

WATER HOSE AND WATER PIPE

REMOVAL AND INSTALLATION

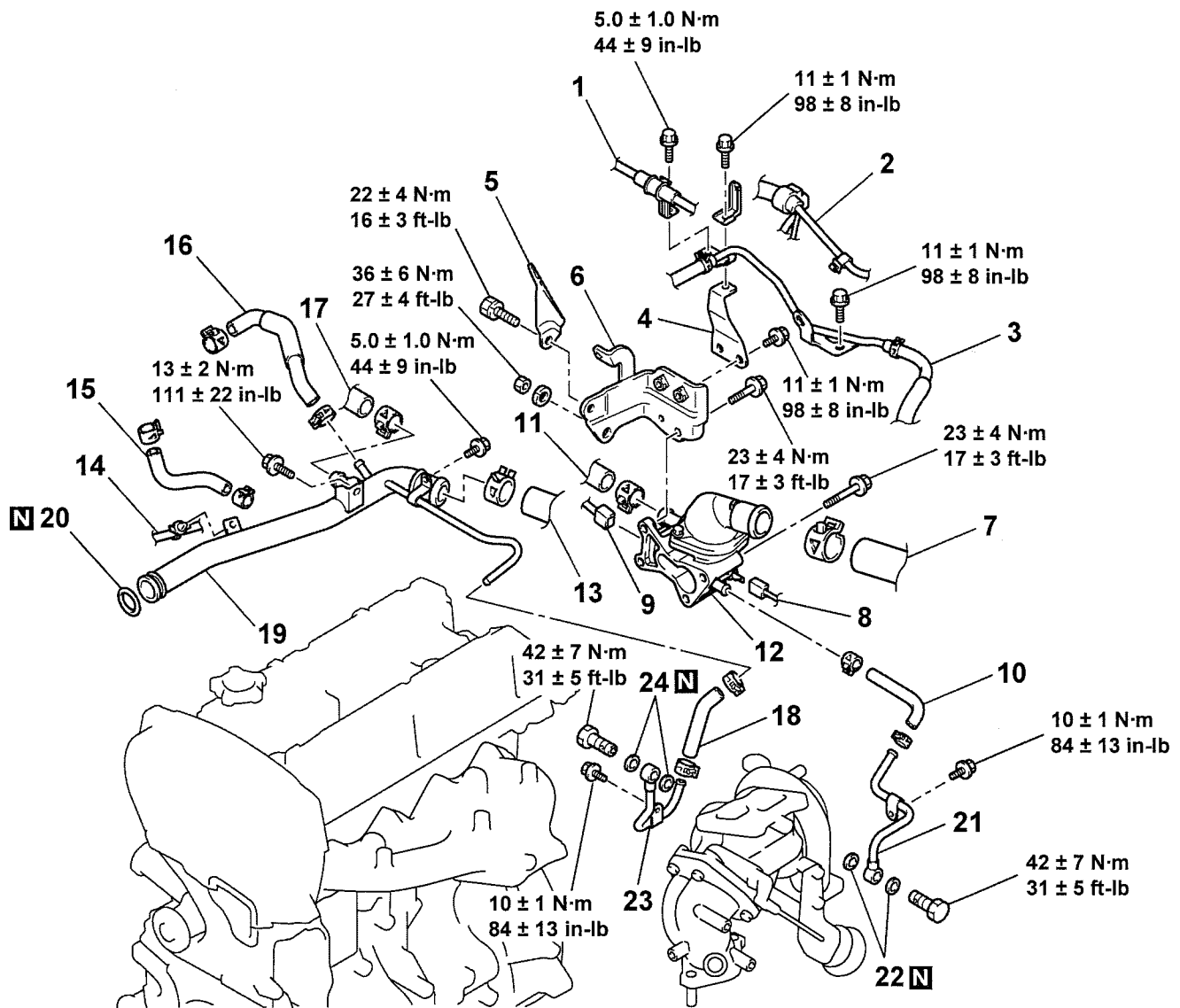
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Pre-removal Operation

- Under Cover Removal (Refer to GROUP 51, Front Bumper P.51-2).
- Engine Coolant Draining (Refer to P.14-18).
- Battery and Battery Tray Removal
- Air Cleaner Assembly Removal (Refer to GROUP 15, Air Cleaner P.15-7).
- Turbocharger Bypass Valve Assembly, Air By-pass Hose, Air Hose E, Air Pipe C and Air Hose D Removal (Refer to GROUP 15, Charge Air Cooler P.15-8).

Post-installation Operation

- Turbocharger Bypass Valve Assembly, Air By-pass Hose, Air Hose E, Air Pipe C and Air Hose D Installation (Refer to GROUP 15, Charge Air Cooler P.15-8).
- Air Cleaner Assembly Installation (Refer to GROUP 15, Air Cleaner P.15-7).
- Battery and Battery Tray Installation
- Engine Coolant Refilling (Refer to P.14-18).
- Under Cover Installation (Refer to GROUP 51, Front Bumper P.51-2).



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REMOVAL STEPS

1. ACCELERATOR CABLE CONNECTION
2. CONTROL WIRING HARNESS CONNECTION

REMOVAL STEPS (Continued)

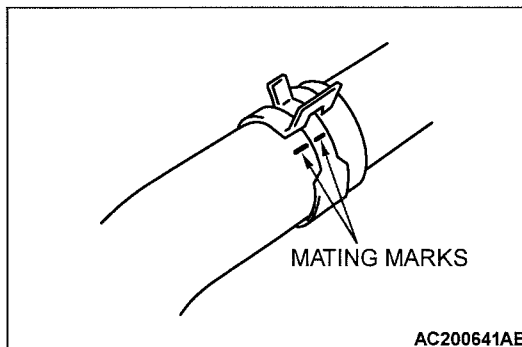
3. VACUUM HOSE AND PIPE ASSEMBLY
4. VACUUM PIPE BRACKET
5. ENGINE HANGER

REMOVAL STEPS (Continued)

6. BRACKET
- <<A>> >>C<< 7. RADIATOR UPPER HOSE CONNECTION
8. ENGINE COOLANT TEMPERATURE GAUGE UNIT CONNECTOR
9. ENGINE COOLANT TEMPERATURE SENSOR CONNECTOR
10. WATER FEED HOSE
11. HEATER HOSE CONNECTION
- >>D<< 12. WATER OUTLET FITTING AND THERMOSTAT CASE ASSEMBLY
- <<A>> >>C<< 13. RADIATOR LOWER HOSE CONNECTION
14. KNOCK SENSOR CONNECTION
15. WATER FEED HOSE
16. WATER RETURN HOSE
17. HEATER HOSE CONNECTION
18. WATER RETURN HOSE
- >>B<< 19. WATER INLET PIPE
- >>A<< 20. O-RING
21. TURBOCHARGER WATER FEED PIPE
22. GASKETS
- TURBOCHARGER AND EXHAUST FITTING ASSEMBLY (REFER TO GROUP 15, EXHAUST MANIFOLD AND TURBOCHARGER P.15-16).
23. TURBOCHARGER WATER RETURN PIPE
24. GASKETS

REMOVAL SERVICE POINT**<<A>> RADIATOR UPPER HOSE/RADIATOR LOWER HOSE DISCONNECTION**

Make mating marks on the radiator hose and the hose clamp. Disconnect the radiator hose.



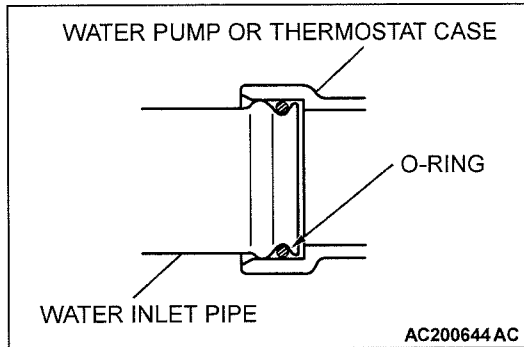
INSTALLATION SERVICE POINTS

>>A<< O-RING INSTALLATION

⚠ CAUTION

Do not let the O-ring get contaminated with grease, such as engine oil.

Fit an O-ring into the groove of the water inlet pipe and apply water to the circumference of the O-ring or the inside of the mounting surface of the pipe for insertion.

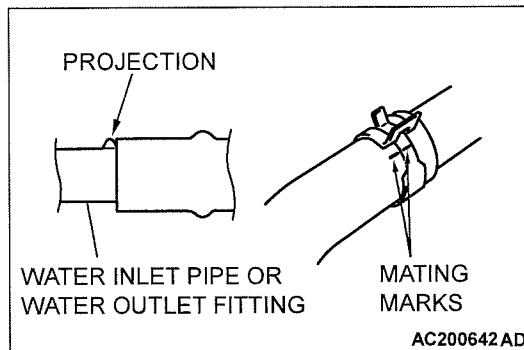


>>B<< WATER INLET PIPE INSTALLATION

After installing the water outlet fitting and thermostat case assembly, tighten the mounting bolt of the water inlet pipe to the specified torque.

>>C<< RADIATOR LOWER HOSE/RADIATOR UPPER HOSE CONNECTION

1. Insert each hose as far as the projection of the water inlet pipe or water outlet fitting.
2. Align the mating marks on the radiator hose and hose clamp, and then connect the radiator hose.



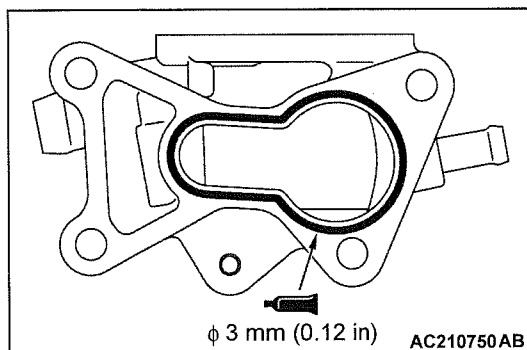
>>D<< WATER OUTLET FITTING AND THERMOSTAT CASE ASSEMBLY INSTALLATION

1. Remove sealant from the thermostat case and cylinder head surfaces.
2. Apply a bead of the sealant to the cylinder head mating surface of the thermostat case as shown.

Specified sealant: 3M™ AAD Part No. 8672, 3M™ AAD Part No. 8679/8678 or equivalent

NOTE: Install the water outlet fitting and thermostat case assembly within 15 minutes after applying liquid gasket.

3. Install the water outlet fitting and thermostat case assembly to the cylinder head.



⚠ CAUTION

Then wait at least one hour. Never start the engine or let engine oil or coolant touch the adhesion surface during that time.

4. Tighten the thermostat case mounting bolts to the specified torque.

Tightening torque: 23 ± 4 N·m (17 ± 3 ft-lb)

INSPECTION

M1141003400252

WATER PIPE AND HOSE CHECK

Check the water pipe and hose for cracks, damage and clogs. Replace them if necessary.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1141005000261

ITEM	SPECIFICATION	
Cylinder block		
Cylinder block drain plug	44 ± 5 N·m (33 ± 3 ft-lb)	
Radiator		
Air Pipe B bolt	12 ± 2 N·m (102 ± 22 in-lb)	
Cooling fan motor bolt	4.5 ± 0.4 N·m (39 ± 4 in-lb)	
Cooling fan nut	3.5 ± 0.4 N·m (31 ± 4 in-lb)	
Cooling fan shroud bolt	4.0 ± 0.4 N·m (35 ± 4 in-lb)	
Reserve tank bolt	5.0 ± 1.0 N·m (44 ± 9 in-lb)	
Reserve tank bracket bolt	5.0 ± 1.0 N·m (44 ± 9 in-lb)	
Reserve tank hose bolt	5.0 ± 1.0 N·m (44 ± 9 in-lb)	
Upper insulator bolt	12 ± 2 N·m (102 ± 22 in-lb)	
Thermostat		
Accelerator cable bolt	5.0 ± 1.0 N·m (44 ± 9 in-lb)	
Control harness bolt	11 ± 1 N·m (98 ± 8 in-lb)	
Vacuum pipe bolt	11 ± 1 N·m (98 ± 8 in-lb)	
Water outlet fitting bolt	10 ± 1 N·m (84 ± 13 in-lb)	
Water hose and water pipe		
Accelerator cable bolt	5.0 ± 1.0 N·m (44 ± 9 in-lb)	
Bracket bolt	36 ± 6 N·m (27 ± 4 ft-lb)	
Control harness bolt	11 ± 1 N·m (98 ± 8 in-lb)	
Engine hanger bolt	22 ± 4 N·m (16 ± 3 ft-lb)	
Turbocharger water feed pipe bolt (bolt, eye)	42 ± 7 N·m (31 ± 5 ft-lb)	
Turbocharger water feed pipe bolt (bolt, flange)	10 ± 1 N·m (84 ± 13 in-lb)	
Turbocharger water return pipe bolt (bolt, eye)	42 ± 7 N·m (31 ± 5 ft-lb)	
Turbocharger water return pipe bolt (bolt, flange)	10 ± 1 N·m (84 ± 13 in-lb)	
Vacuum pipe bolt	11 ± 1 N·m (98 ± 8 in-lb)	
Vacuum pipe bracket bolt	11 ± 1 N·m (98 ± 8 in-lb)	
Water inlet pipe bolt	M6	5.0 ± 1.0 N·m (44 ± 9 in-lb)
	M8	13 ± 2 N·m (111 ± 22 in-lb)
Water outlet fitting and thermostat case bolt	23 ± 4 N·m (17 ± 3 ft-lb)	
Water pump		
Generator brace bolt	22 ± 4 N·m (16 ± 3 ft-lb)	
Water pump and generator brace bolt	23 ± 3 N·m (17 ± 2 ft-lb)	
Water pump bolt	14 ± 1 N·m (120 ± 13 in-lb)	

SERVICE SPECIFICATIONS

M1141000300342

ITEM		STANDARD VALUE	LIMIT
Valve opening pressure of radiator cap kPa (psi)		93 – 123 (14 – 18)	Minimum 83 (12)
Fan control module input voltage V	Ignition switch: "ON"	Battery positive voltage	-
Fan control module output voltage V	A/C switch: "OFF"	1 or less	-
	A/C switch: "ON"	Repeat steps 1) and 2). 1) 8.2 ± 2.6 2) Battery positive voltage ± 2.6	-
Thermostat	Valve opening temperature of thermostat °C (°F)	80 ± 1.5 (176 ± 3)	-
	Full-opening temperature of thermostat °C (°F)	93 (199)	-
	Valve lift mm (in)	9.5 (0.37) or more	-

COOLANT

M1141000400286

ITEM	QUANTITY dm ³ (qt)
Mitsubishi Genuine Coolant or equivalent	6.0 (6.3)

SEALANTS

M1141000500283

ITEM	SPECIFIED SEALANT
Cylinder block drain plug	3M™ AAD Part No. 8731 or equivalent
Thermostat case	3M™ AAD Part No. 8672, 3M™ AAD Part No. 8679/8678 or equivalent
Water outlet fitting	