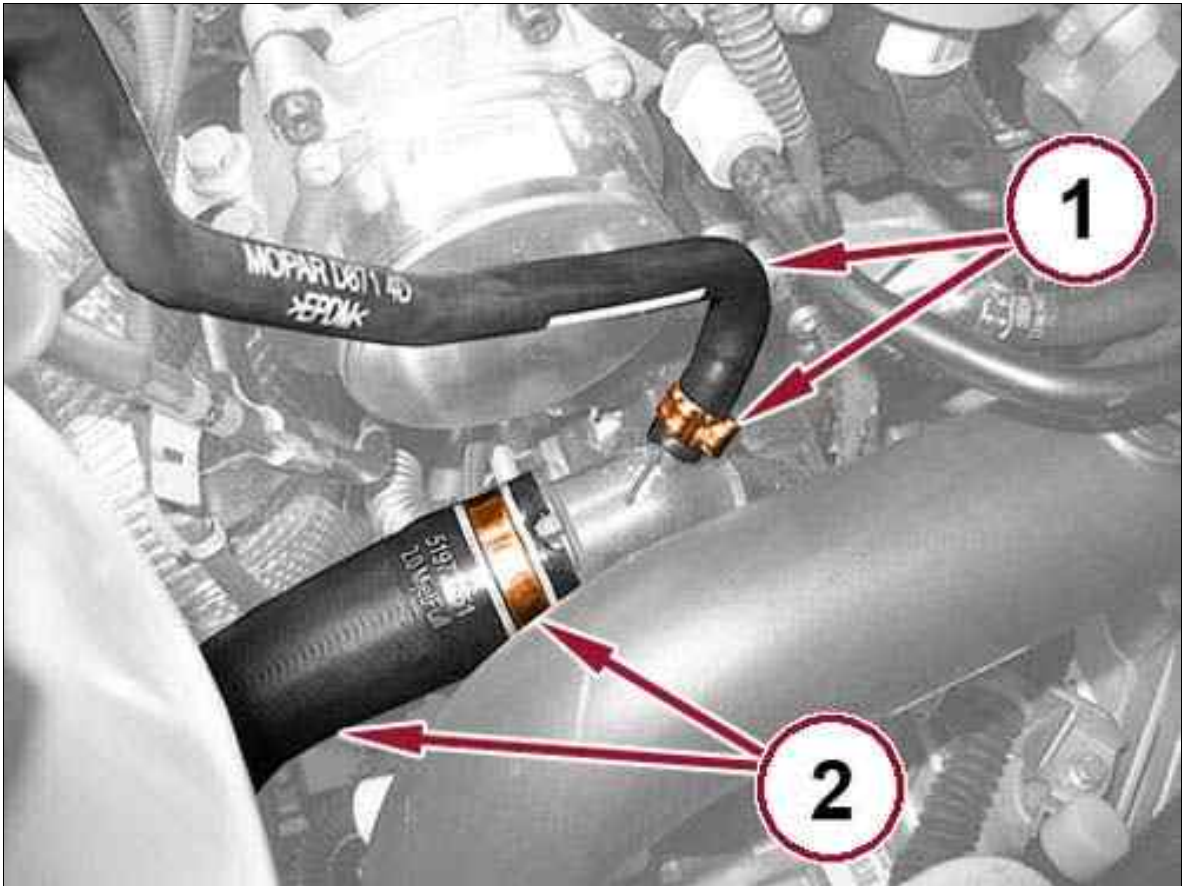
Fig 4: Clamp & Coolant Hose



Courtesy of CHRYSLER GROUP, LLC

8. Loosen clamp and remove the coolant hose (1).

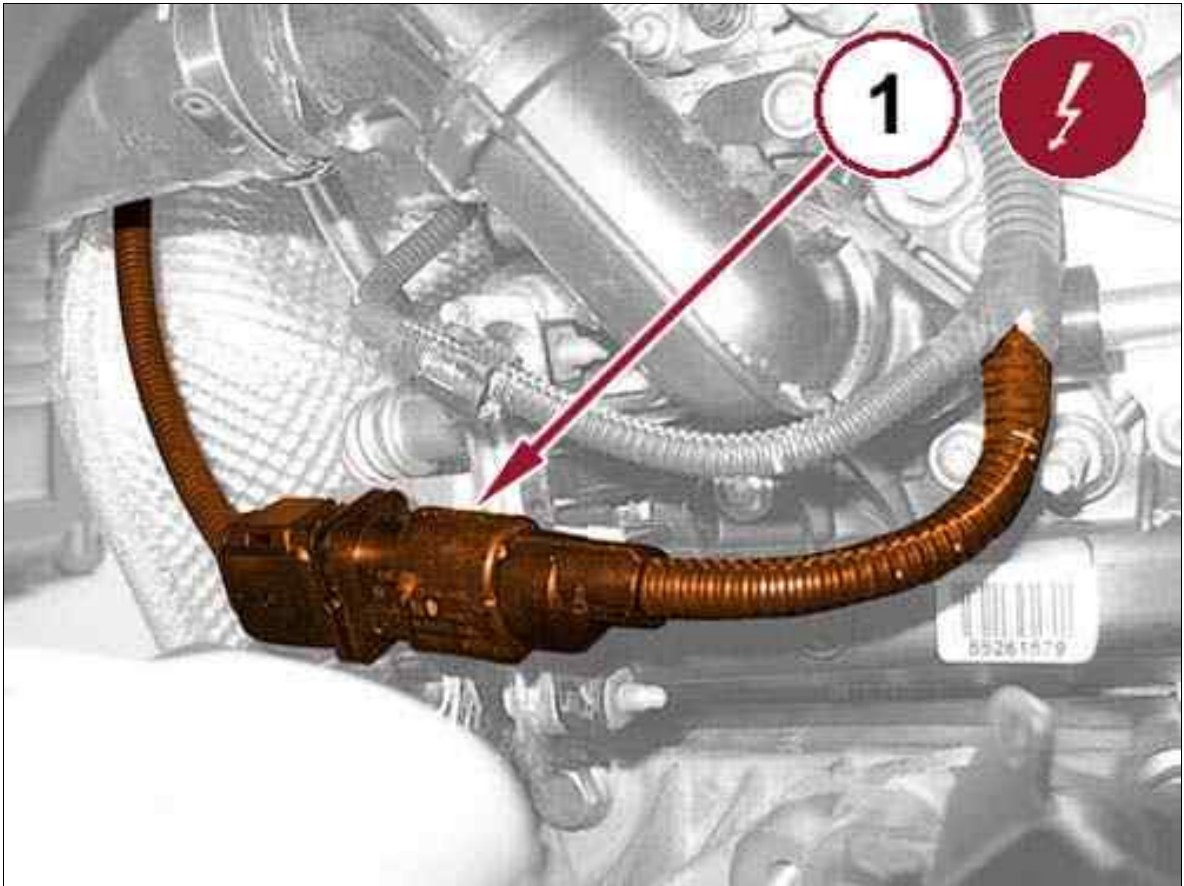
Fig 5: Degas Hose, Upper Radiator Hose & Clamps



Courtesy of CHRYSLER GROUP, LLC

9. Loosen the clamp and remove the degas hose (1) from the thermostat housing.
10. Loosen clamp and remove the upper radiator hose (2) from the thermostat housing.

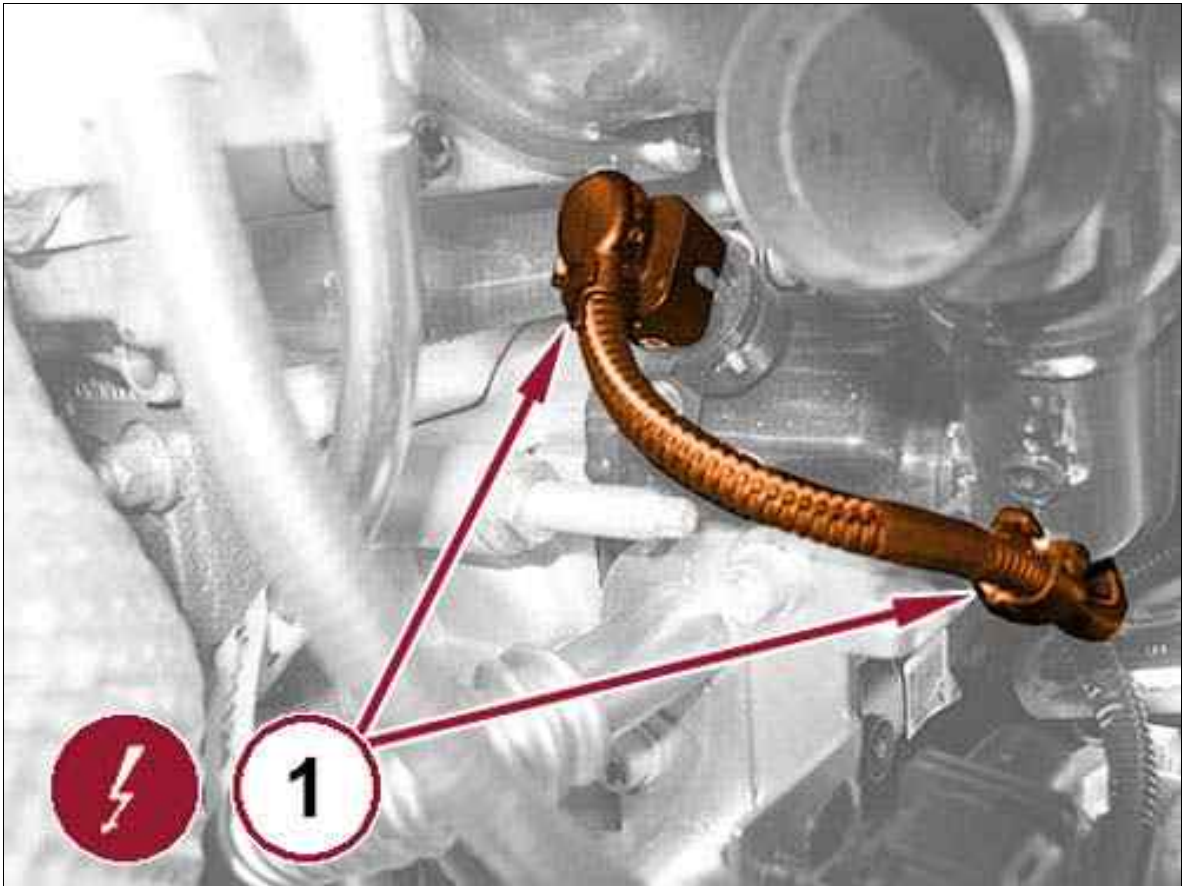
Fig 6: Front Oxygen Sensor Wire Connector



Courtesy of CHRYSLER GROUP, LLC

11. Disconnect the front oxygen sensor wire connector (1) and detach wire harness connector from the bracket.

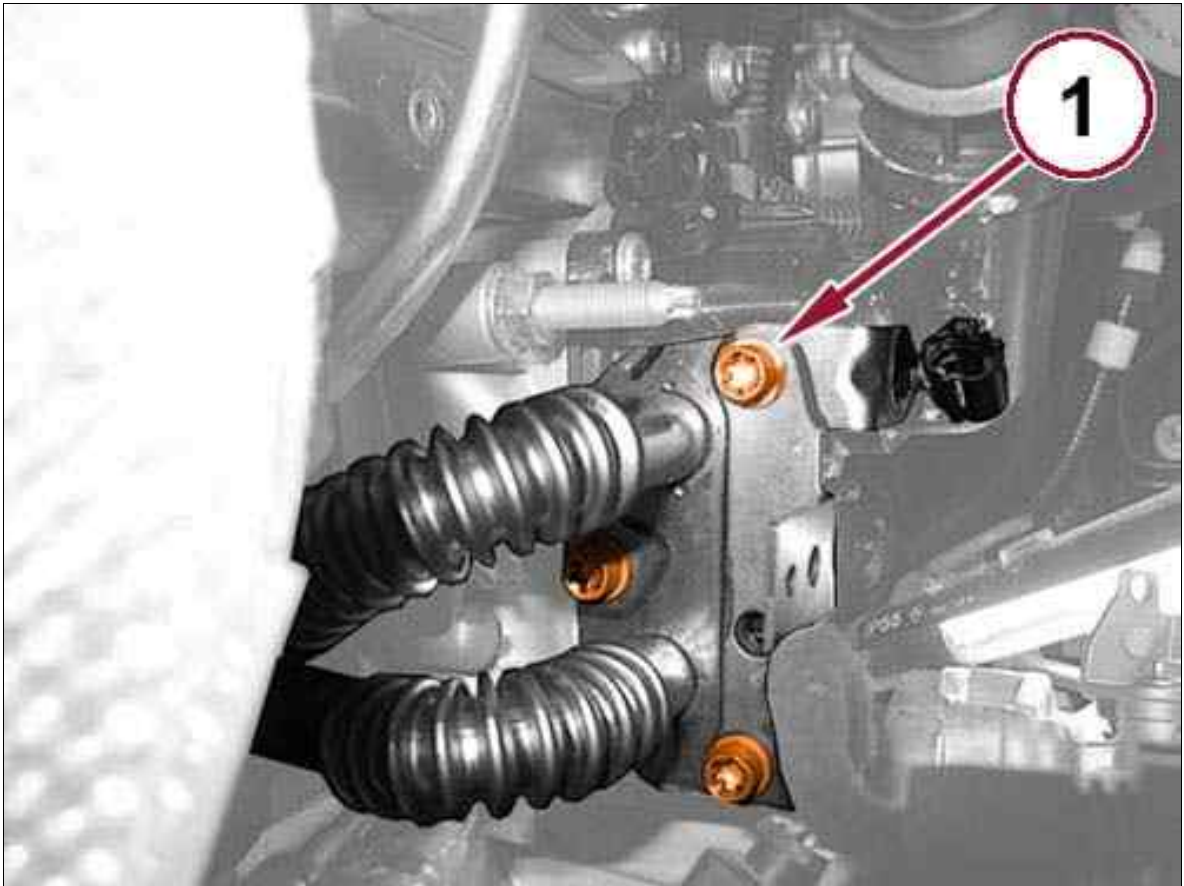
Fig 7: Coolant Temperature Sensor Wire Harness Connector



Courtesy of CHRYSLER GROUP, LLC

12. Disconnect the coolant temperature sensor wire harness connector wire harness connector (1).

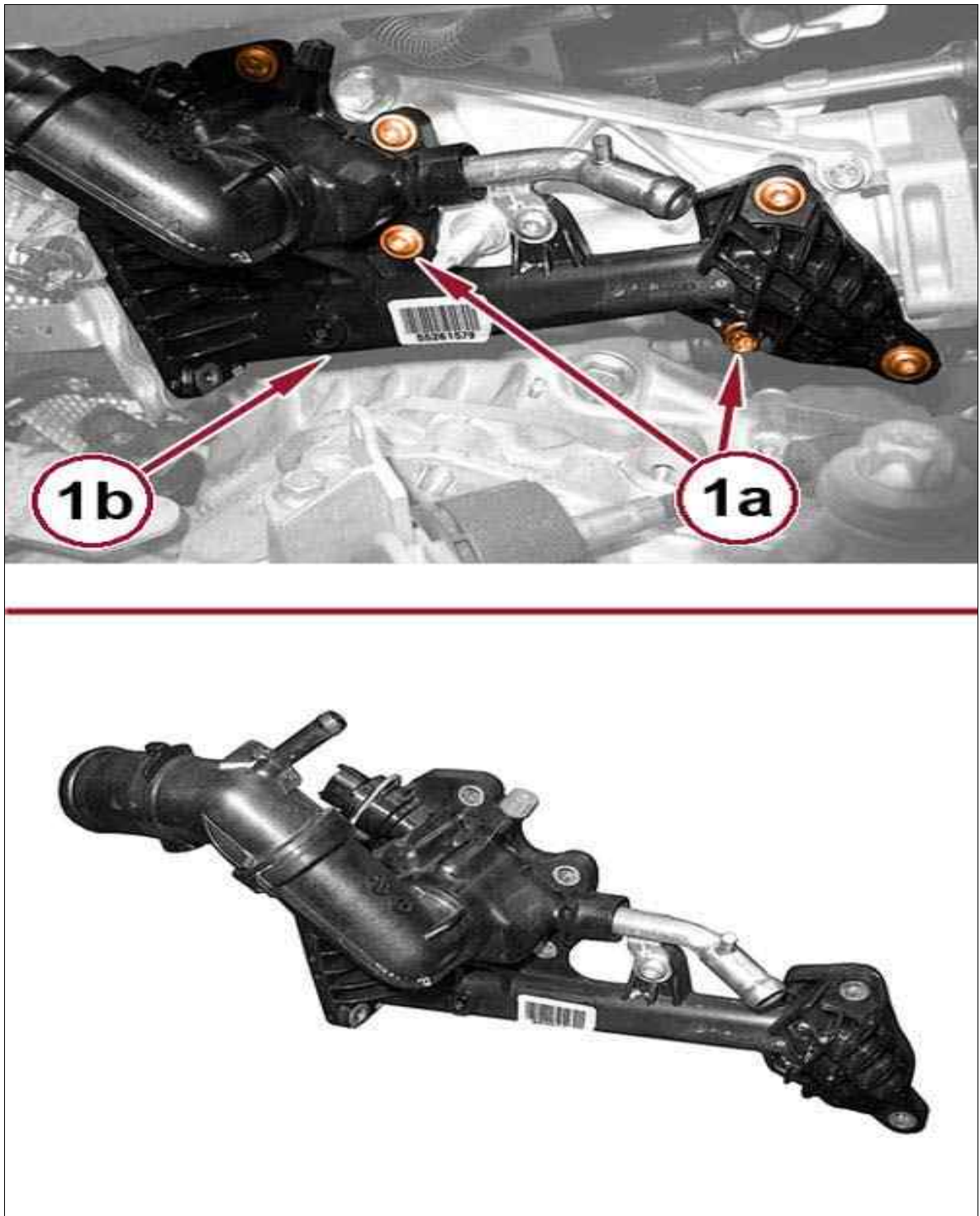
Fig 8: Bolts



Courtesy of CHRYSLER GROUP, LLC

13. Remove the bolts (1) and the EGR tubes from the thermostat housing.

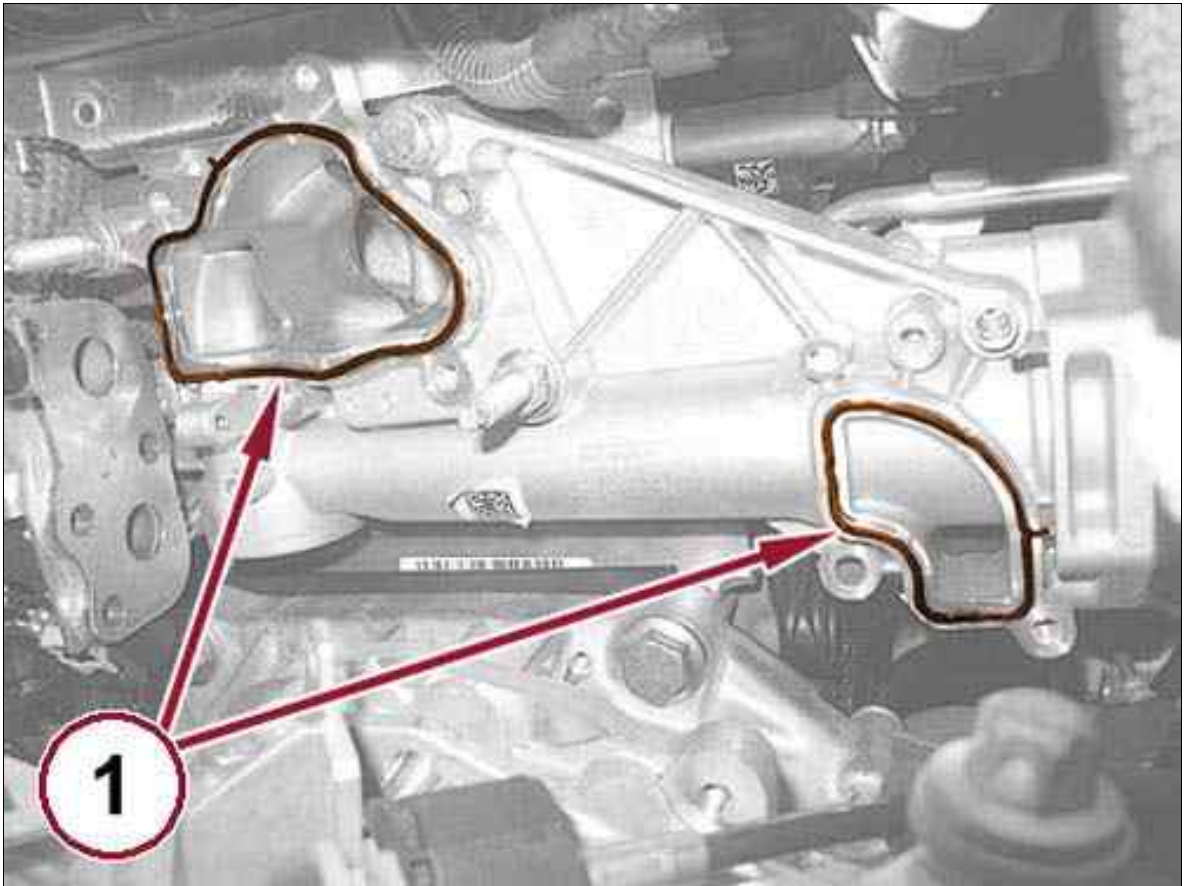
Fig 9: Bolts & Thermostat Housing Assembly



Courtesy of CHRYSLER GROUP, LLC

14. Remove bolts (1a) and the thermostat housing assembly (1b).

Fig 10: Gasket Seals

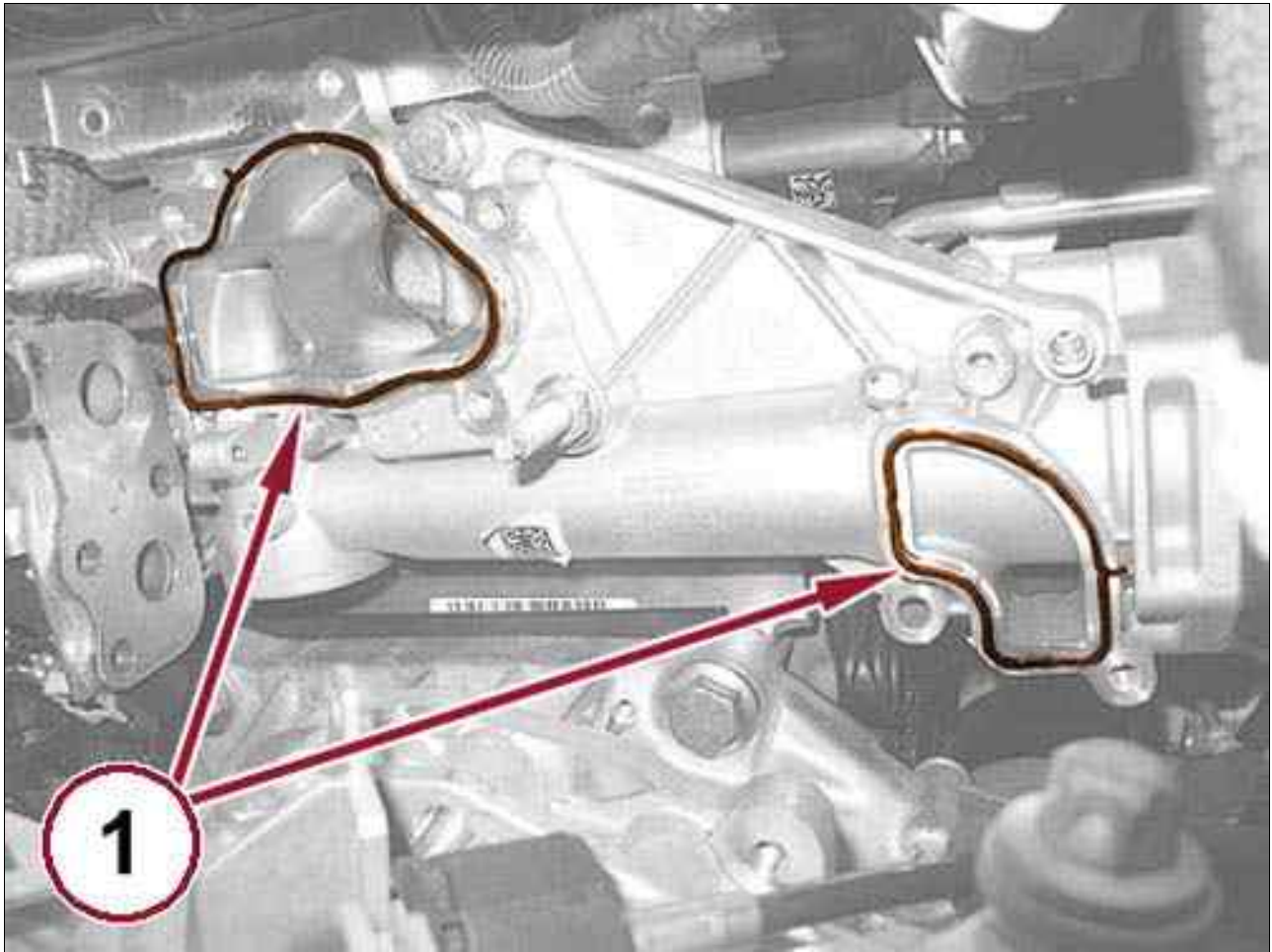


Courtesy of CHRYSLER GROUP, LLC

15. Remove and discard the gasket seals (1).

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 2.0L DIESEL > INSTALLATION

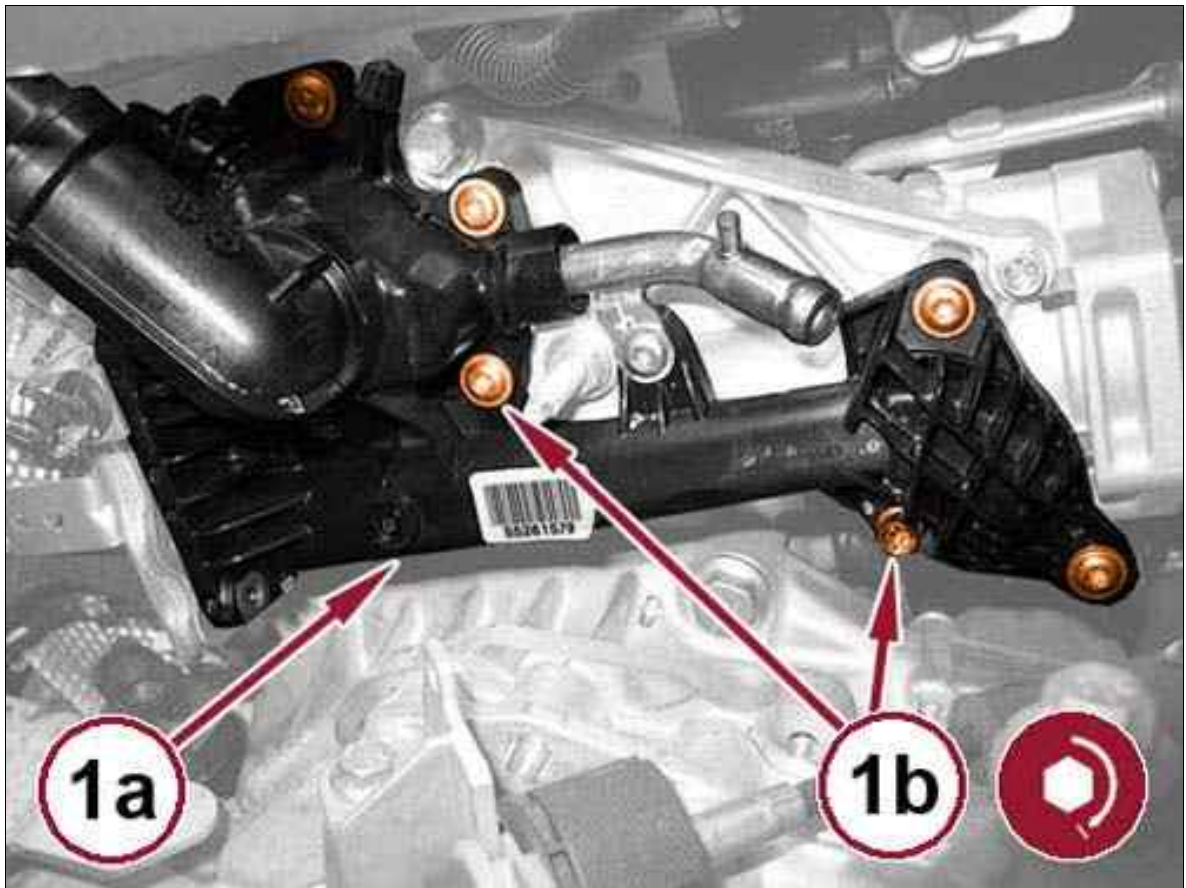
Fig 1: Gasket Seals



Courtesy of CHRYSLER GROUP, LLC

1. Install **NEW** gasket seals (1).

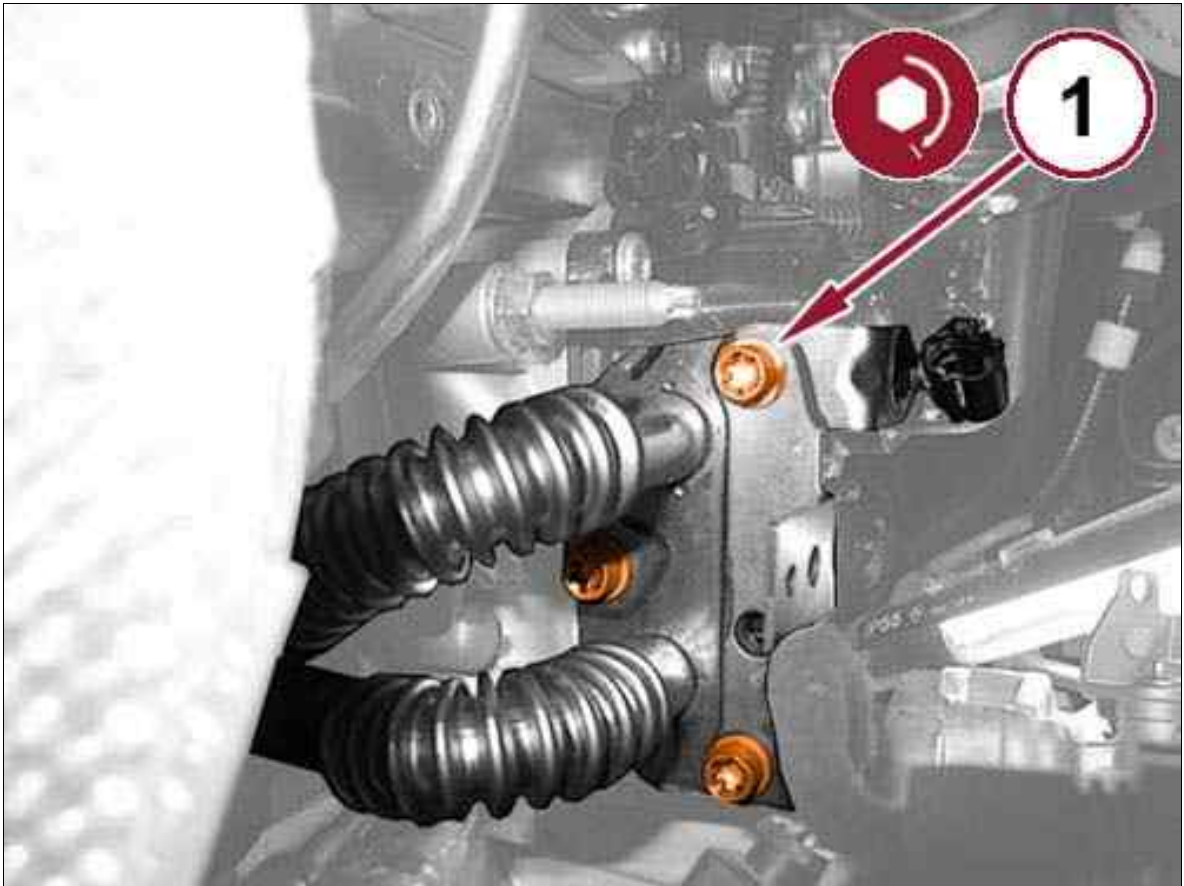
Fig 2: Thermostat Housing & Bolts



Courtesy of CHRYSLER GROUP, LLC

2. Install the thermostat housing (1a). Tighten the bolts (1b) to the proper specification. Refer to SPECIFICATIONS .

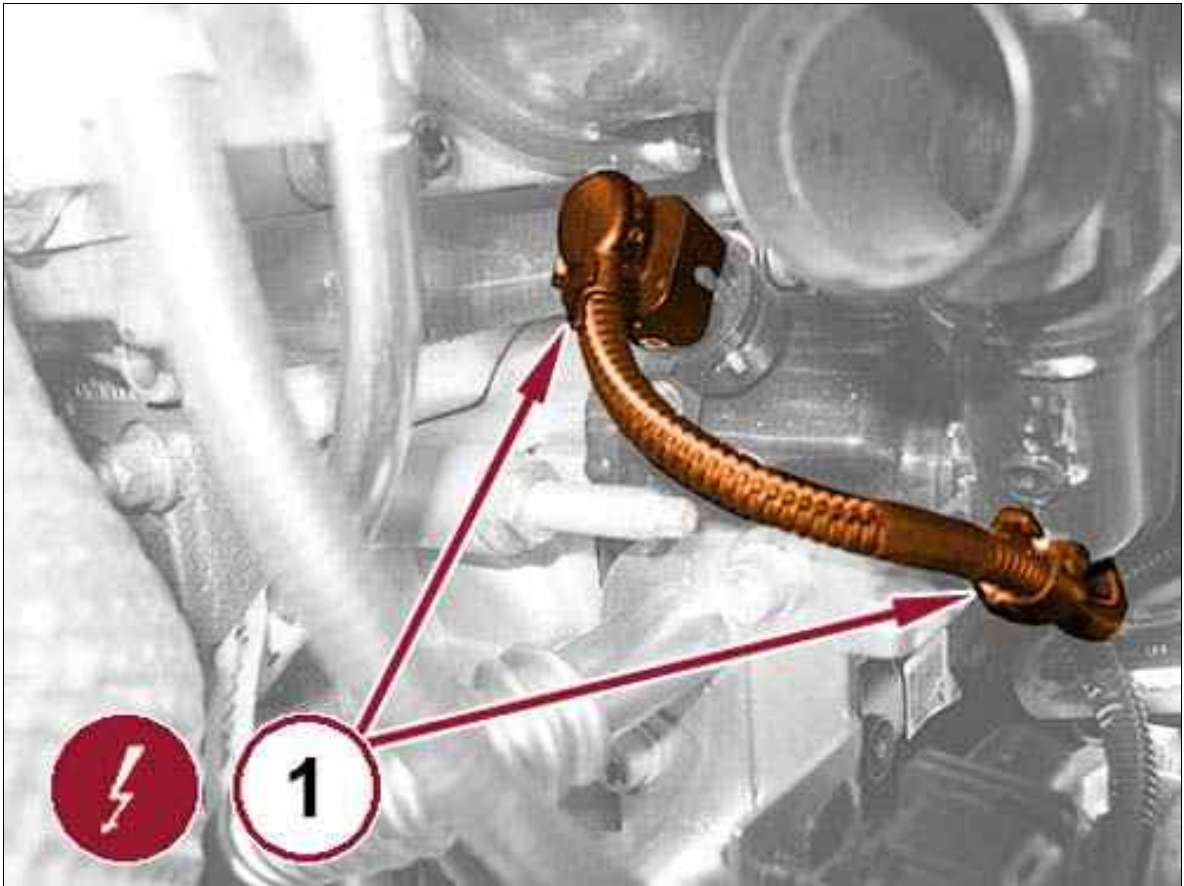
Fig 3: Bolts



Courtesy of CHRYSLER GROUP, LLC

3. Install the bolts (1) securing the EGR tubes to the thermostat housing and tighten to the proper specification. Refer to SPECIFICATIONS .

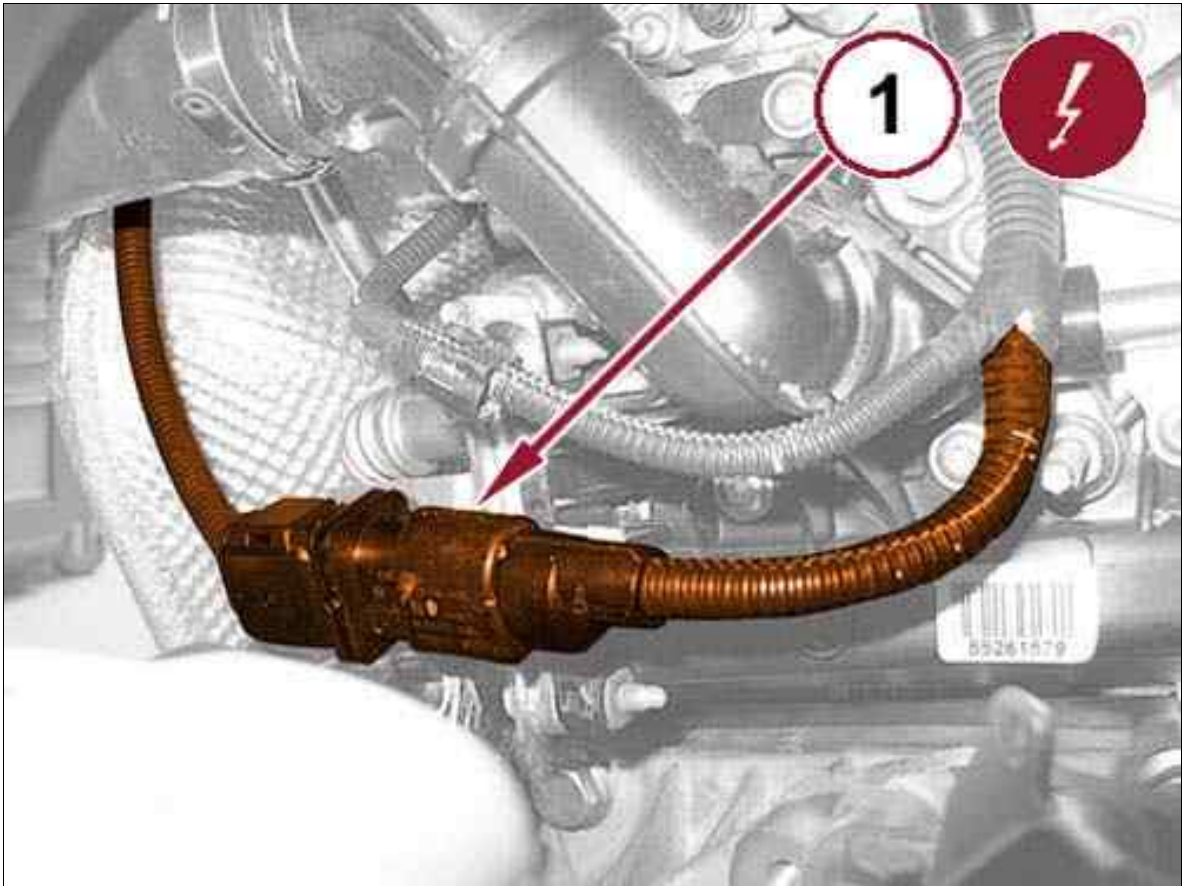
Fig 4: Coolant Temperature Sensor Wire Harness Connector



Courtesy of CHRYSLER GROUP, LLC

4. Connect the coolant temperature sensor wire harness connector wire harness connector (1).

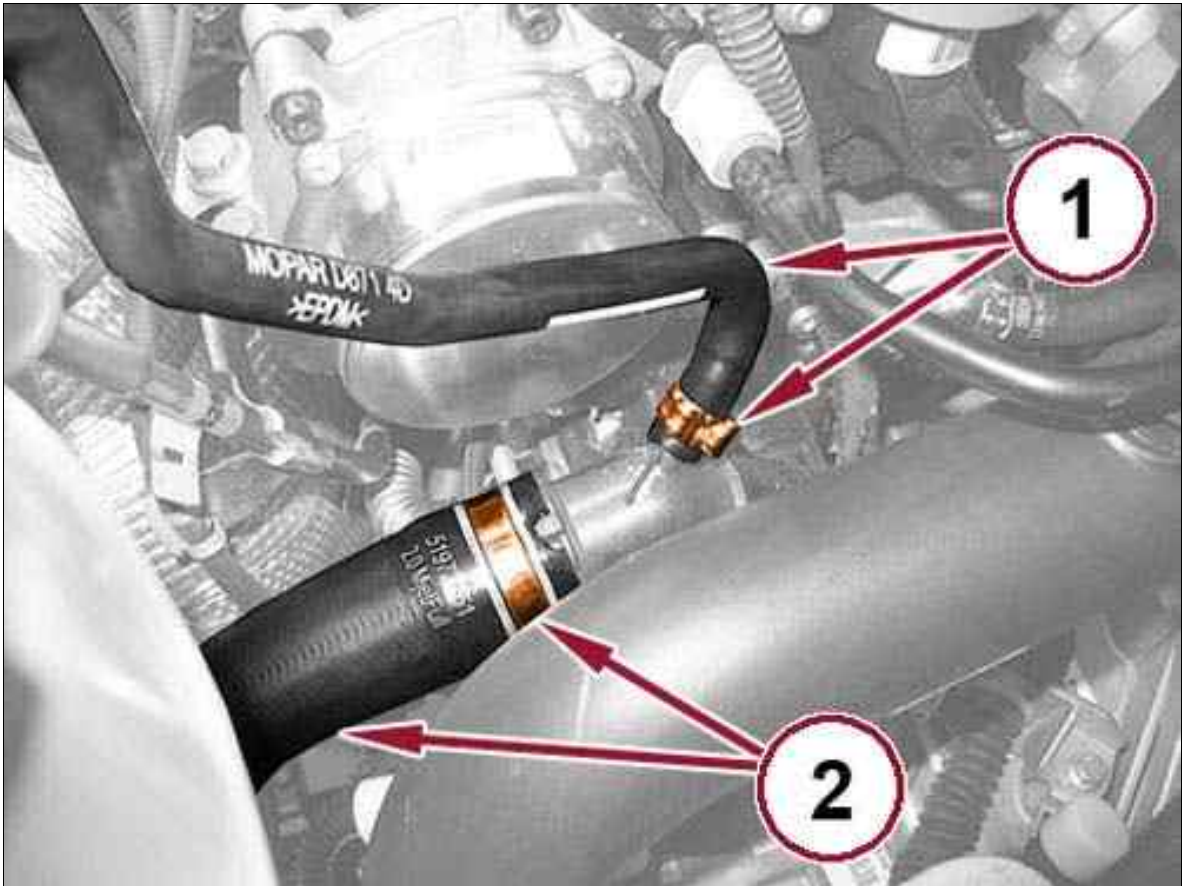
Fig 5: Front Oxygen Sensor Wire Connector



Courtesy of CHRYSLER GROUP, LLC

5. Attach the wire harness connector to the bracket and connect the front oxygen sensor wire connector (1).

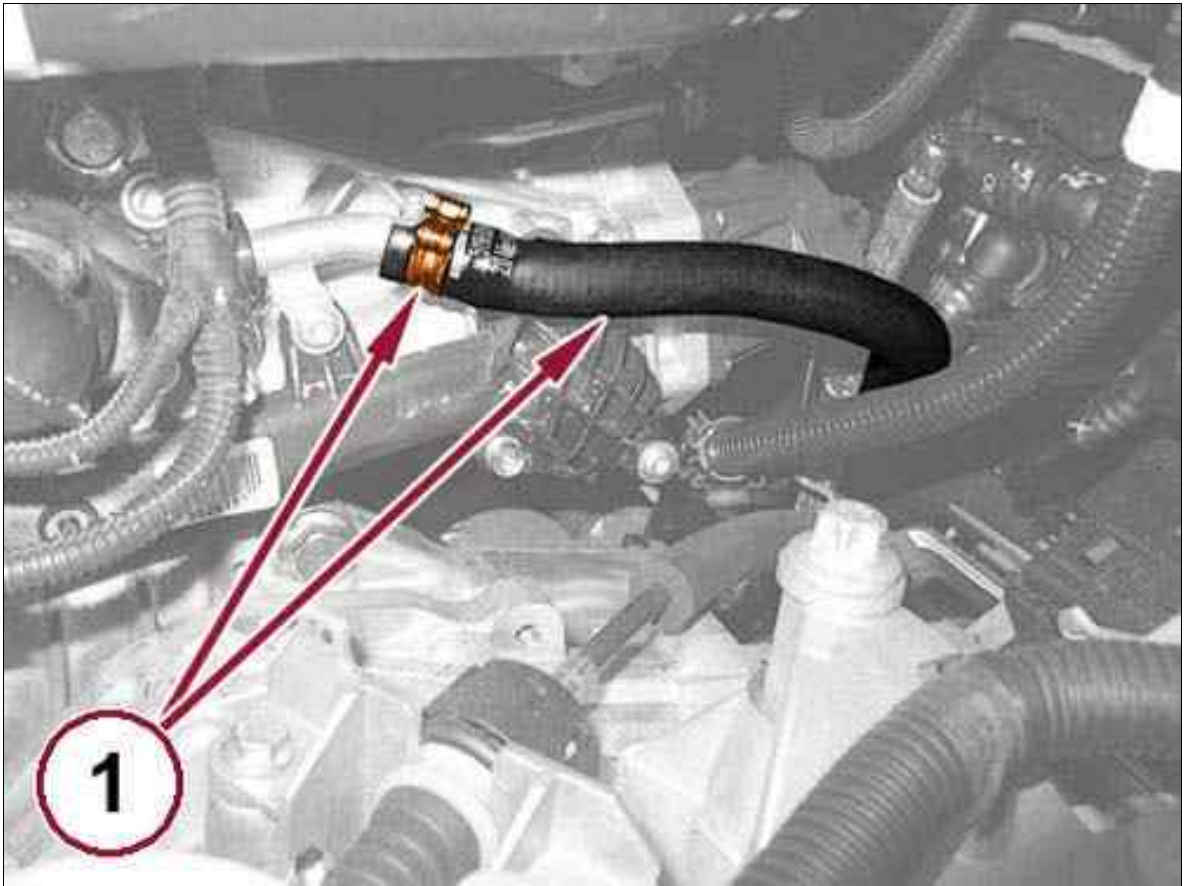
Fig 6: Degas Hose, Upper Radiator Hose & Clamps



Courtesy of CHRYSLER GROUP, LLC

6. Install the upper radiator hose (2) onto the thermostat housing and tighten the clamp.
7. Install the degas hose (1) onto the thermostat housing and tighten the clamp.

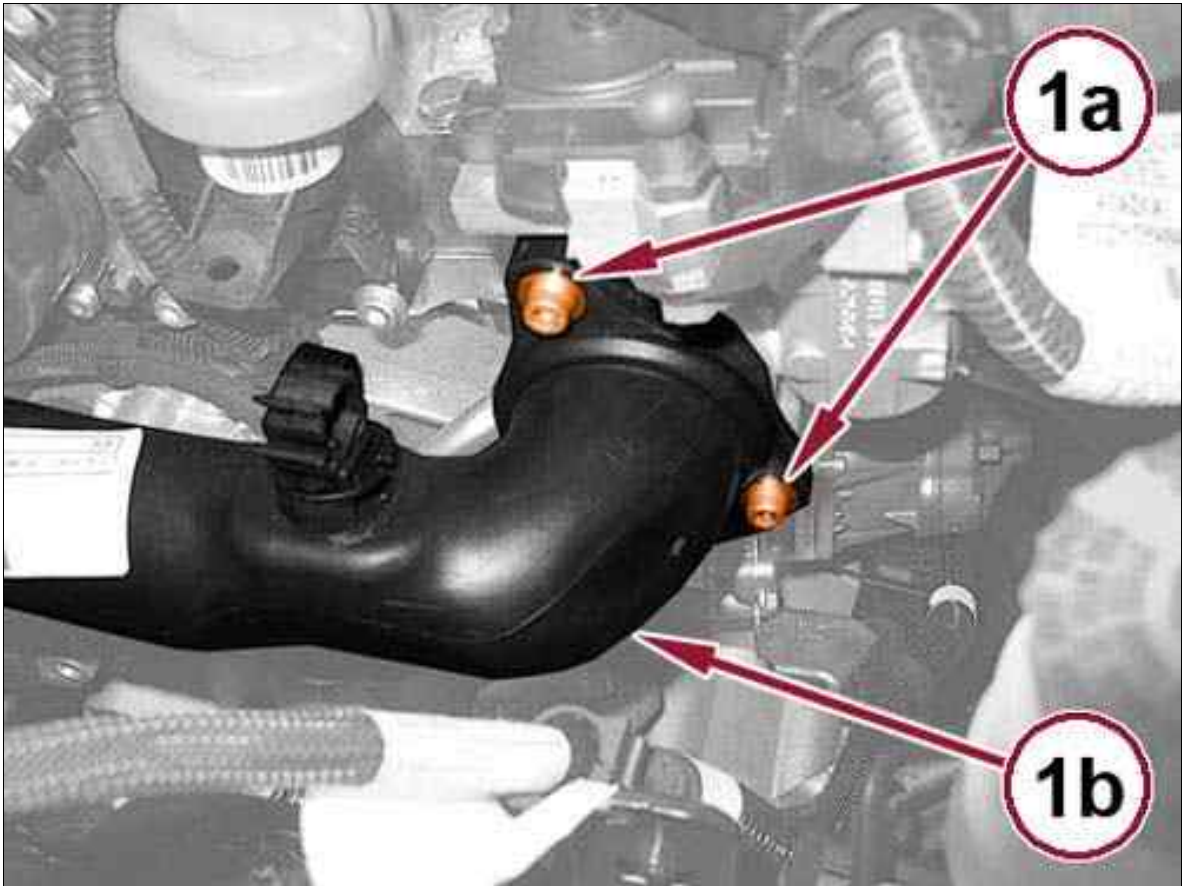
Fig 7: Clamp & Coolant Hose



Courtesy of CHRYSLER GROUP, LLC

8. Install the coolant hose (1) and tighten the clamp.

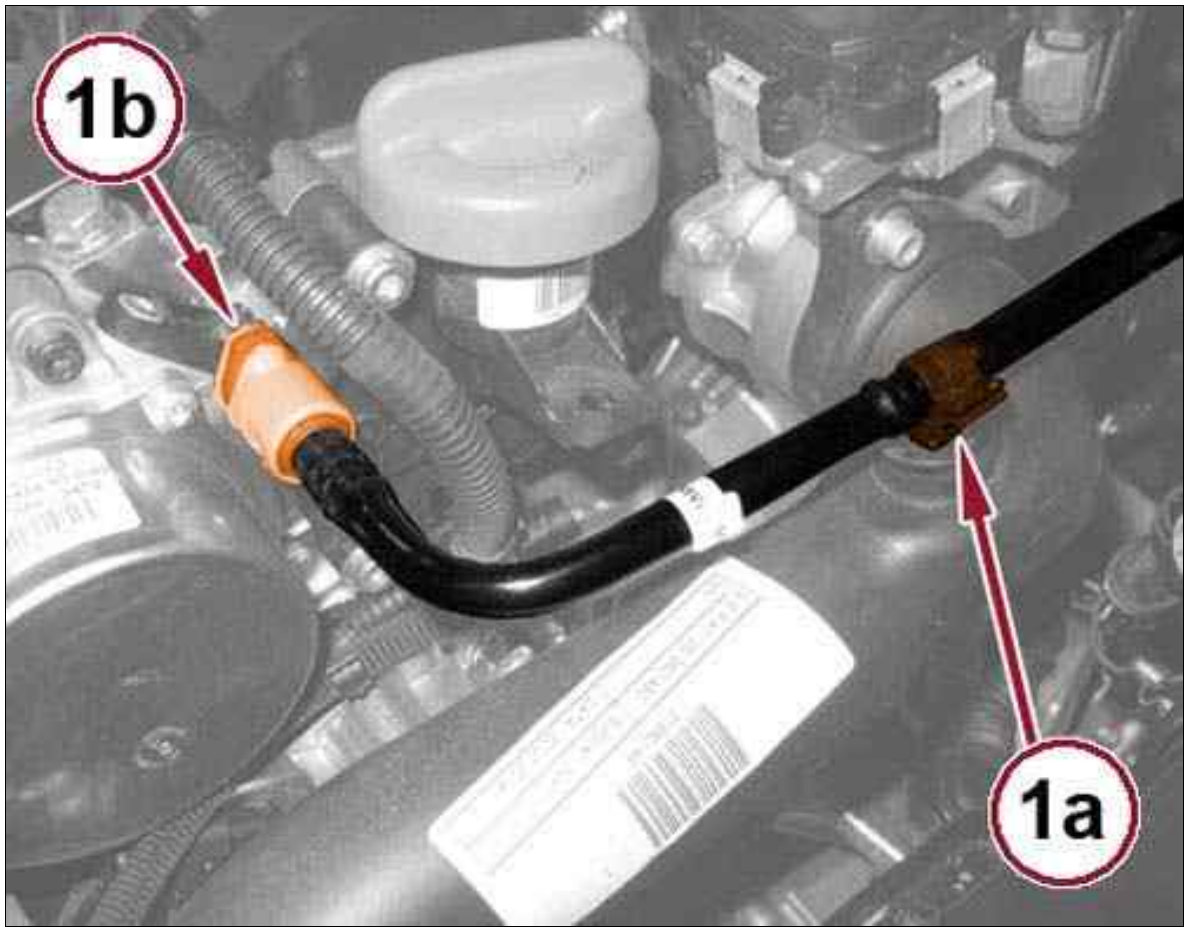
Fig 8: Bolts & CAC Tube



Courtesy of CHRYSLER GROUP, LLC

9. Using a **NEW** O-ring seal, install the left charge Air Cooler (CAC) tube (1b). Tighten the bolts (1a) to the proper specification. Refer to TORQUE SPECIFICATIONS .

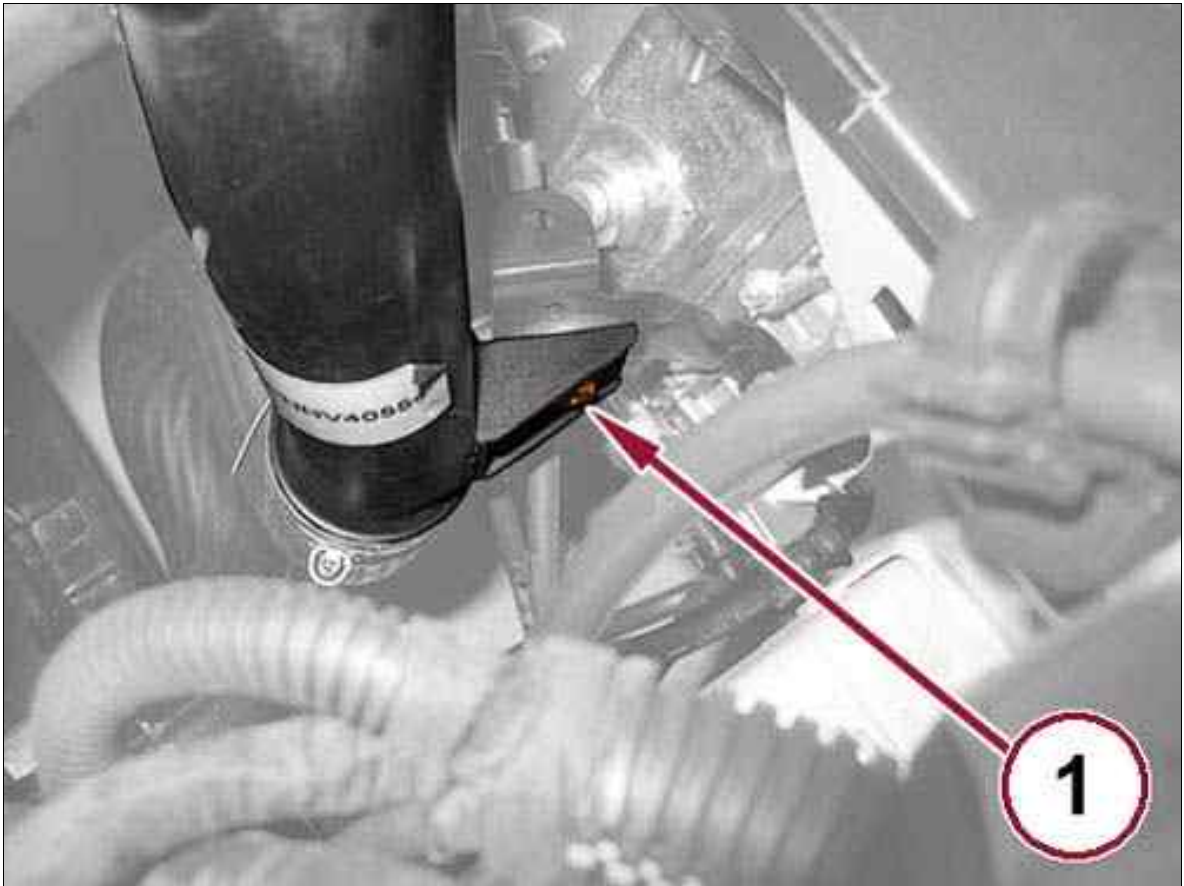
Fig 9: Retaining Clip & Quick-Disconnect Fitting



Courtesy of CHRYSLER GROUP, LLC

10. Connect the vacuum brake booster hose (1b) quick-disconnect fitting (1b) and close the retaining clip (1a).

Fig 10: Bolt



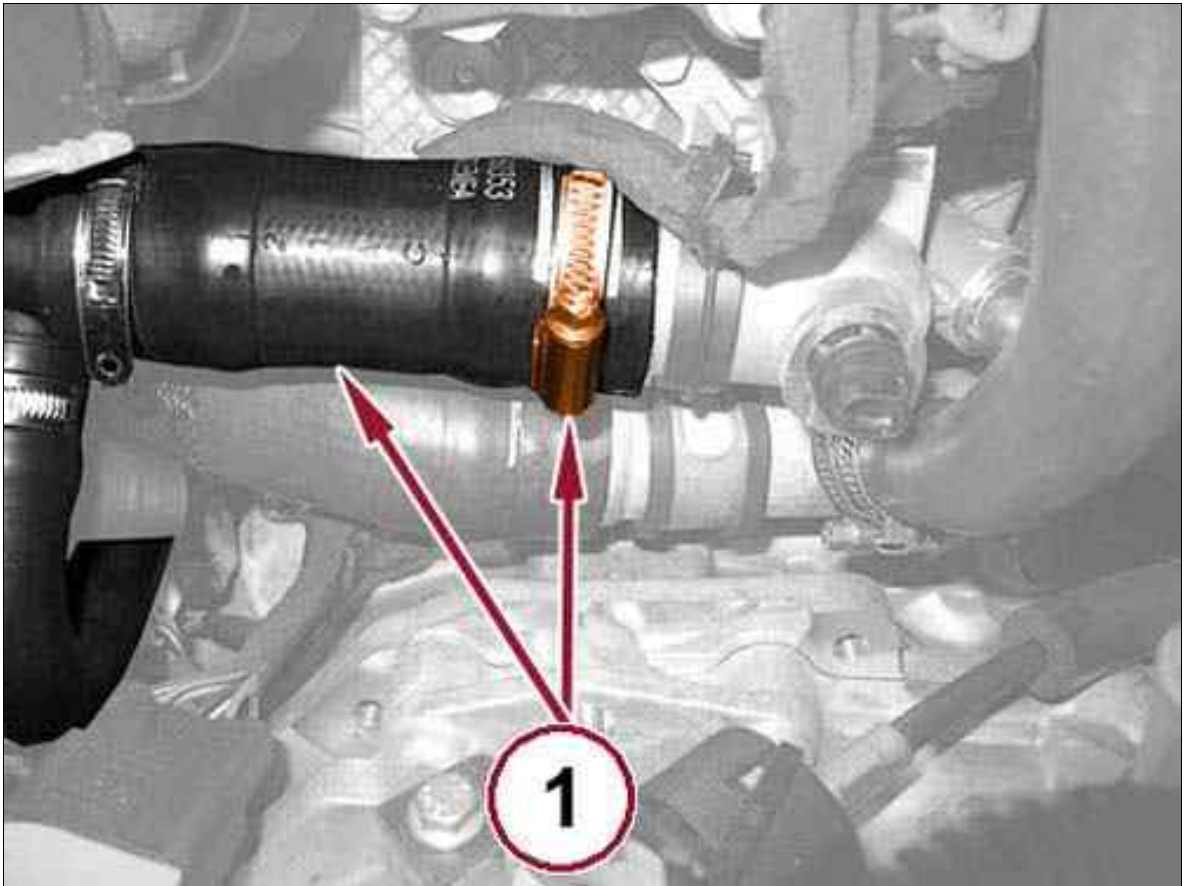
Courtesy of CHRYSLER GROUP, LLC

11. Install the bolt securing the left CAC tube. Tighten the bolts to the proper specification. Refer to TORQUE SPECIFICATIONS .
12. Fill the cooling system. Refer to STANDARD PROCEDURE .
13. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
14. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
15. Run engine to operating temperature and check for leaks.

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > REMOVAL

1. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
2. Remove the battery and battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
3. Drain the cooling system. Refer to STANDARD PROCEDURE .

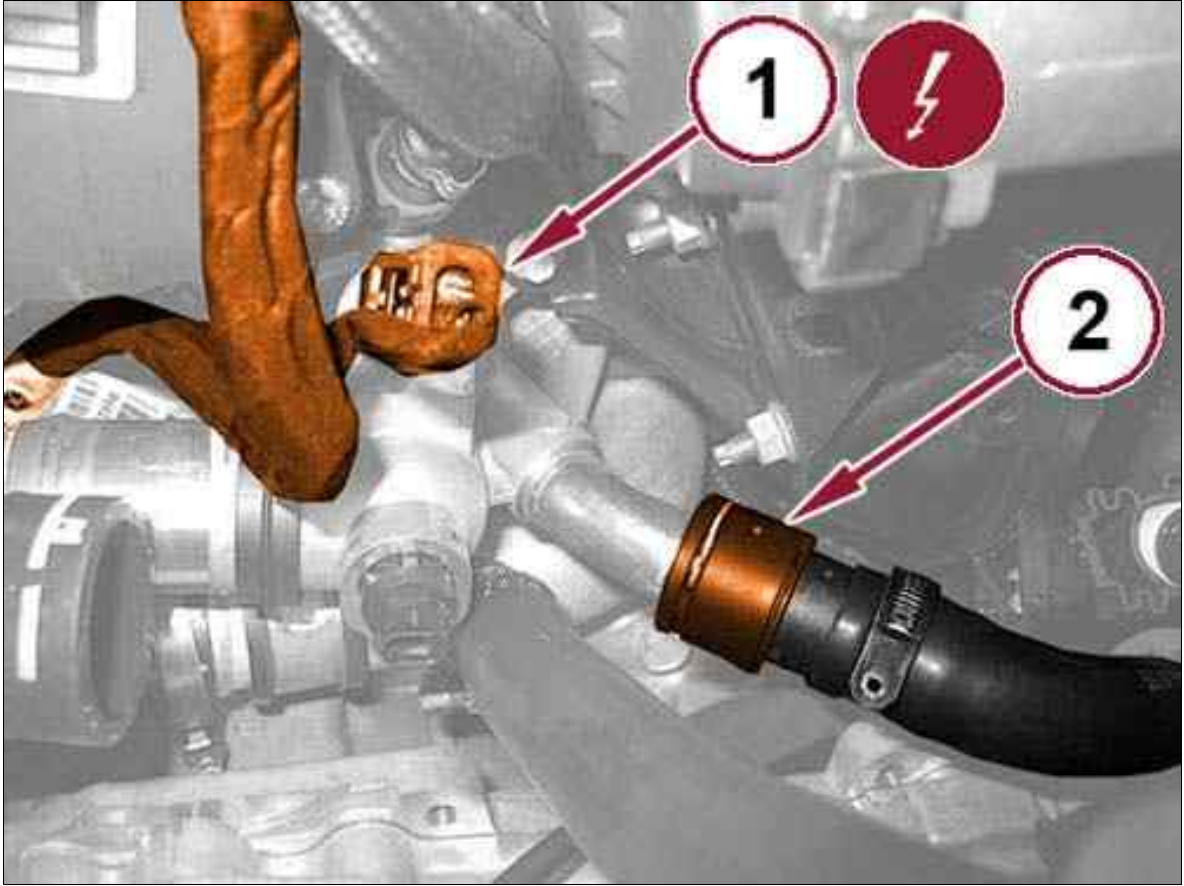
Fig 1: Radiator Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

4. Loosen the clamp and remove the radiator hose (1) from the thermostat housing.

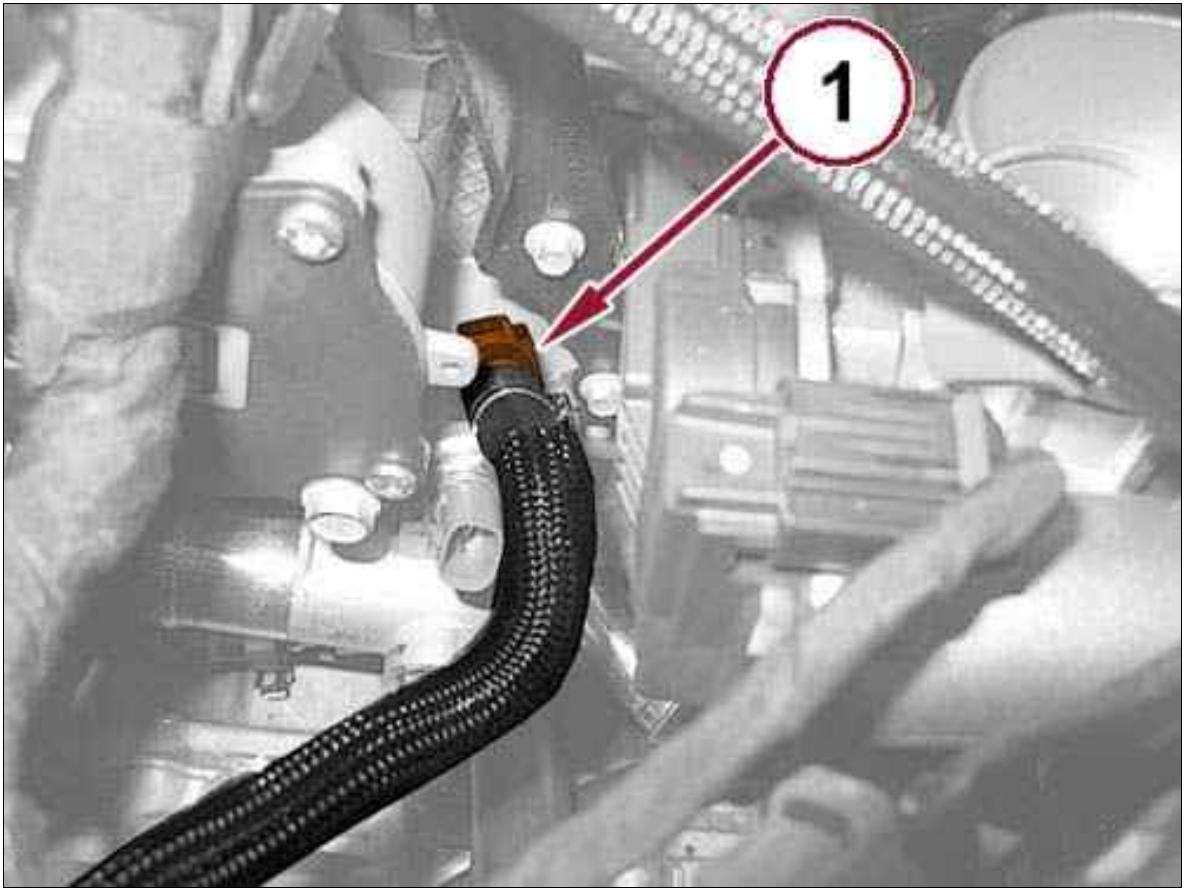
Fig 2: Engine Coolant Temperature (ECT) Sensor Wire Harness Connector & Coolant Hose Quick-Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

5. Disconnect the Engine Coolant Temperature (ECT) sensor wire harness connector (1).
6. Disconnect the quick-connect coupling and remove the coolant hose (2) from the thermostat housing

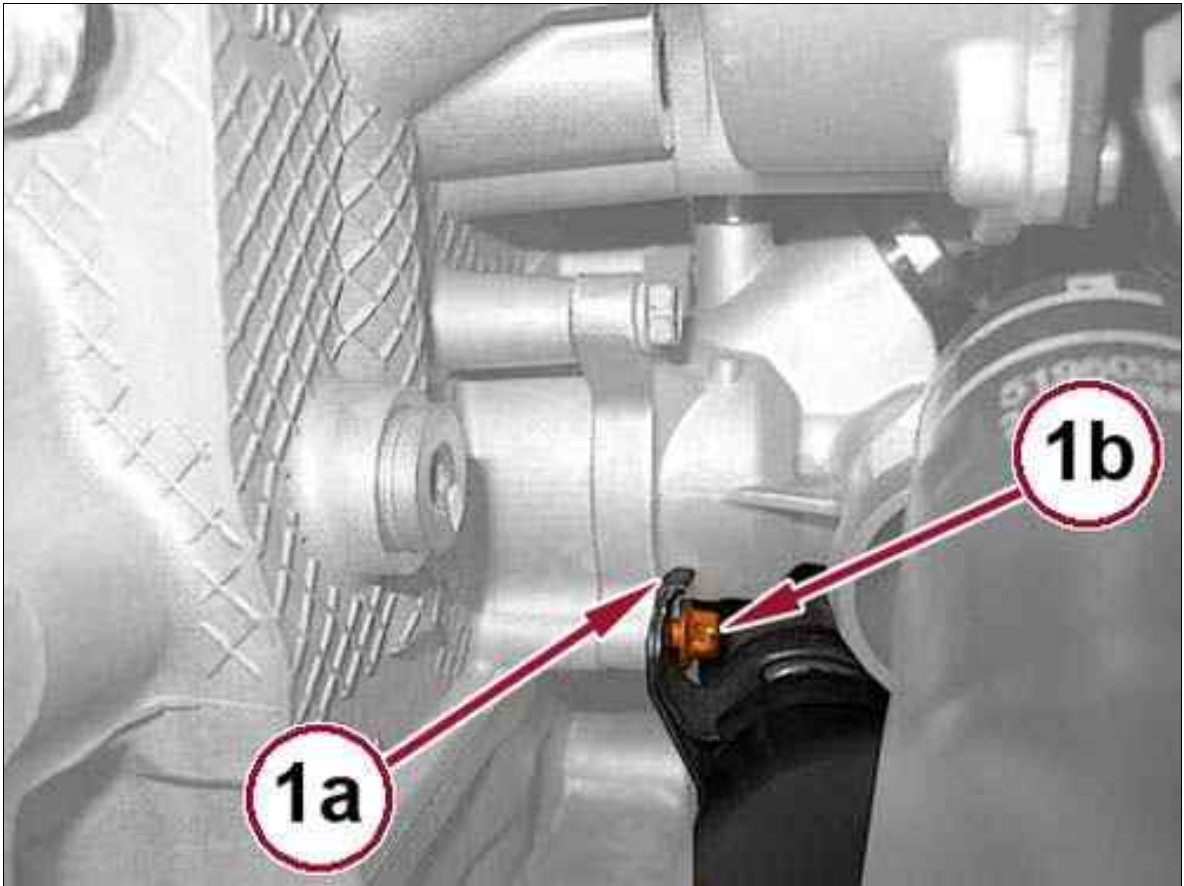
Fig 3: Degas Hose Quick-Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

7. Disconnect the quick-connect coupling and remove the degas hose (1) from the thermostat housing.

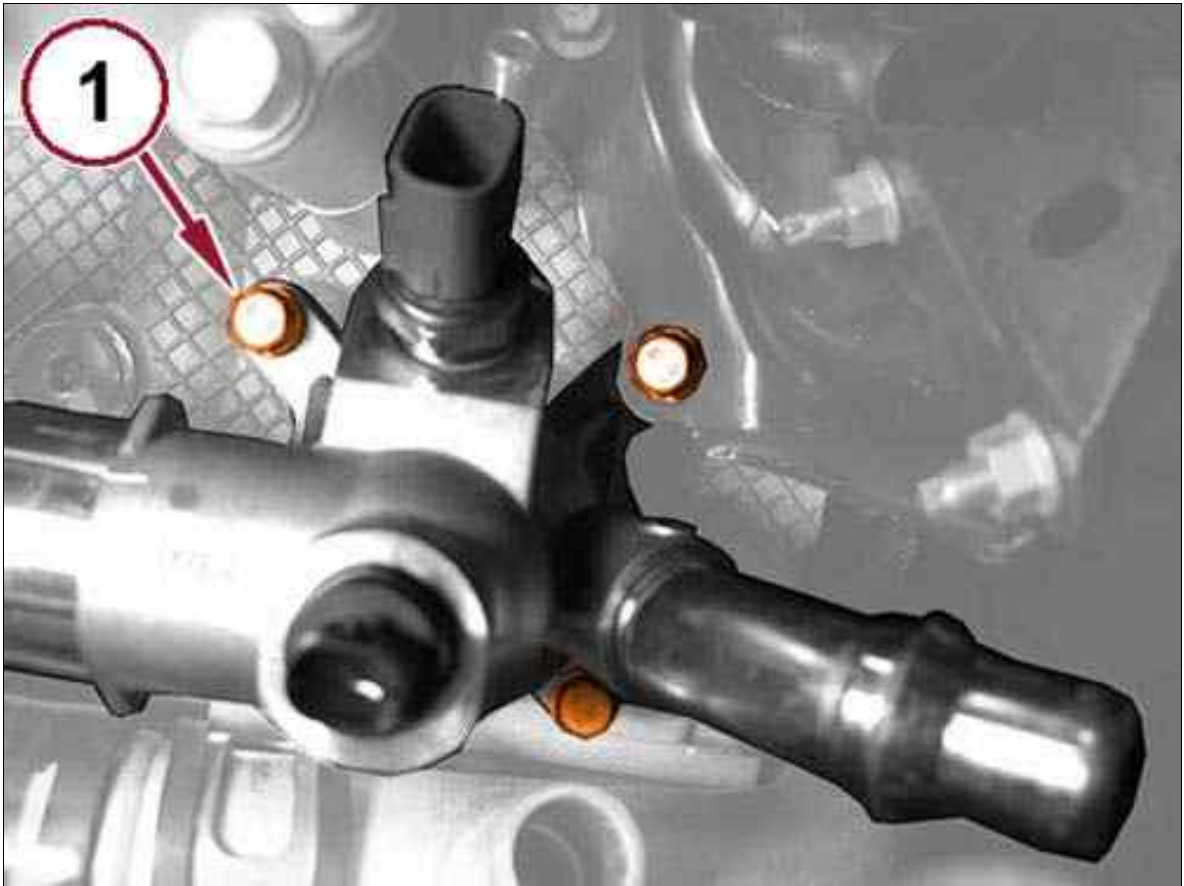
Fig 4: Coolant Tube To Thermostat Housing Lock Tab & Bolt



Courtesy of CHRYSLER GROUP, LLC

8. Release the lock tab (1a) and remove the bolt (1b) securing the coolant tube to the thermostat housing.

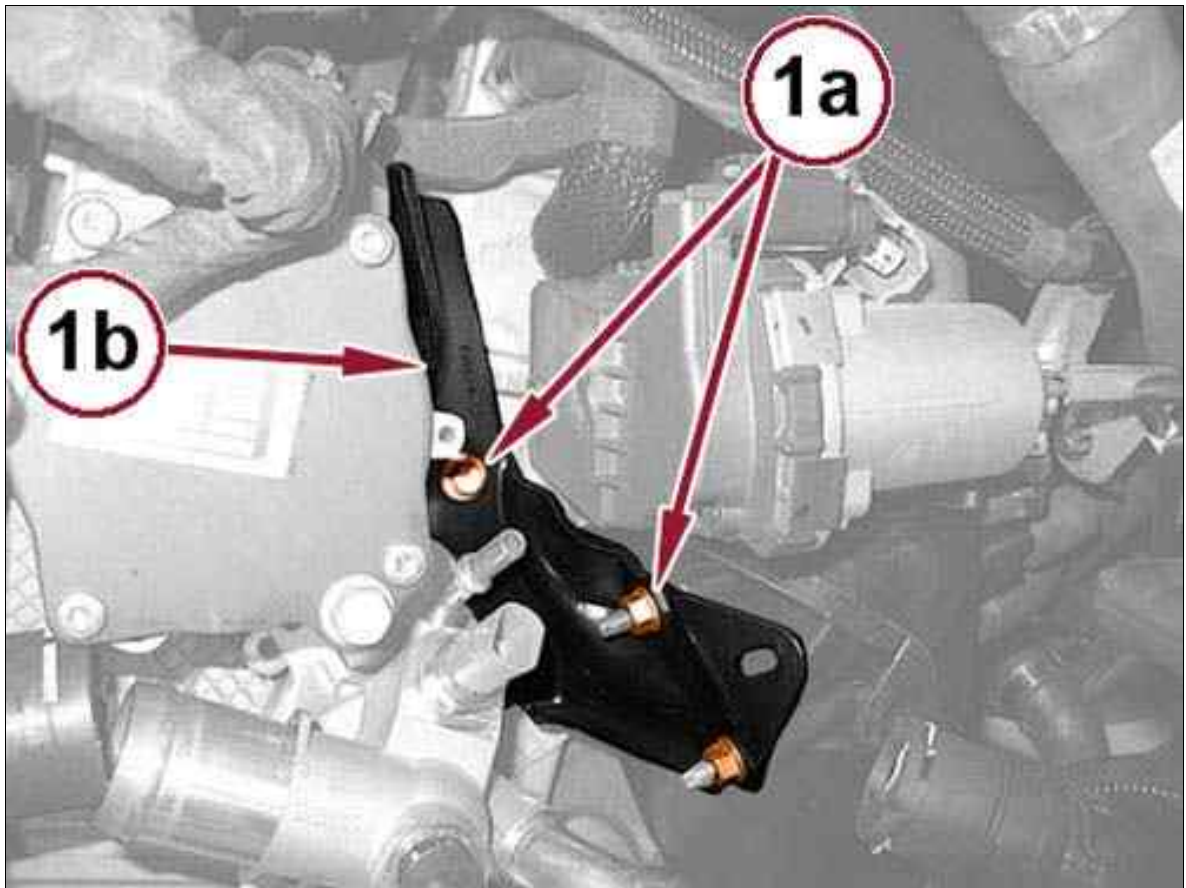
Fig 5: Thermostat Housing & Bolt



Courtesy of CHRYSLER GROUP, LLC

9. Remove the bolts (1) securing the thermostat housing.

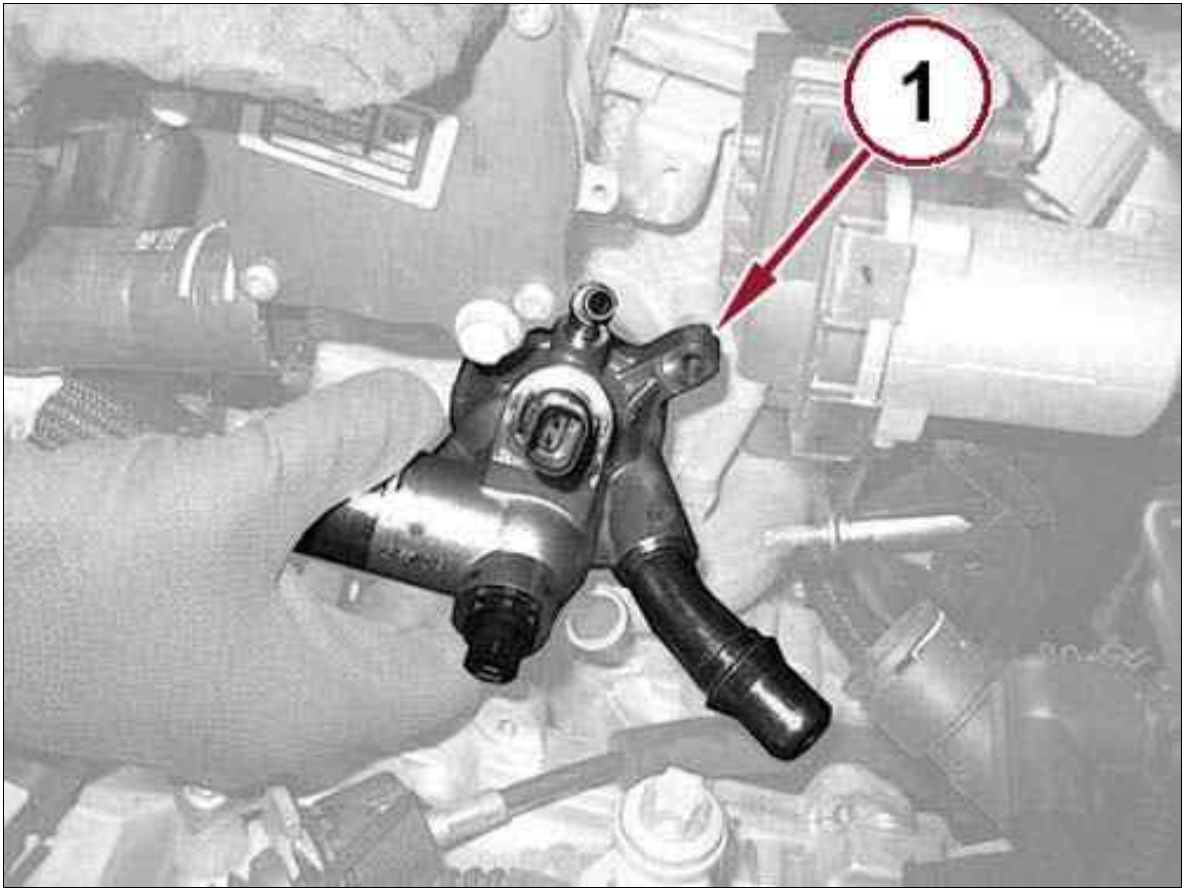
Fig 6: Vacuum Pump Support Bracket & Fasteners



Courtesy of CHRYSLER GROUP, LLC

10. Remove the fasteners (1a) and the vacuum pump support bracket (1b).

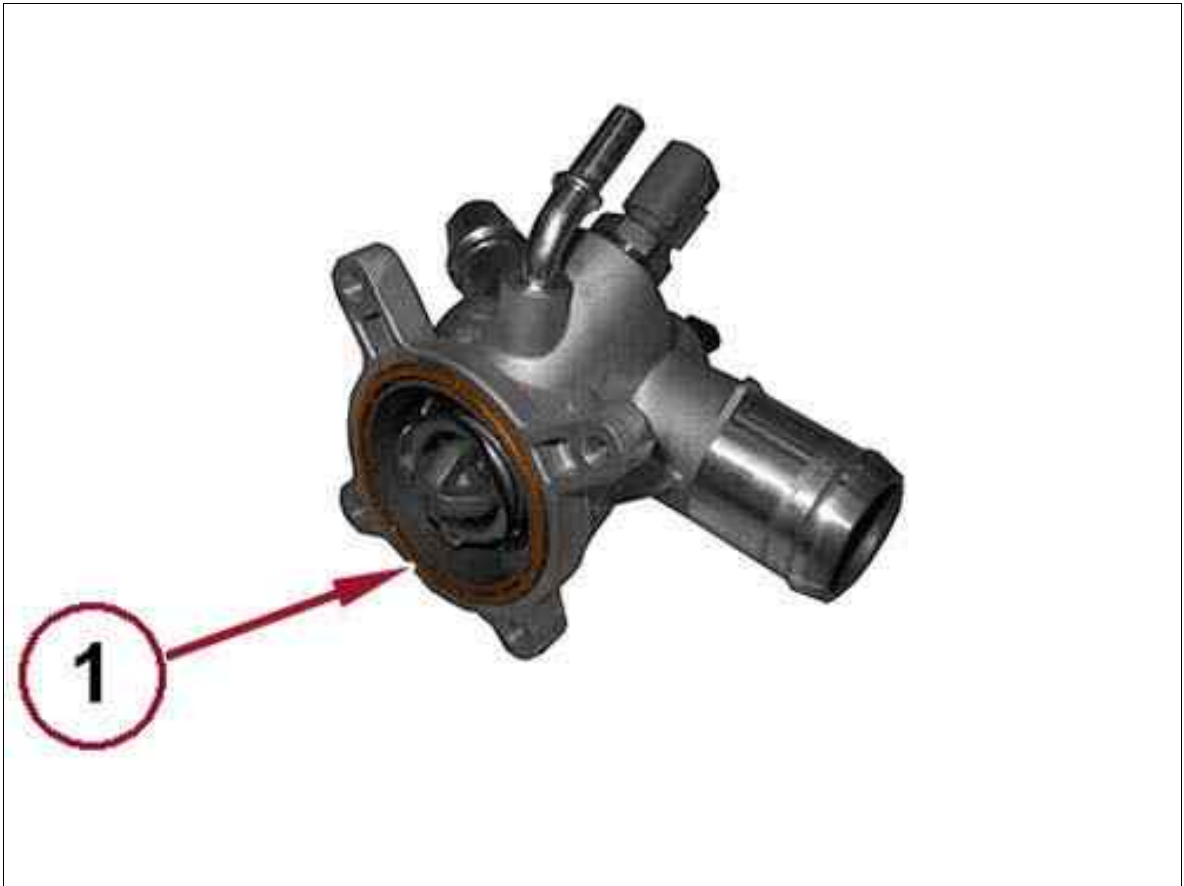
Fig 7: Thermostat Housing



Courtesy of CHRYSLER GROUP, LLC

11. Remove the thermostat housing (1).

Fig 8: Thermostat Housing Gasket

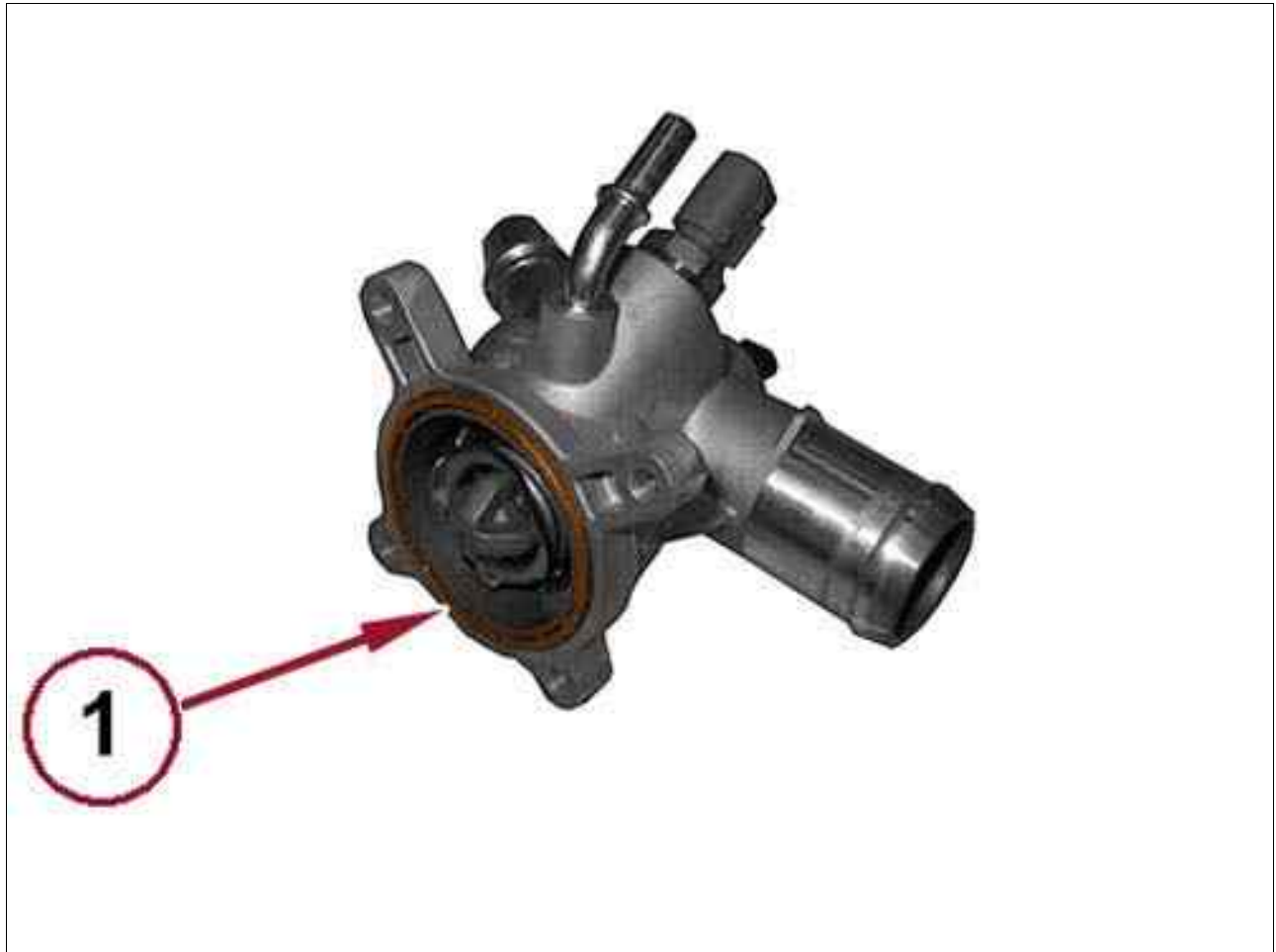


Courtesy of CHRYSLER GROUP, LLC

12. Remove and discard the thermostat housing gasket (1).

ENGINE > THERMOSTAT > REMOVAL AND INSTALLATION > 2.4L MULTI AIR > INSTALLATION

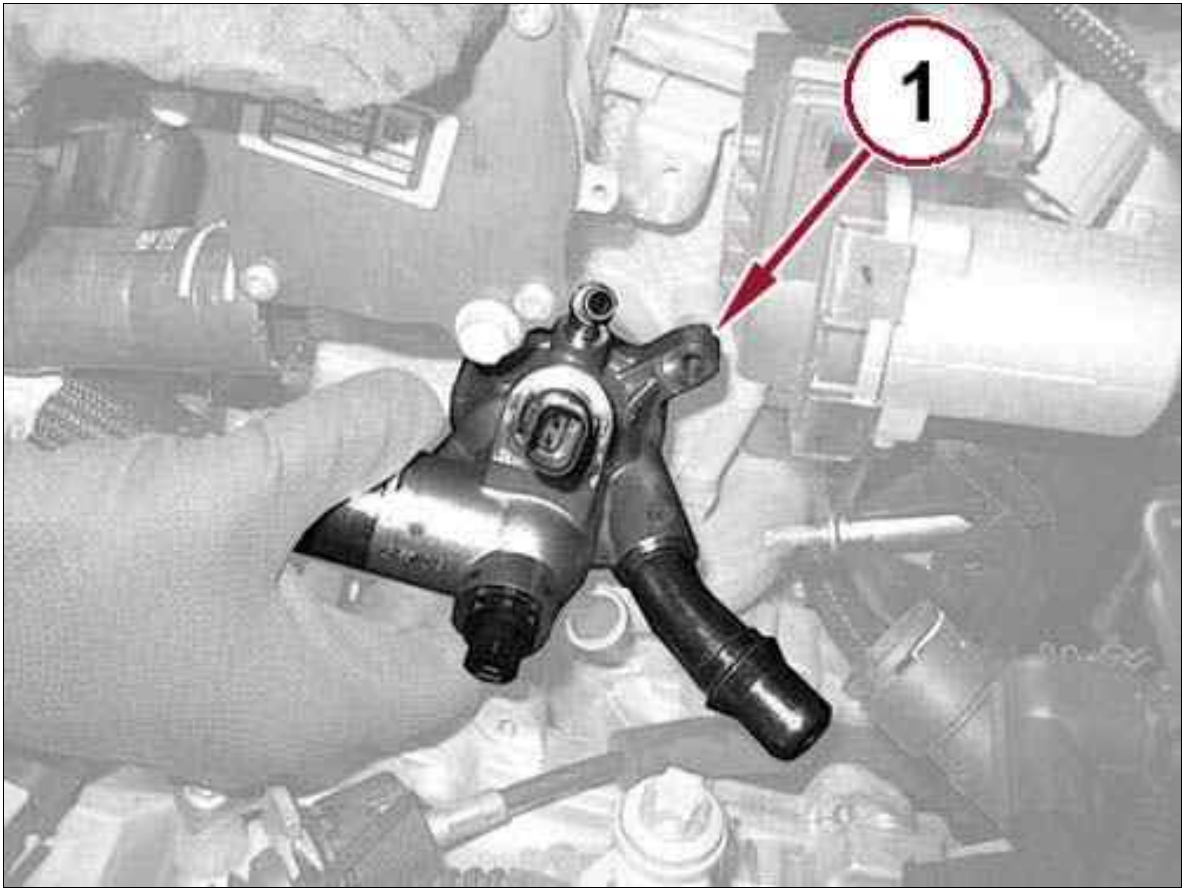
Fig 1: Thermostat Housing Gasket



Courtesy of CHRYSLER GROUP, LLC

1. Clean the gasket mating surfaces.
2. Install a **NEW** thermostat housing gasket (1).

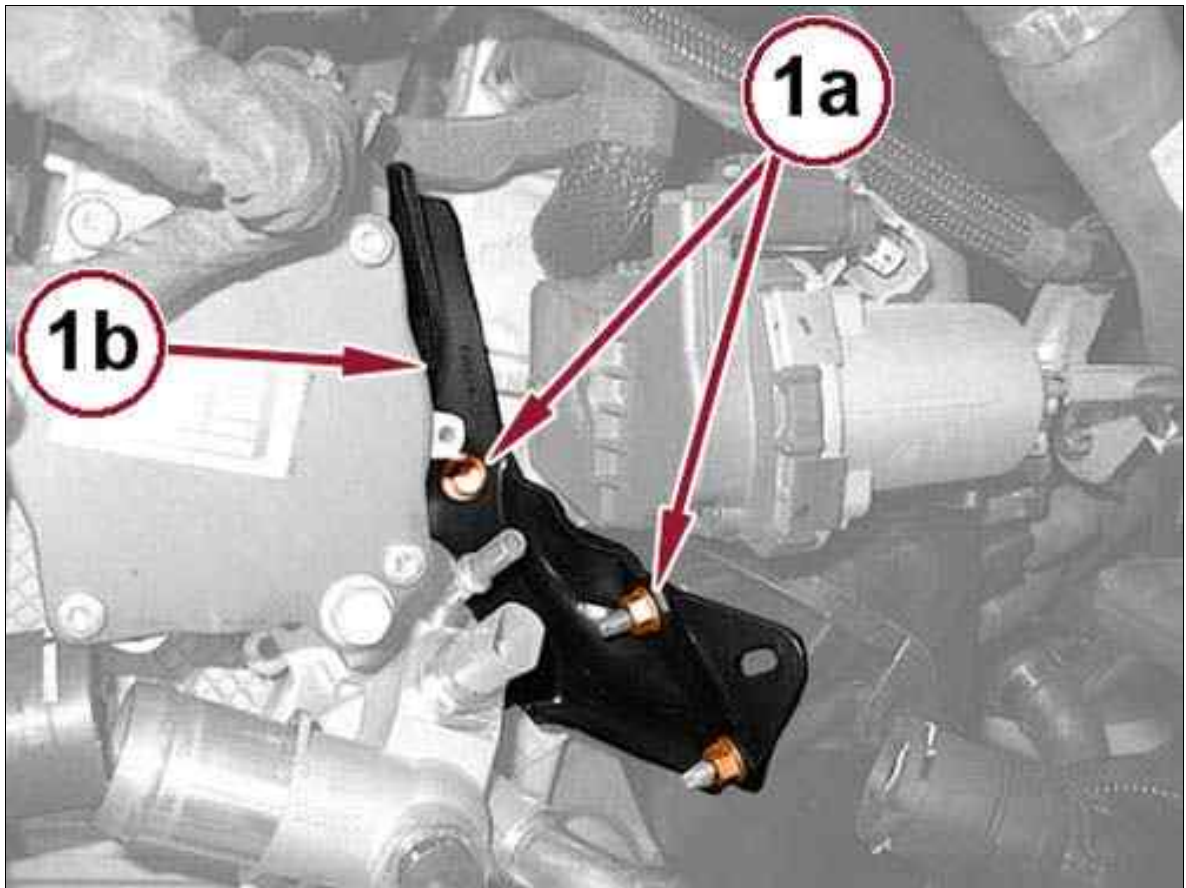
Fig 2: Thermostat Housing



Courtesy of CHRYSLER GROUP, LLC

3. Install the thermostat housing (1) and tighten bolt finger tight.

Fig 3: Vacuum Pump Support Bracket & Fasteners



Courtesy of CHRYSLER GROUP, LLC

4. Install the vacuum pump support bracket (1b) and securely tighten fasteners (1a).

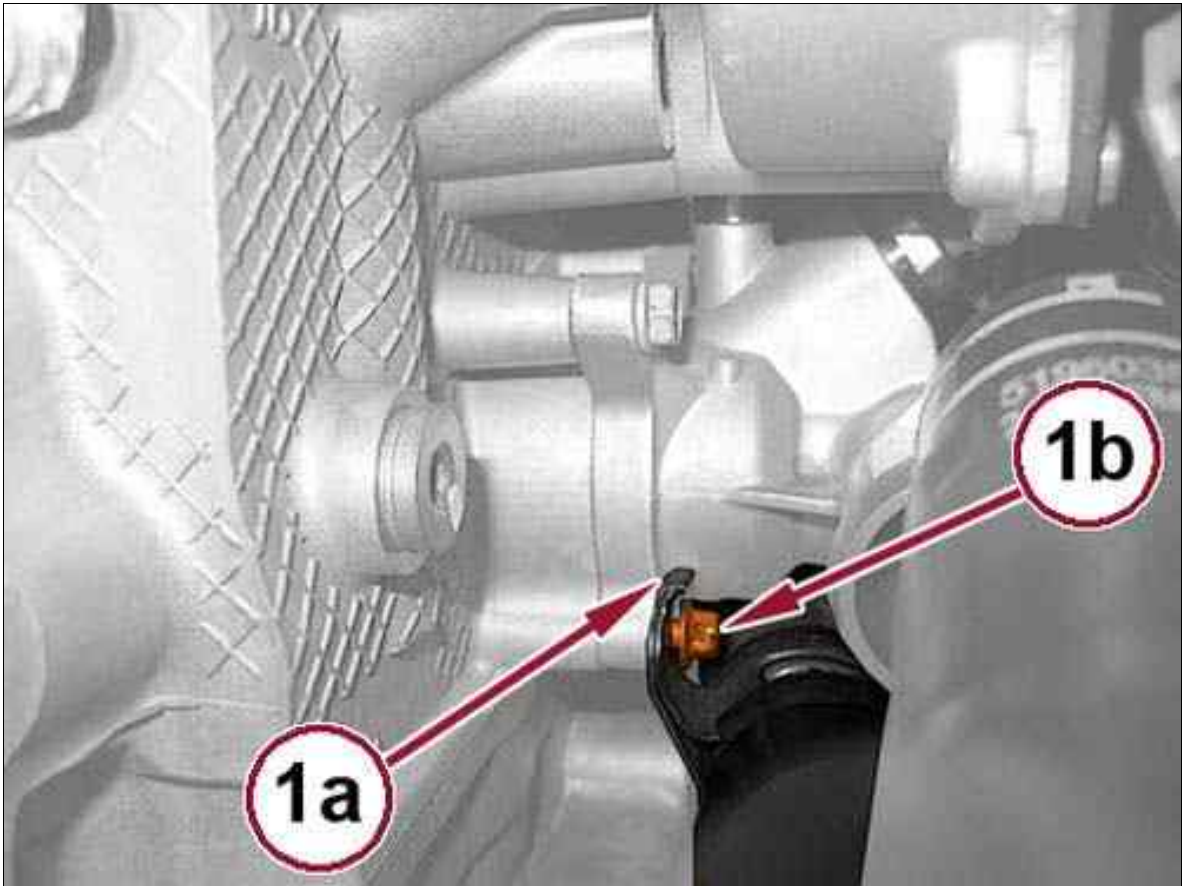
Fig 4: Thermostat Housing Bolts



Courtesy of CHRYSLER GROUP, LLC

5. Tighten the thermostat housing bolts (1) in a criss-cross pattern to the proper specification. Refer to SPECIFICATIONS . 18 N.m 13 ft. lbs.

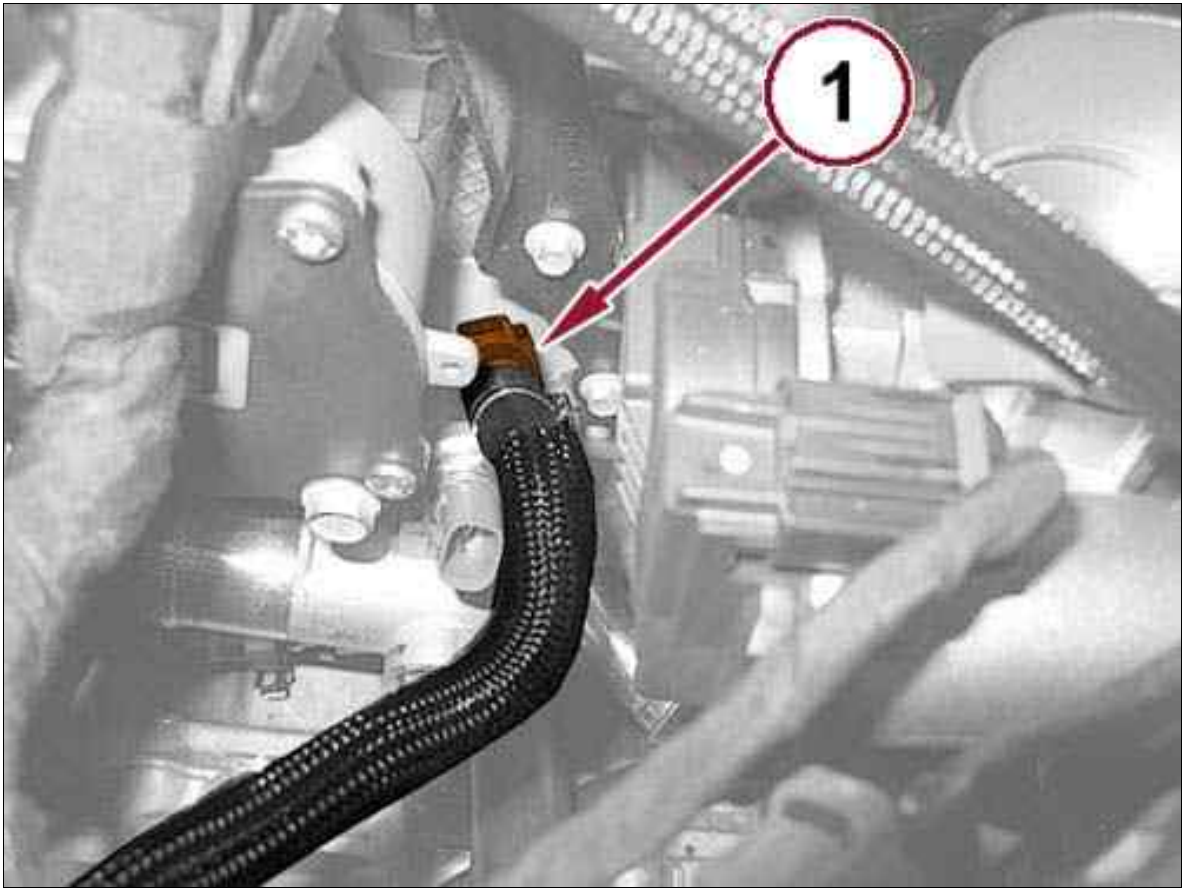
Fig 5: Coolant Tube To Thermostat Housing Lock Tab & Bolt



Courtesy of CHRYSLER GROUP, LLC

6. Install the bolt (1b) securing the coolant tube to the thermostat housing and tighten to the proper specification, then bend lock tab to secure bolt (1a) 18 N.m. Refer to SPECIFICATIONS .

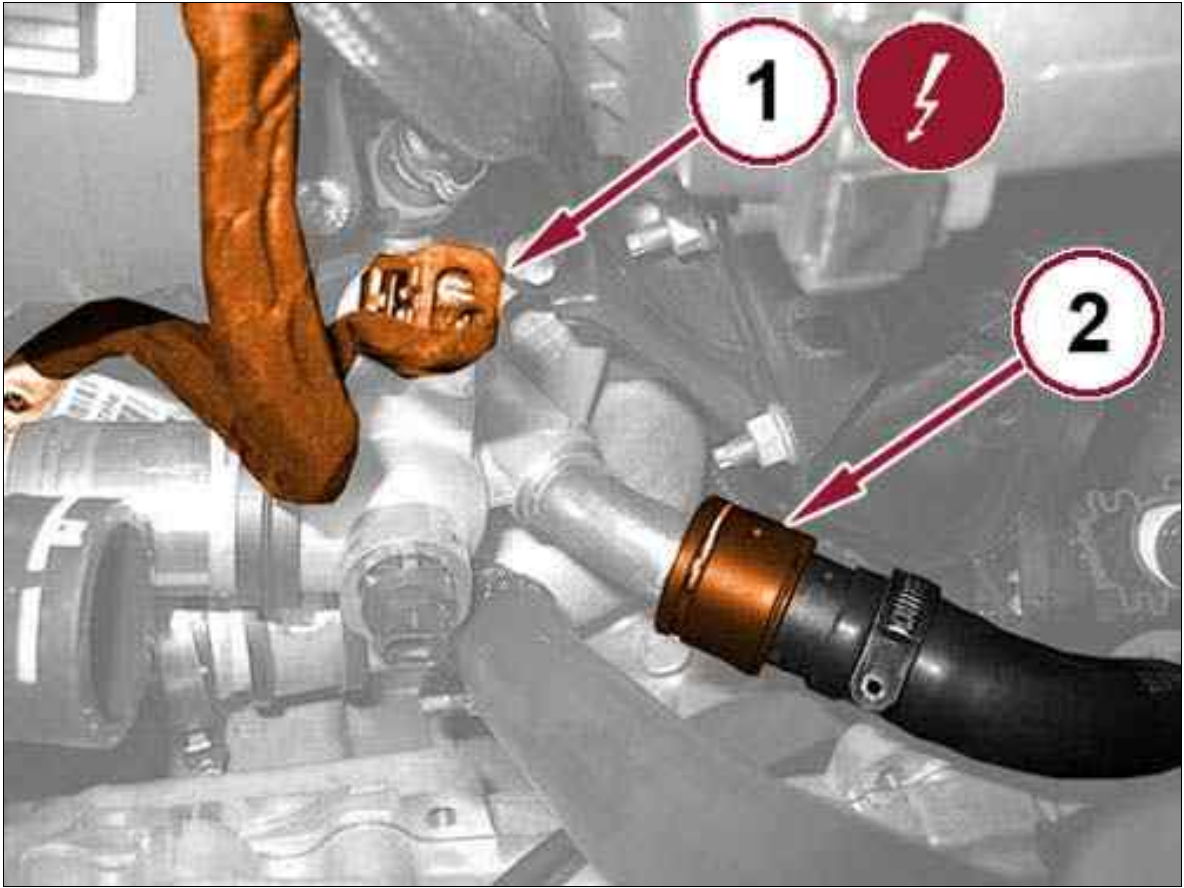
Fig 6: Degas Hose Quick-Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

7. Install the degas hose (1) to the thermostat housing and connect the quick-connect fitting.

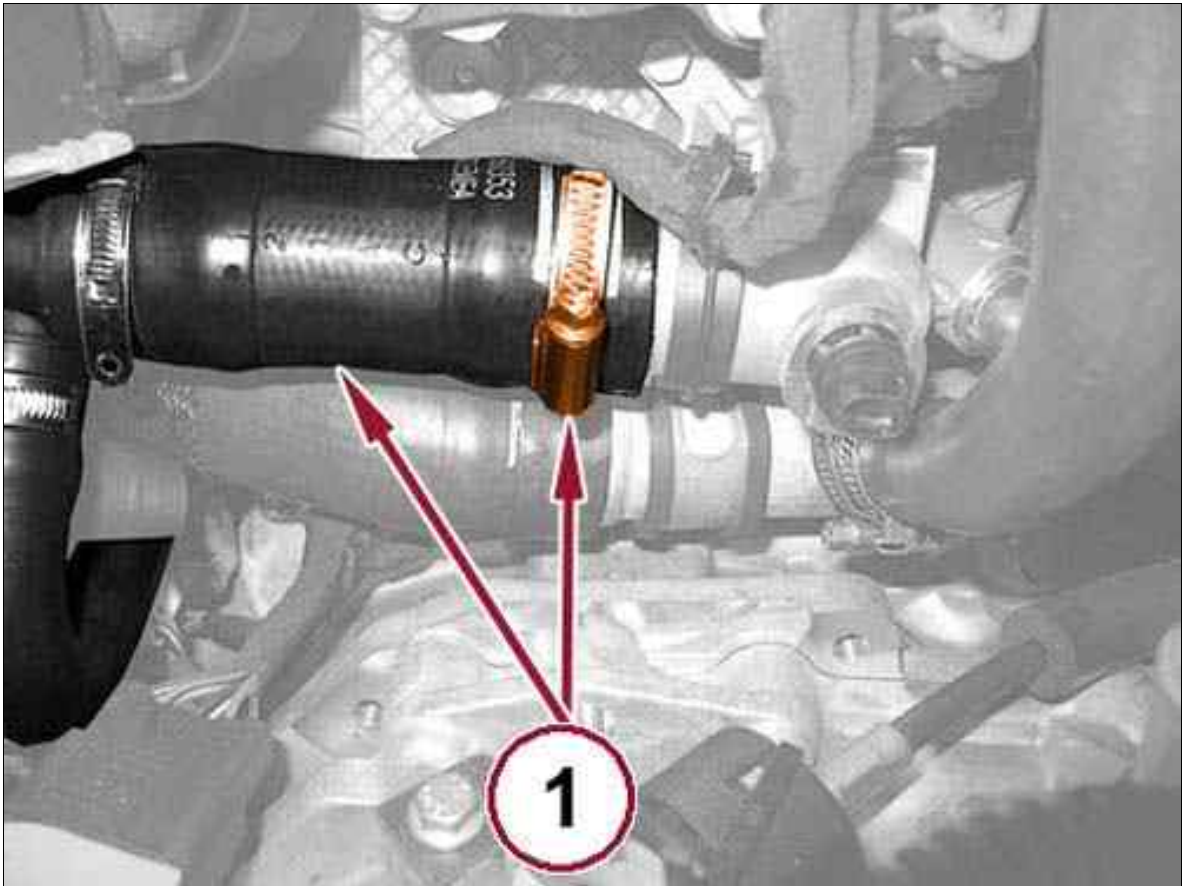
Fig 7: Engine Coolant Temperature (ECT) Sensor Wire Harness Connector & Coolant Hose Quick-Connect Coupling



Courtesy of CHRYSLER GROUP, LLC

8. Install the coolant hose to the thermostat housing and engage the quick-connect coupling (2).
9. Connect and lock the Engine Coolant Temperature (ECT) sensor wire harness connector (1).

Fig 8: Radiator Hose & Clamp



Courtesy of CHRYSLER GROUP, LLC

10. Install the radiator hose (1) to the thermostat housing and securely tighten the clamp.
11. Install the battery tray and battery. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
12. Fill the cooling system. Refer to STANDARD PROCEDURE .
13. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
14. Start engine and check for leaks.
15. Run the engine until it reaches normal operating temperature. Check the cooling system for correct fluid level. Refer to STANDARD PROCEDURE .

TRANSMISSION > COOLER, TRANSMISSION OIL > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > DESCRIPTION

The automatic transmission cooler is located in the front of the condenser and behind the front fascia. The transmission cooler is a heat exchanger that allows heat in the transmission fluid to be transferred to the air passing over the cooler fins.

The transmission oil cooler assembly is equipped with a thermal bypass valve that incorporates the quick connect fitting for the transmission oil cooler lines.

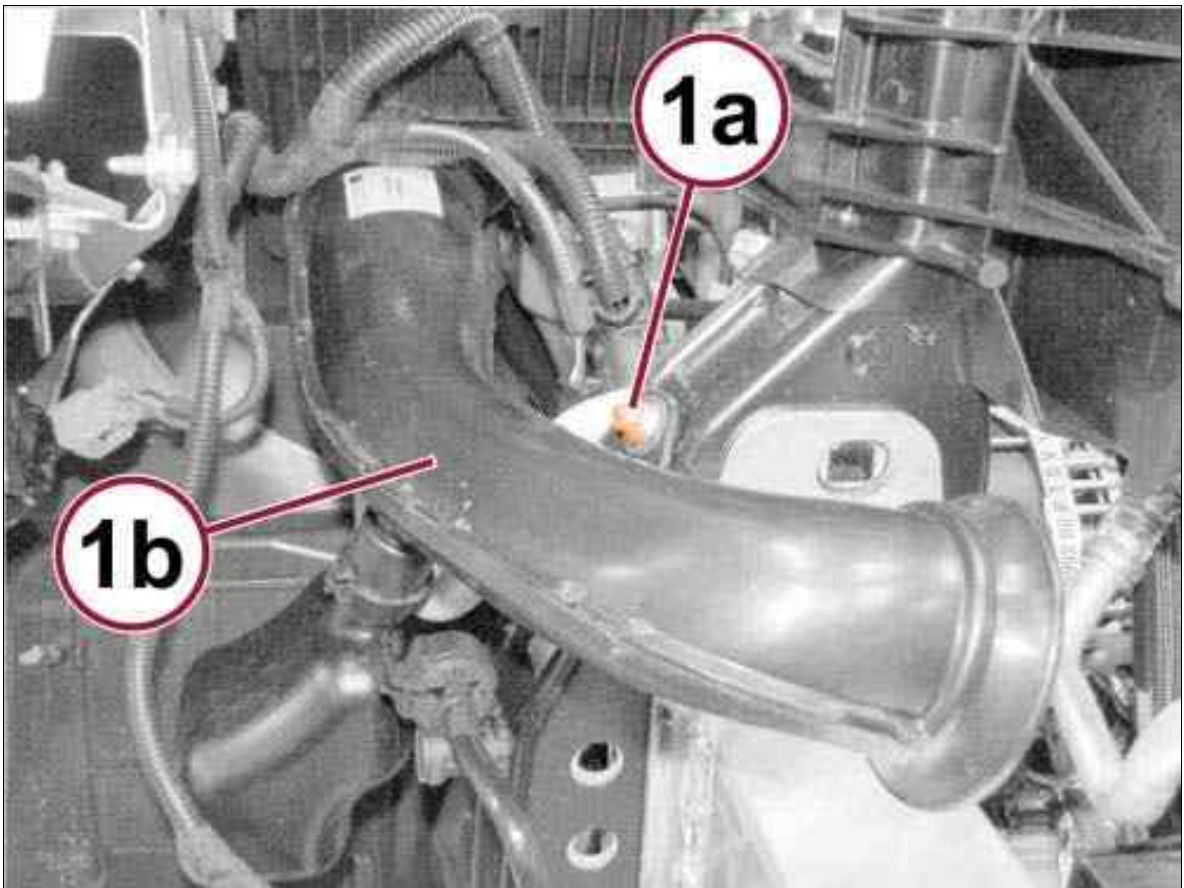
TRANSMISSION > COOLER, TRANSMISSION OIL > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION > OPERATION

Transmission oil is routed through the cooler where heat is removed from the transmission oil before returning to the transmission. The transmission oil cooler bypass valve aids in achieving desired transmission oil operating temperature, it does this by recirculating the oil back to the transmission without flowing through the transmission oil cooler at low oil temperatures.

TRANSMISSION > COOLER, TRANSMISSION OIL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable.
2. Remove the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

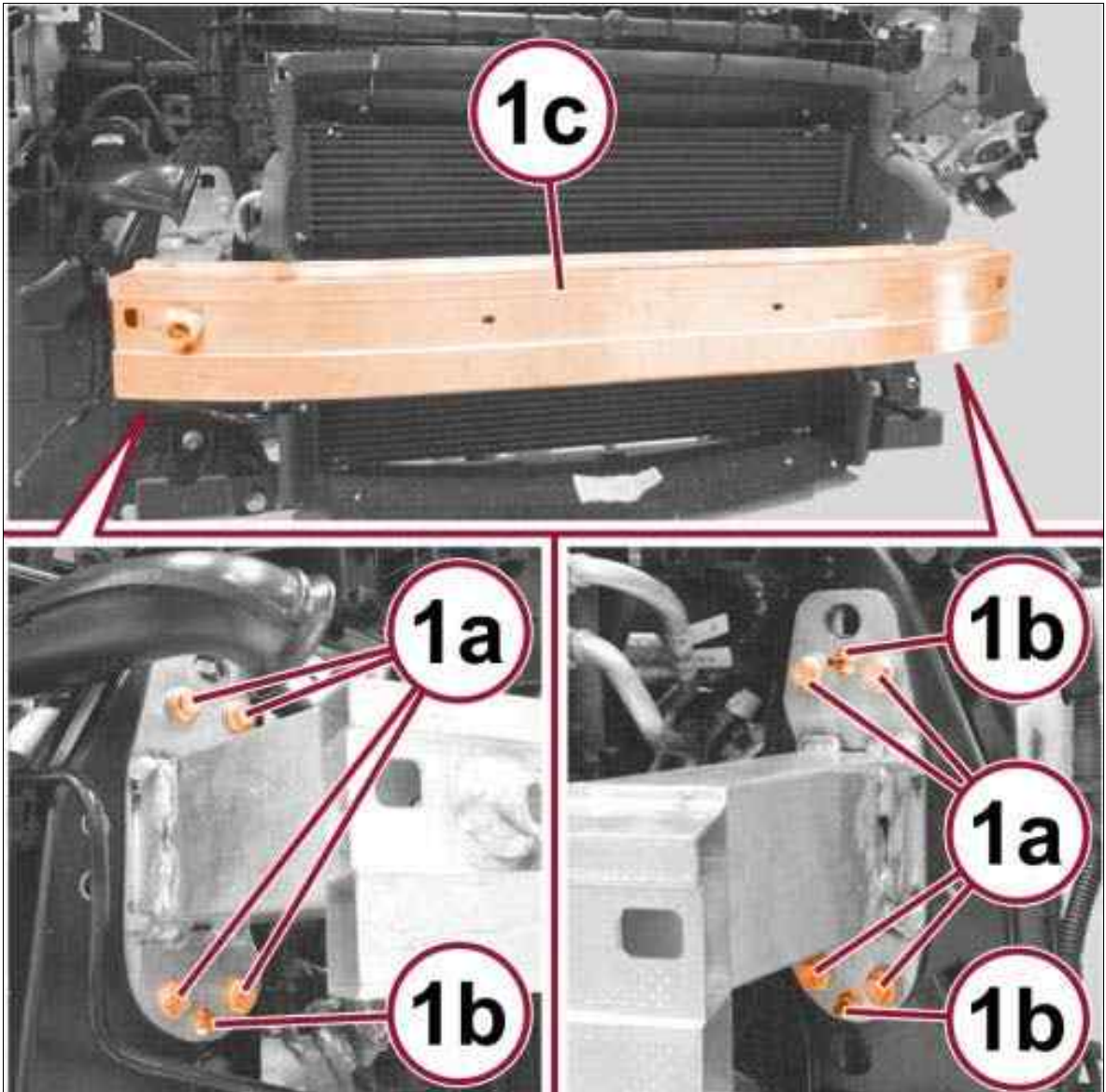
Fig 1: Air Cleaner Inlet Tube & Nut



Courtesy of CHRYSLER GROUP, LLC

3. Remove the nut (1a) and the air cleaner inlet tube (1b).

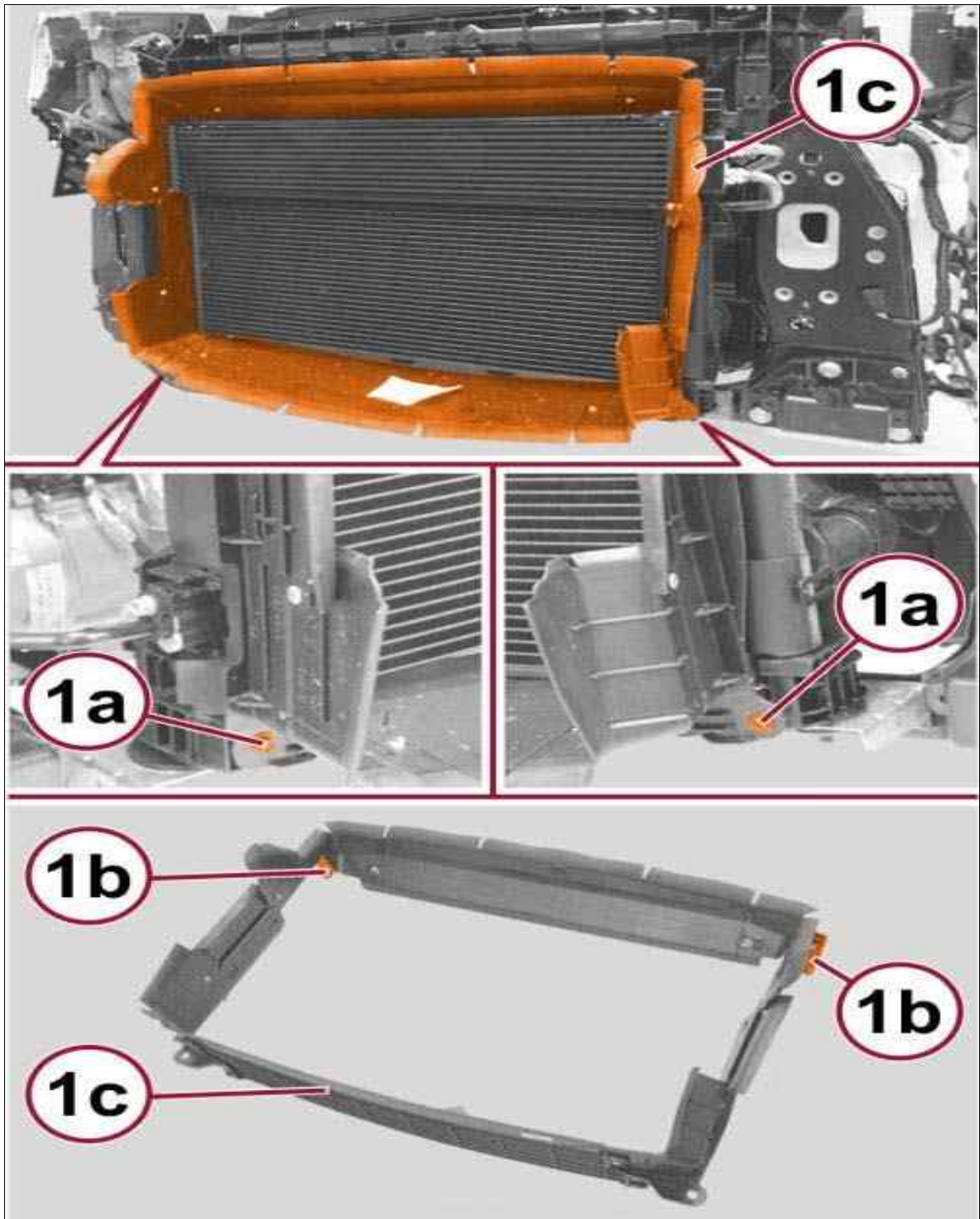
Fig 2: Front Bumper Reinforcement, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

4. Remove the bolts (1a) and the nuts (1b) and the front bumper reinforcement (1c).

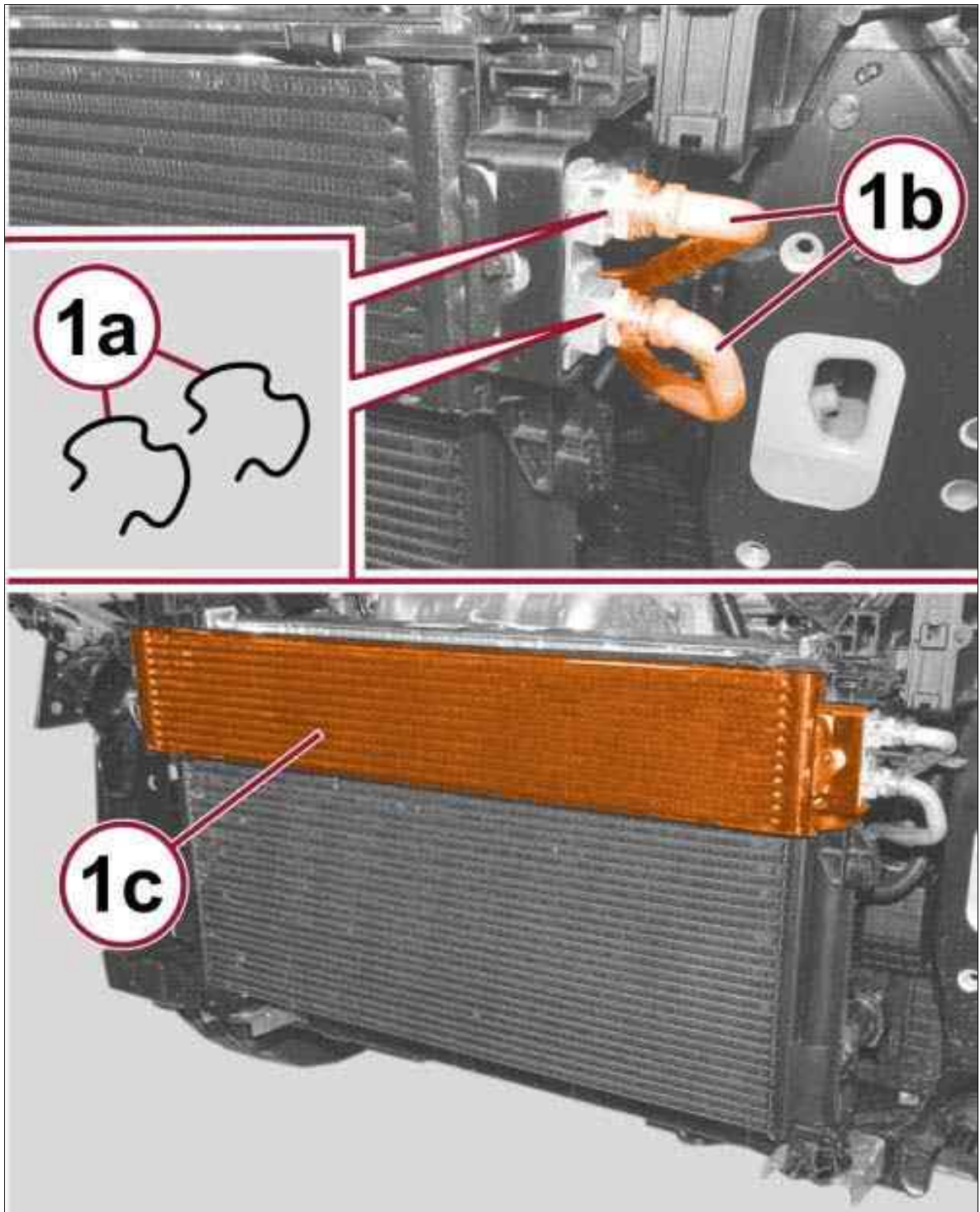
Fig 3: Radiator Air Deflector, Retainers & Bolts



Courtesy of CHRYSLER GROUP, LLC

5. Remove the bolts (1a) and disengage the retainers side (1b) and remove the radiator air deflector (1c).

Fig 4: Transmission Cooler, Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

 NOTE:

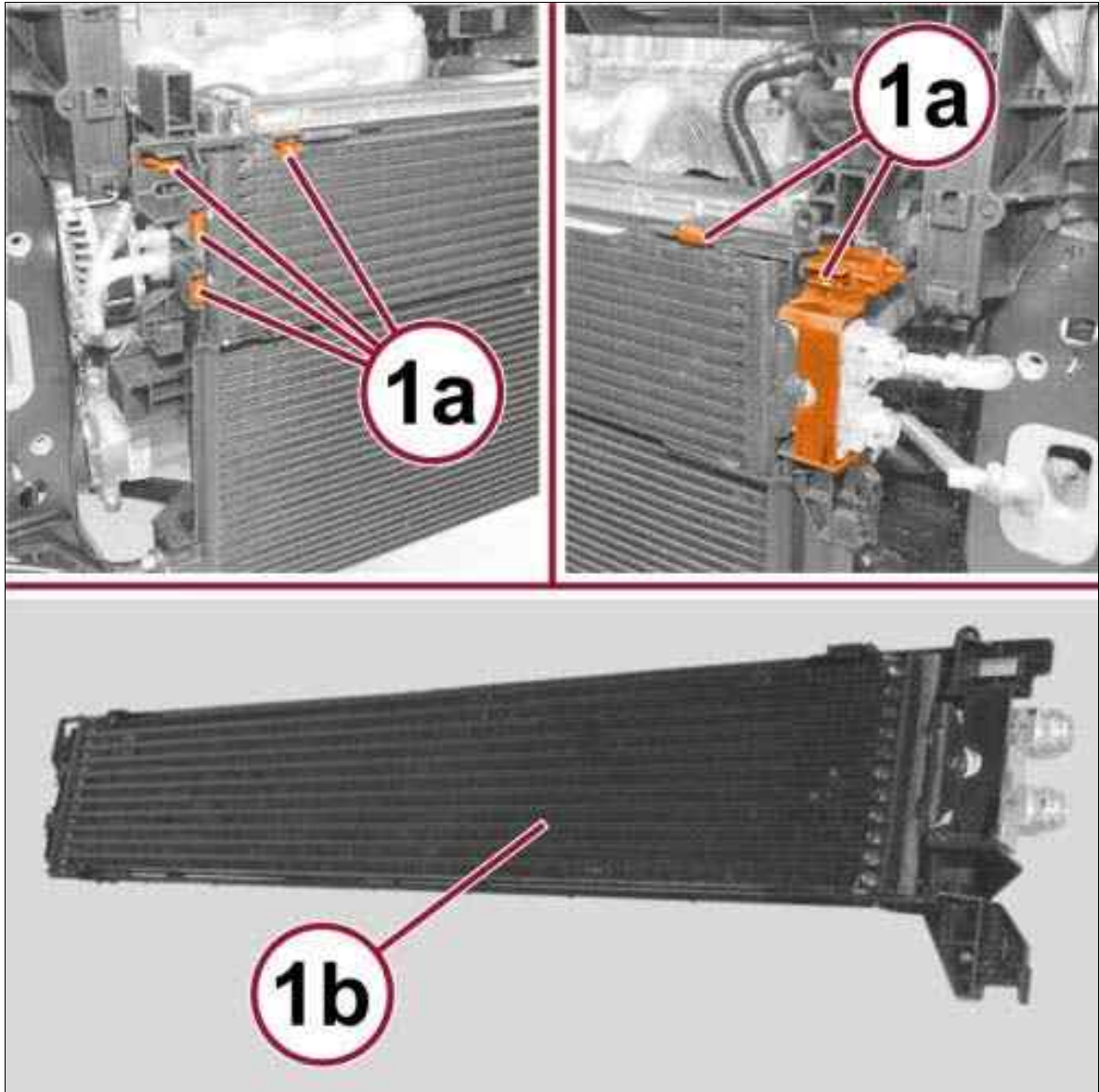
Plug and seal the ends of the transmission cooler and the transmission cooler lines to prevent leakage of oil, or moisture, contaminants, or impurities from entering into the system.

 **NOTE:**

Clean any transmission fluid the may have leaked out during the removal process.

6. Remove the retaining clips (1a) and the transmission cooler lines (1b) from the transmission cooler (1c).

Fig 5: Transmission Oil Cooler & Retainers

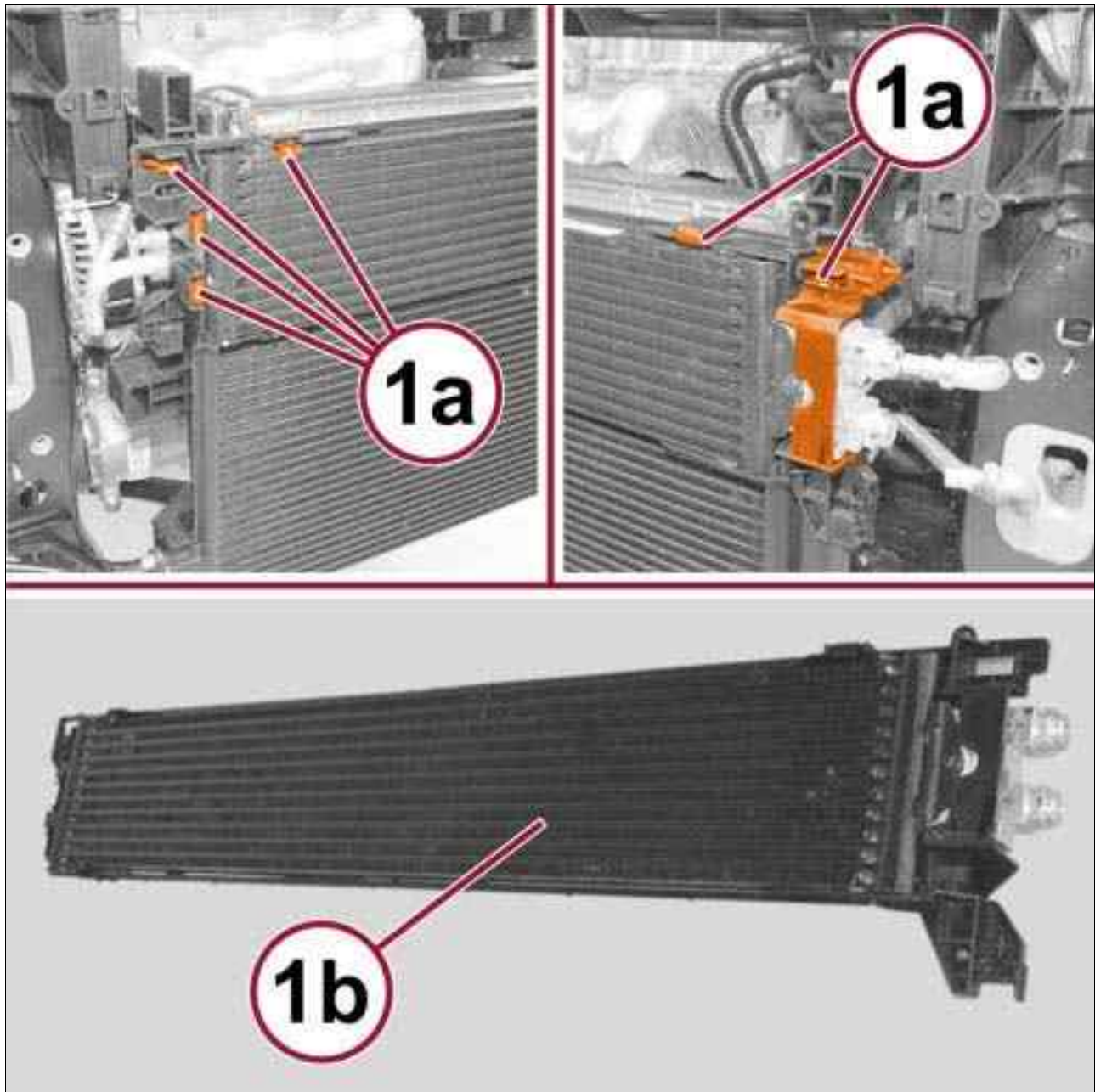


Courtesy of CHRYSLER GROUP, LLC

7. Disengage the retainers (1a) and remove the transmission oil cooler (1b).

**TRANSMISSION > COOLER, TRANSMISSION OIL > REMOVAL AND INSTALLATION >
REMOVAL AND INSTALLATION > INSTALLATION**

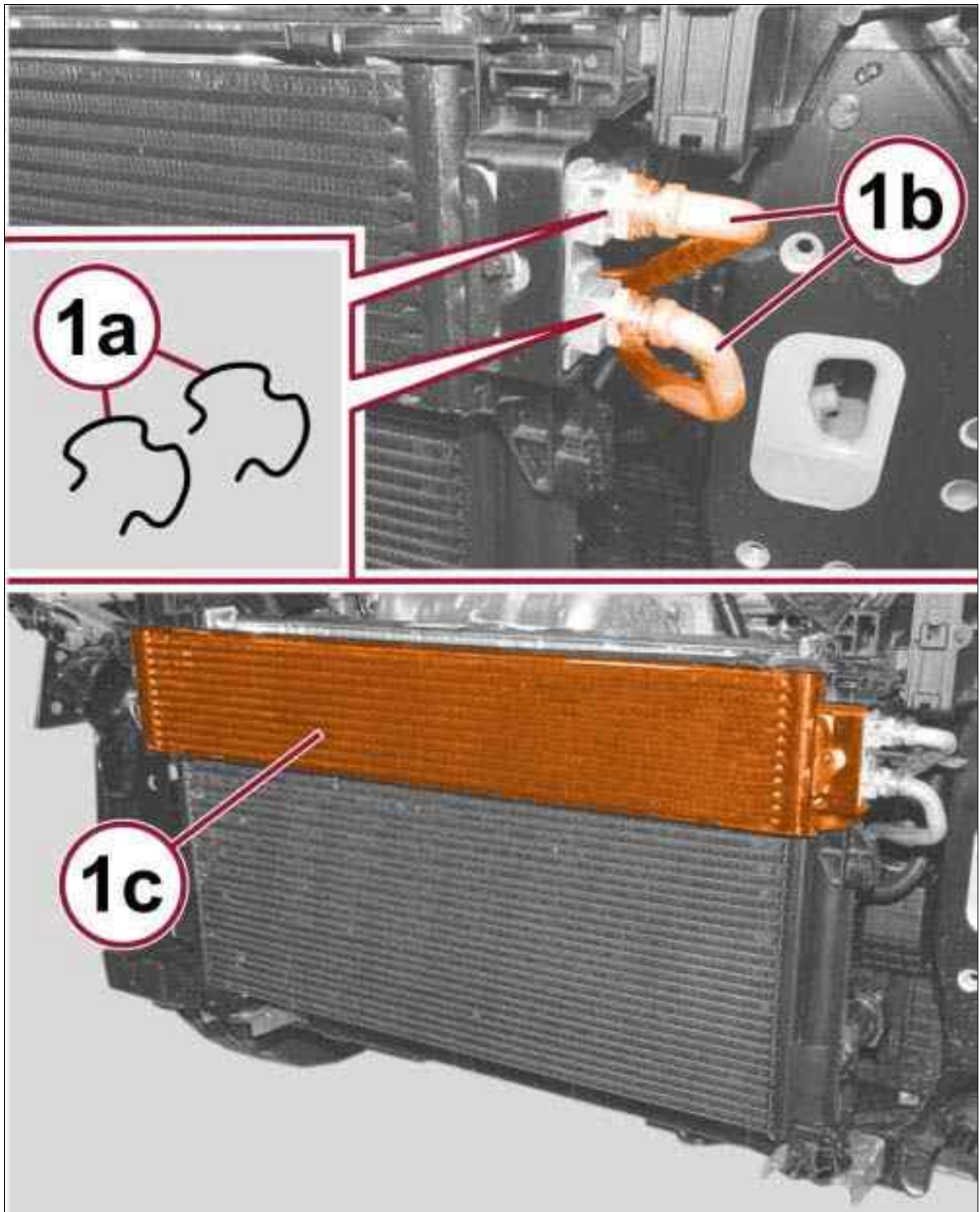
Fig 1: Transmission Oil Cooler & Retainers



Courtesy of CHRYSLER GROUP, LLC

1. Install the transmission oil cooler (1b) and engage the retainers (1a).

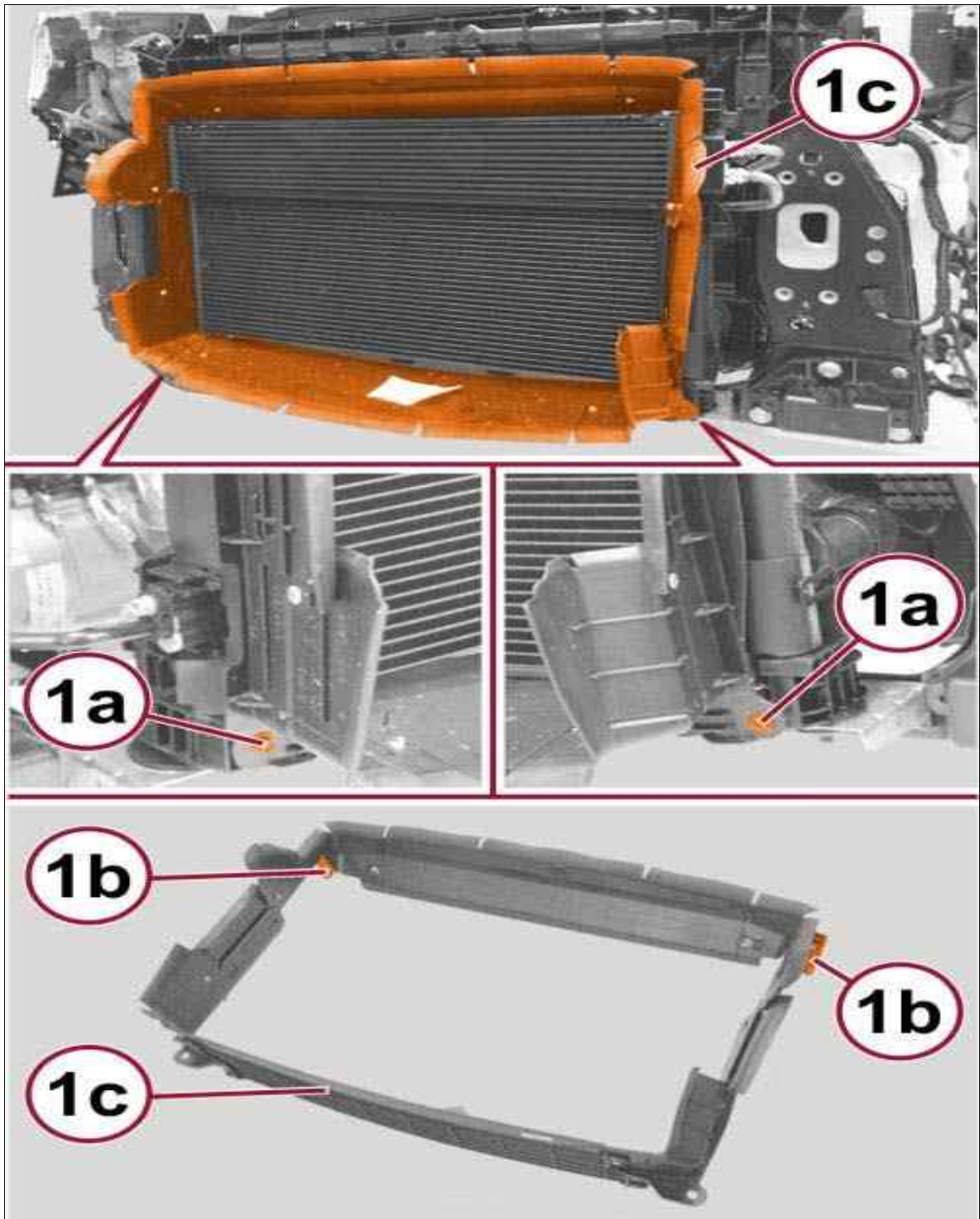
Fig 2: Transmission Cooler, Lines & Clips



Courtesy of CHRYSLER GROUP, LLC

2. Remove the seal and plug from the transmission cooler and the transmission cooler lines.
3. Using **NEW** gasket seals, install the transmission cooler lines (1b) to the transmission cooler (1c) and the retaining clips (1a).

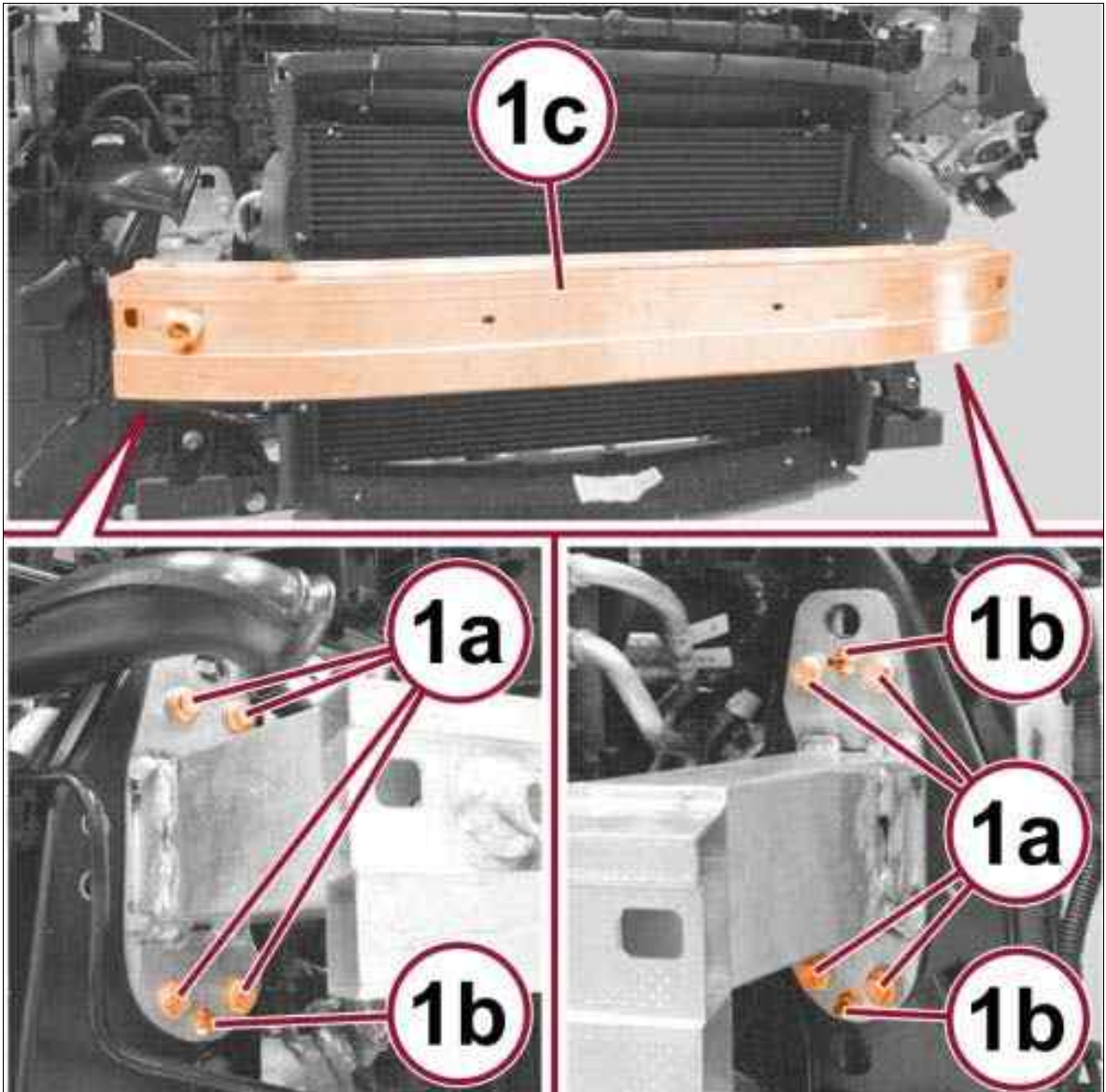
Fig 3: Radiator Air Deflector, Retainers & Bolts



Courtesy of CHRYSLER GROUP, LLC

4. Install the radiator air deflector (1c) and engage the retainers side (1b) and securely tighten the bolts (1a).

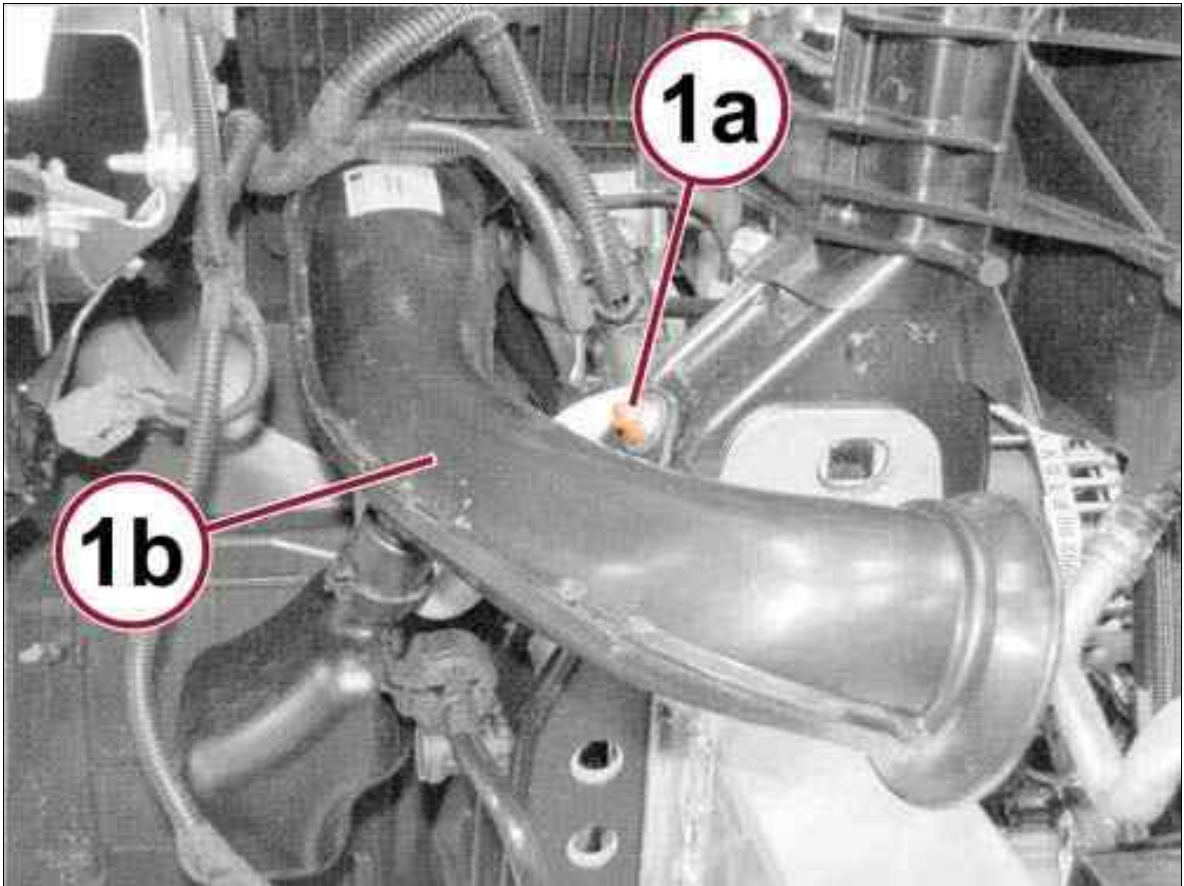
Fig 4: Front Bumper Reinforcement, Bolts & Nuts



Courtesy of CHRYSLER GROUP, LLC

5. Install the front bumper reinforcement (1c). Tighten the bolts (1a) and the nuts (1b) to the proper specification. Refer to SPECIFICATIONS .

Fig 5: Air Cleaner Inlet Tube & Nut



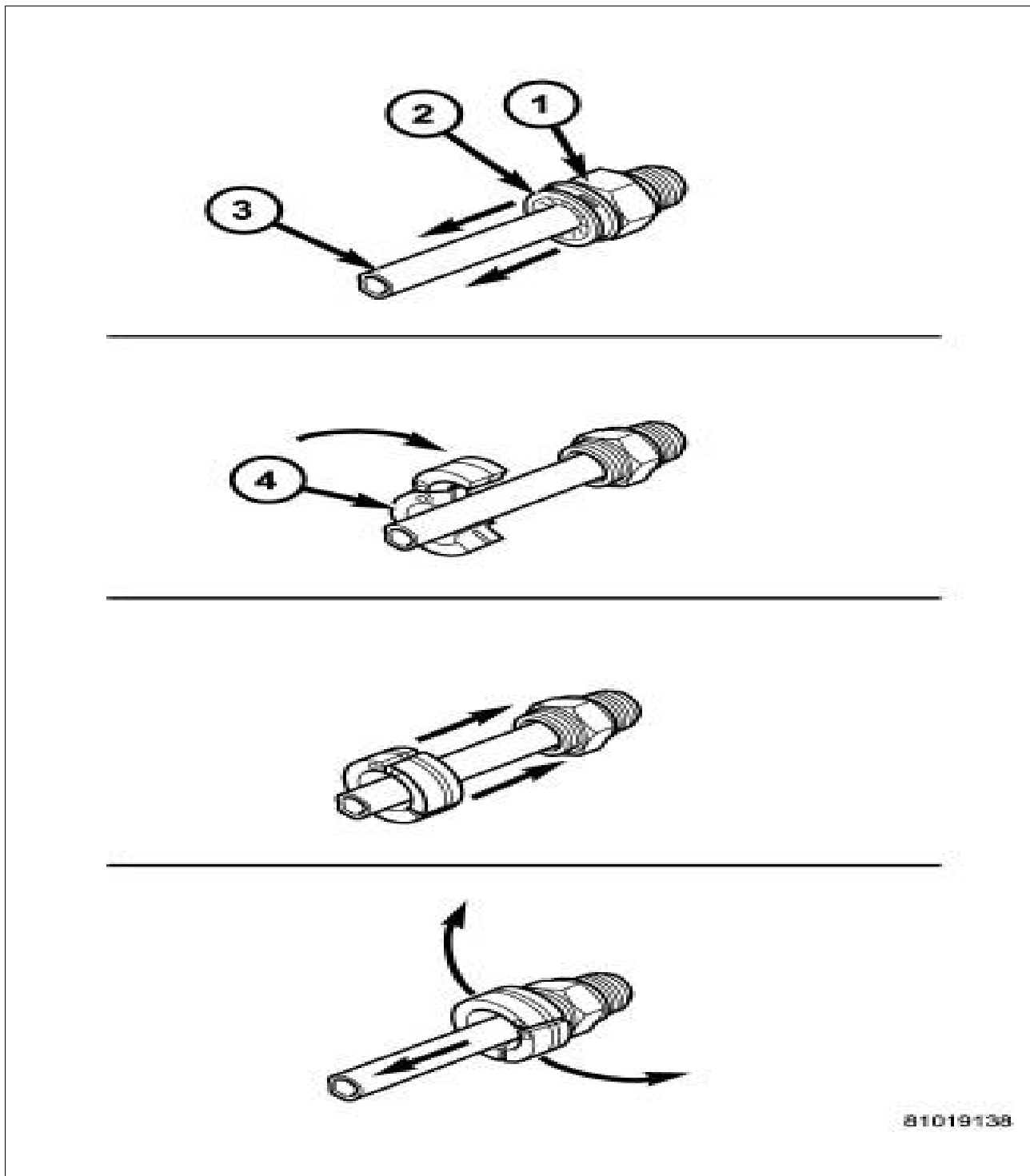
Courtesy of CHRYSLER GROUP, LLC

6. Install the air cleaner inlet tube (1b) and securely tighten the nut (1a).
7. Install the front bumper fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
8. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.
9. Check transmission fluid level and correct as necessary. Refer to FLUID AND FILTER, STANDARD PROCEDURE .

TRANSMISSION > TUBES AND HOSES, TRANSMISSION OIL COOLER > STANDARD PROCEDURE > STANDARD PROCEDURE - TRANSMISSION COOLER LINE QUICK CONNECT FITTING DISASSEMBLY/ASSEMBLY > DISCONNECT

TRANSMISSION END

Fig 1: Oil Cooler Line Quick Connect Fitting - Disassembly



Courtesy of CHRYSLER GROUP, LLC

1 - QUICK CONNECT FITTING

2 - DUST CAP

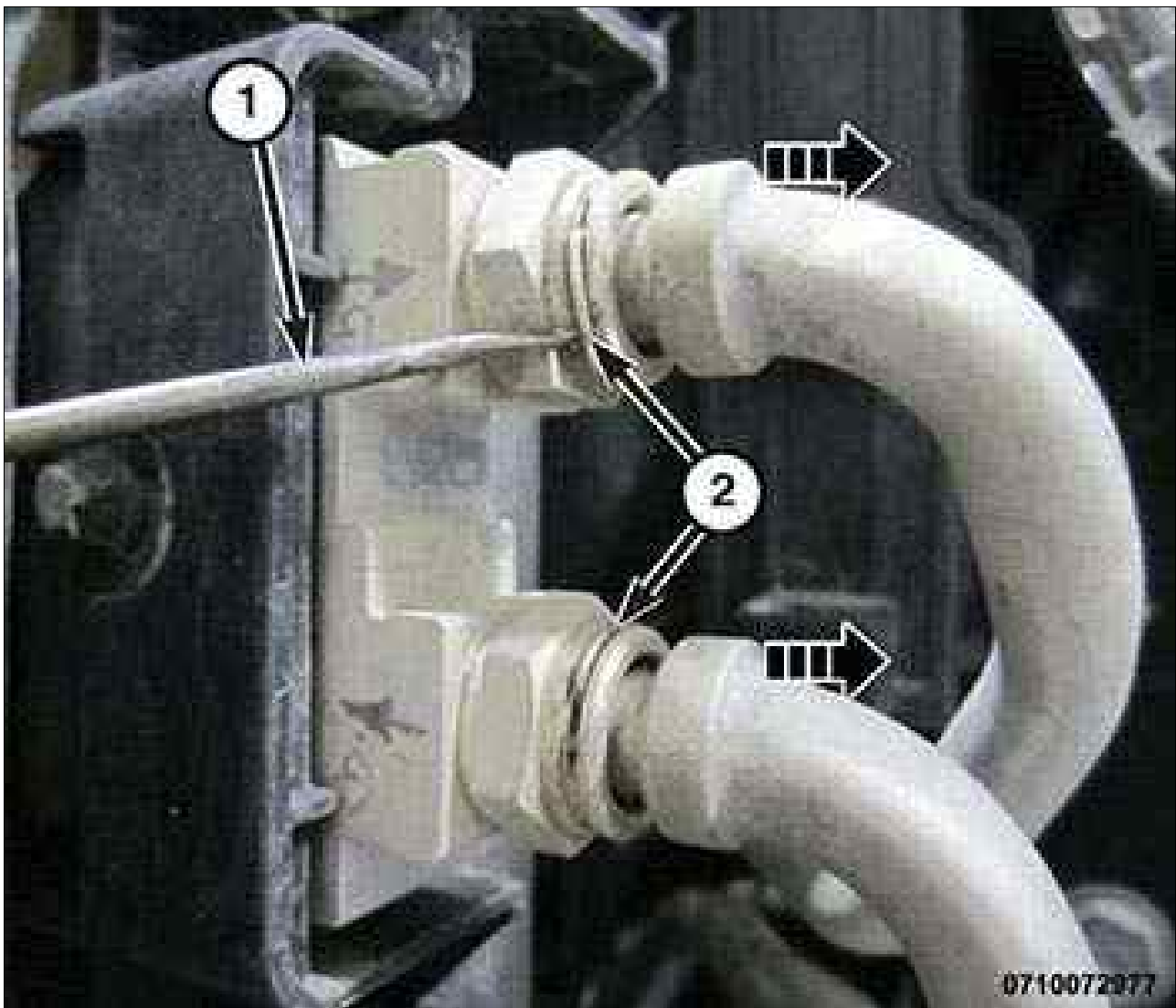
3 - OIL COOLER LINE

4 - SPECIAL TOOL 8875A for 3/8" Line or 9546 for 1/2" Line.

1. Remove dust cap by pulling it straight back off of quick connect fitting
2. Place disconnect Special Tool (special tool #8875A, Disconnect, Transmission Cooler Line) onto a 3/8 inch transmission cooler lines or Special Tool (special tool #9546, Disconnect Tool) onto a 1/2 inch transmission cooler lines with the fingers of the tool facing the quick connect fitting.
3. Slide disconnect tool down the transmission line and engage the fingers of the tool into the retaining clip. When properly engaged in the clip, the tool will fit flush against the quick connect fitting.
4. Rotate the disconnect tool 60° to expand the retaining clip.
5. While holding the disconnect tool against the quick connect fitting, pull back on the transmission cooler line to remove.

TRANSMISSION OIL COOLER END

Fig 2: Removing Spring Clips



Courtesy of CHRYSLER GROUP, LLC

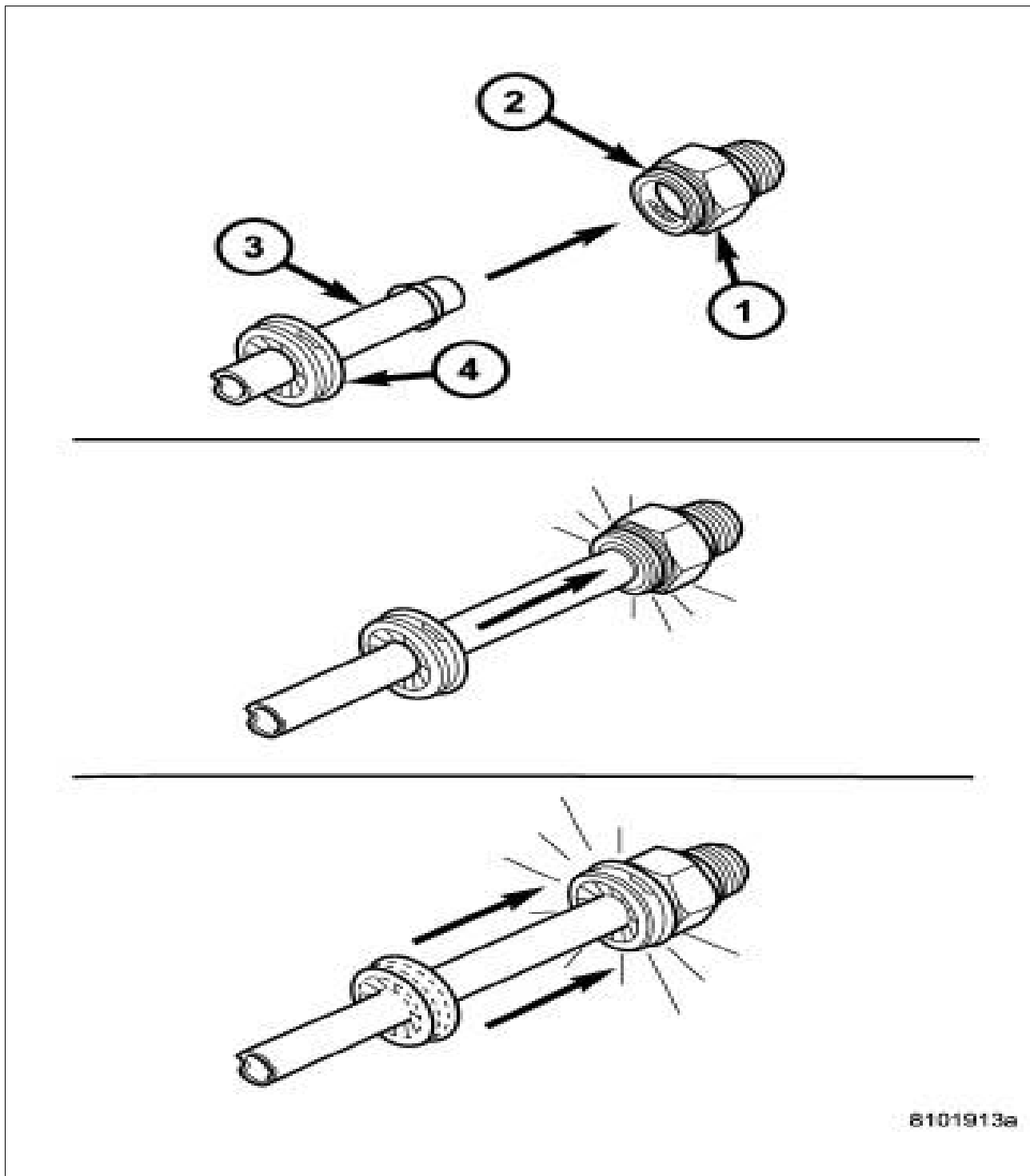
1. Using a suitable tool (1), remove the spring clips (2) from the connectors.

2. Pull the transmission oil cooler lines out from the transmission oil cooler.

**TRANSMISSION > TUBES AND HOSES, TRANSMISSION OIL COOLER > STANDARD
PROCEDURE > STANDARD PROCEDURE - TRANSMISSION COOLER LINE QUICK
CONNECT FITTING DISASSEMBLY/ASSEMBLY > CONNECT**

TRANSMISSION END

Fig 1: Connecting Transmission Cooler Line Quick Connect Fitting



Courtesy of CHRYSLER GROUP, LLC

1 - QUICK CONNECT FITTING

2 - CLIP

3 - OIL COOLER LINE

4 - DUST CAP

1. Align transmission cooler line (3) with quick connect fitting while pushing straight into the fitting.
2. Push in on transmission cooler line until a "click" is heard or felt.
3. Slide dust cap (4) down the transmission cooler line and snap it over the quick connect fitting until it is fully seated and rotates freely. Dust cap will only snap over quick connect fitting when the transmission cooler line is properly installed.

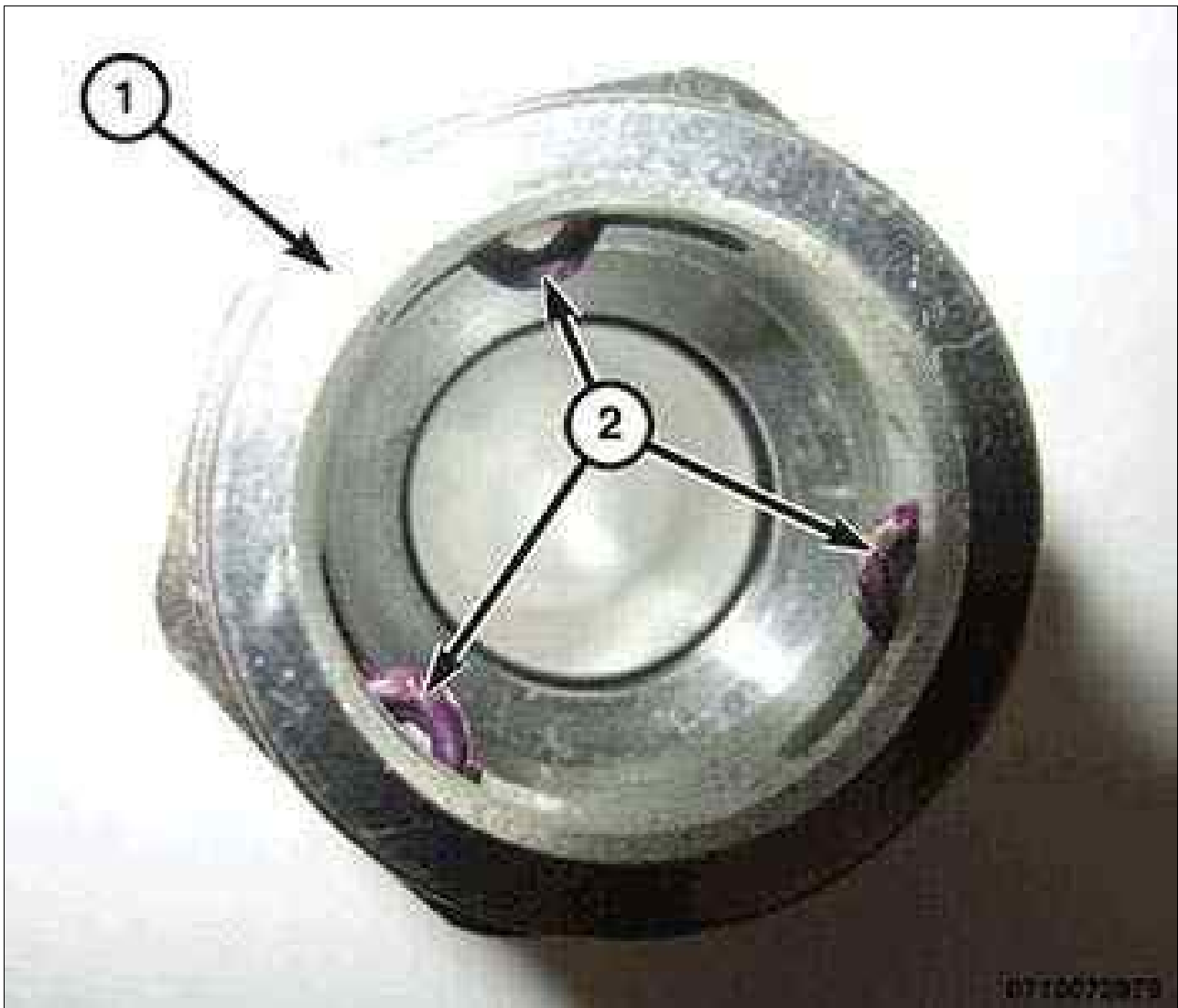


NOTE:

If dust cap will not snap into place, repeat assembly step #2.

TRANSMISSION OIL COOLER END

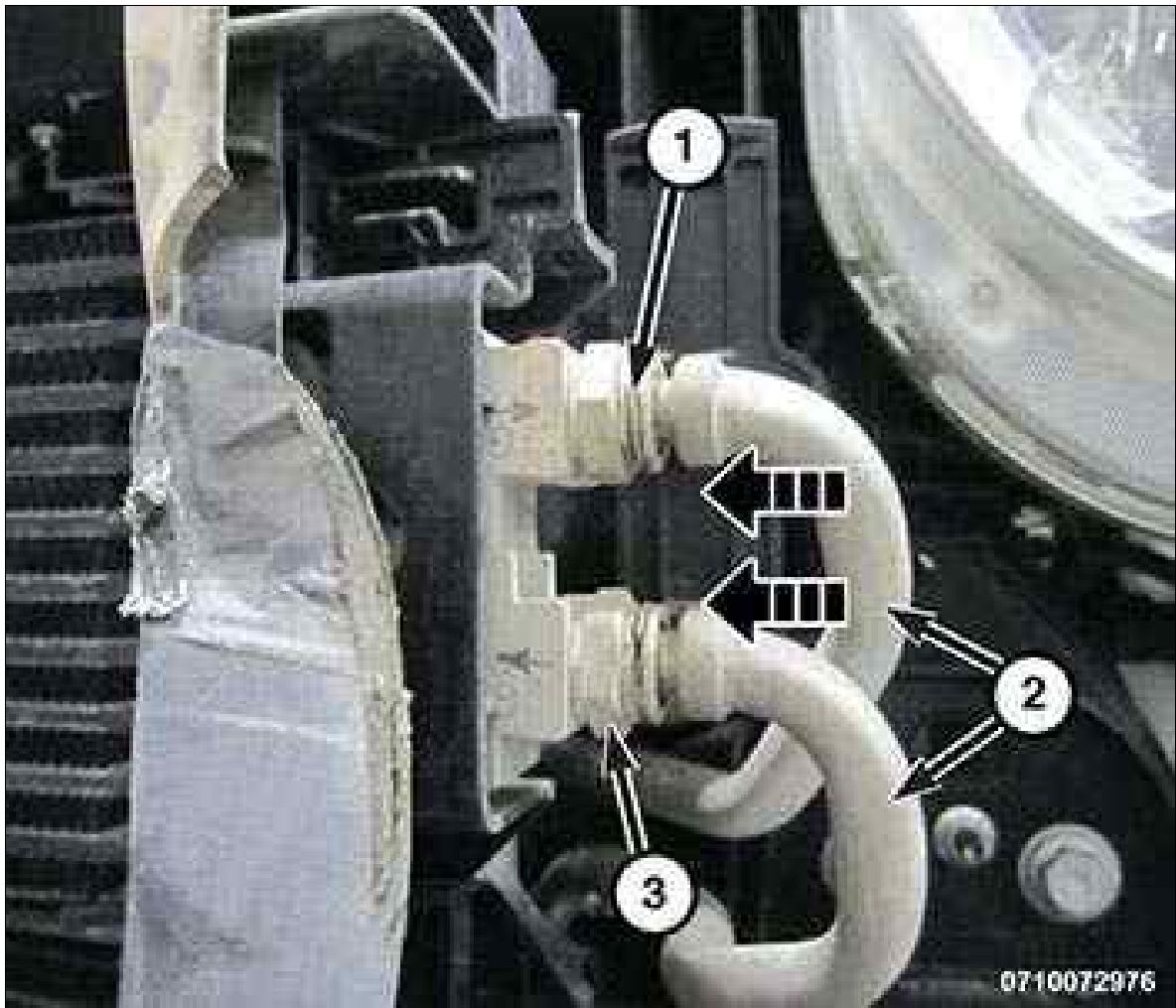
Fig 2: Quick Connect Fitting & Locking Tabs



Courtesy of CHRYSLER GROUP, LLC

1. Position the spring clip in the quick connect fitting (1) so that the three locking Tabs (2) appear as shown in illustration.

Fig 3: Connecting Transmission Oil Cooler Lines



Courtesy of CHRYSLER GROUP, LLC

 NOTE:

Lubricate the end of the transmission cooler oil line with the appropriate fluid to ease installation.

2. Push the transmission oil cooler lines (2) into the fittings (3) until a "click" is heard or felt.
3. Check that the transmission oil cooler line is locked into the fitting by attempting to pull the line out. If the line comes out, inspect the spring clip for correct installation and repeat steps 2 and 3.

TRANSMISSION > TUBES AND HOSES, TRANSMISSION OIL COOLER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

Fig 1: Transmission Oil Cooler Lines & Routing Clip



Courtesy of CHRYSLER GROUP, LLC

2. Release the transmission oil cooler lines (2) from the routing clip (1) located at the radiator fan shroud.
3. Disconnect the transmission oil cooler lines from the transmission oil cooler.
4. Disconnect the transmission oil cooler lines from the transmission. Refer to TUBES AND HOSES, TRANSMISSION OIL COOLER, STANDARD PROCEDURE .
5. Remove the transmission oil cooler lines from the vehicle.

TRANSMISSION > TUBES AND HOSES, TRANSMISSION OIL COOLER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

1. Position transmission cooler lines in vehicle.
2. Install transmission cooler line at transmission fittings. Refer to TUBES AND HOSES, TRANSMISSION OIL COOLER, STANDARD PROCEDURE .
3. Install transmission cooler lines at transmission oil cooler. Refer to TUBES AND HOSES,

TRANSMISSION OIL COOLER, STANDARD PROCEDURE .

Fig 1: Transmission Oil Cooler Lines & Routing Clip



Courtesy of CHRYSLER GROUP, LLC

4. Secure the transmission oil cooler lines (2) to the routing clip (1) at the radiator fan shroud.
5. Install the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
6. Check transmission fluid level. Refer to FLUID AND FILTER, STANDARD PROCEDURE .