



# Technical Service Bulletin

SUBJECT:		No: <b>TSB-22-11-001</b>
<b>CHANGE OF INTAKE MANIFOLD BOLT(S) AND TORQUE - SERVICE MANUAL REVISION</b>		DATE: <b>April 2022</b>
		MODEL: <b>See below</b>
<b>CIRCULATE TO:</b>	<input type="checkbox"/> GENERAL MANAGER	<input checked="" type="checkbox"/> PARTS MANAGER
<input checked="" type="checkbox"/> SERVICE ADVISOR	<input checked="" type="checkbox"/> SERVICE MANAGER	<input checked="" type="checkbox"/> TECHNICIAN
	<input checked="" type="checkbox"/> WARRANTY PROCESSOR	<input type="checkbox"/> SALES MANAGER

## PURPOSE

This TSB updates the Engine and Intake Manifold section of the affected Service Manuals and advises of new flange bolts available for use.

Please note the following implementation date and interchangeability of the bolts:

	<b>Previous</b>	<b>New</b>
Type of bolt	Bolt with washer	Flange bolt
Application timing of production	Up to end of March 2021	From early April 2021
Interchangeability between previous and new bolts	When replacing all four bolts, new bolts (Flange Bolt) can be used instead of previous bolts (Bolt with Washer).	

## AFFECTED VEHICLES

- 2014 - 2021 Mirage
- 2017 - 2021 Mirage G4

## AFFECTED SERVICE MANUAL

- 2014 - 2021 Mirage Service Manual, Group 11-Engine
- 2014 - 2021 Mirage Service Manual, Group 15-Intake Manifold Removal and Installation
- 2017 - 2021 Mirage G4 Service Manual, Group 11-Engine
- 2017 - 2021 Mirage G4 Service Manual, Group 15-Intake Manifold Removal and Installation



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Please make the indicated changes to the 2014 - 2021 Mirage and 2017 - 2021 Mirage G4 Service Manuals, Group 11-Engine -> Engine Overhaul -> Torque Specifications.

ENGINE OVERHAUL  
TORQUE SPECIFICATIONS

**TORQUE SPECIFICATIONS**

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Item	Specification
<b>Generator and ignition system</b>	
Crankshaft pulley center bolt	50 N·m (37 ft-lb), +60°, 0 N·m (0 ft-lb), 50 N·m (37 ft-lb) then +60°
Generator brace bolt (M8)	5.0 ± 1.0 N·m (44 ± 8 in-lb)
Generator brace bolt (M10)	38 ± 5 N·m (28 ± 3 ft-lb)
Generator nut (M8)	23 ± 2 N·m (17 ± 1 ft-lb)
Generator nut (M10)	47 ± 5 N·m (35 ± 3 ft-lb)
Ignition coil bolt	9.5 ± 2.5 N·m (84 ± 22 in-lb)
Oil dipstick guide bolt	11 ± 3 N·m (97 ± 26 in-lb)
Spark plug	25 ± 5 N·m (18 ± 3 ft-lb)
Water pump pulley bolt	11 ± 3 N·m (97 ± 26 in-lb)
<b>Fuel and emission parts</b>	
Engine hanger bolt	25 ± 5 N·m (18 ± 3 ft-lb)
Evaporative emission purge solenoid nut	5.5 ± 1.5 N·m (49 ± 13 in-lb)
Fuel rail and fuel injector assembly bolt	14 ± 3 N·m (124 ± 26 in-lb)
Throttle body bolt	9.5 ± 2.5 N·m (84 ± 22 in-lb)
<b>Intake manifold</b>	
Intake manifold bolt	<del>28 ± 2 N·m (24 ± 1 ft-lb)</del>
Intake manifold stay bolt	19 ± 1 N·m (14.0 ± 0.7 ft-lb)
Manifold absolute pressure sensor bolt	5.5 ± 1.5 N·m (49 ± 13 in-lb)
<b>Exhaust manifold</b>	
Exhaust manifold bolt and nut	34 ± 3 N·m (25 ± 2 ft-lb)
Exhaust manifold cover bolt	9.5 ± 2.5 N·m (84 ± 22 in-lb)
Linear air-fuel ratio sensor	44 ± 5 N·m (32 ± 3 ft-lb)
<b>Water hose and pipe</b>	
Engine coolant temperature sensor	30 ± 9 N·m (22 ± 6 ft-lb)
Engine oil pressure switch	10 ± 2 N·m (89 ± 17 in-lb)
Camshaft position sensor bolt	9.5 ± 2.5 N·m (84 ± 22 in-lb)
Crankshaft position sensor bolt	9.5 ± 2.5 N·m (84 ± 22 in-lb)
Knock sensor bolt	20 ± 2 N·m (15 ± 1 ft-lb)
Water inlet fitting bolt	11 ± 3 N·m (97 ± 26 in-lb)
Water pipe bolt	11 ± 3 N·m (97 ± 26 in-lb)
<b>Oil pan and timing chain case</b>	
Cylinder head cover bolt	2.0 ± 0.5 N·m then 7.0 ± 0.5 N·m (18 ± 4 in-lb then 62 ± 4 in-lb)
Oil drain plug	39 ± 5 N·m (29 ± 3 ft-lb)
Oil filter cover bolt	23 ± 6 N·m (17 ± 4 ft-lb)

<New> 28 ± 2 N·m (21 ± 1 ft-lb) <Bolt with the washer>  
22 ± 1 N·m (16.2 ± 0.7 ft-lb) <Flange bolt>

Please make the indicated changes on the next two pages to the 2014 - 2021 Mirage and 2017 - 2021 Mirage G4 Service Manuals, Group 11-Engine -> Engine Overhaul -> Intake Manifold Removal and Installation.

ENGINE OVERHAUL  
INTAKE MANIFOLD

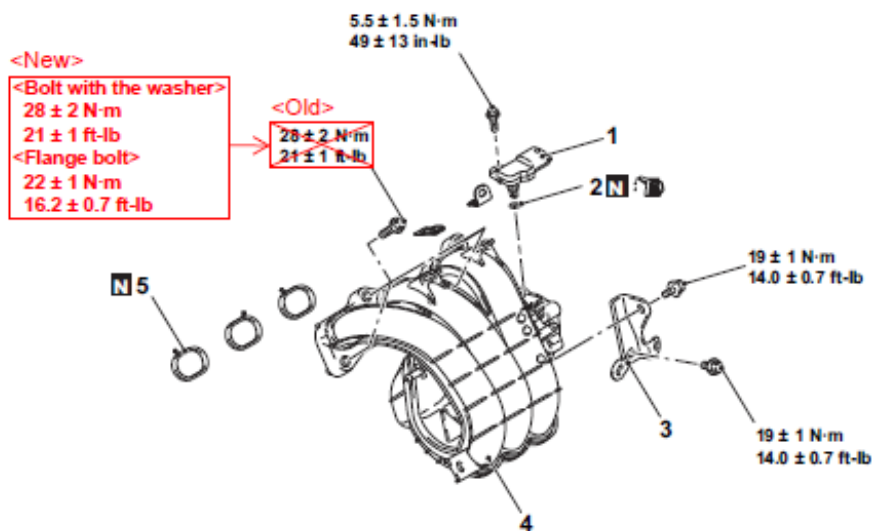
**INTAKE MANIFOLD**

**REMOVAL AND INSTALLATION**

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**CAUTION**

- When removing or installing the manifold absolute pressure sensor, be careful not to apply impact to the sensor.
- Do not reuse the manifold absolute pressure sensor that has been dropped.



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- Removal steps**
1. Manifold absolute pressure sensor
  2. O-ring

- Removal steps (Continued)**
- >>B<< 3. Intake manifold stay
  - >>B<< 4. Intake manifold
  - >>A<< 5. Intake manifold gasket

**INSTALLATION SERVICE POINTS**

**>>A<< INTAKE MANIFOLD GASKET  
INSTALLATION**

Securely insert the gasket in the groove of the intake manifold without causing any torsion or damage to the gasket.

>>B<<INTAKE MANIFOLD/INTAKE MANIFOLD  
STAY INSTALLATION

<Added>

**CAUTION**

For the intake manifold mounting bolts, do not mix bolt with the washer, and flange bolt.

1. Install the intake manifold and intake manifold stay temporarily tighten the mounting bolts.

**CAUTION**

Check that the sealing surfaces of the intake manifold and intake manifold stay contact securely after temporary tightening.

2. Tighten the intake manifold and intake manifold stay bolts to the specified torque.

<New>

$28 \pm 2 \text{ N}\cdot\text{m}$  ( $21 \pm 1 \text{ ft}\cdot\text{lb}$ ) <Bolt with the washer>  
 $22 \pm 1 \text{ N}\cdot\text{m}$  ( $16.2 \pm 0.7 \text{ ft}\cdot\text{lb}$ ) <Flange bolt>

Tightening torque:  $\downarrow$

<Old>

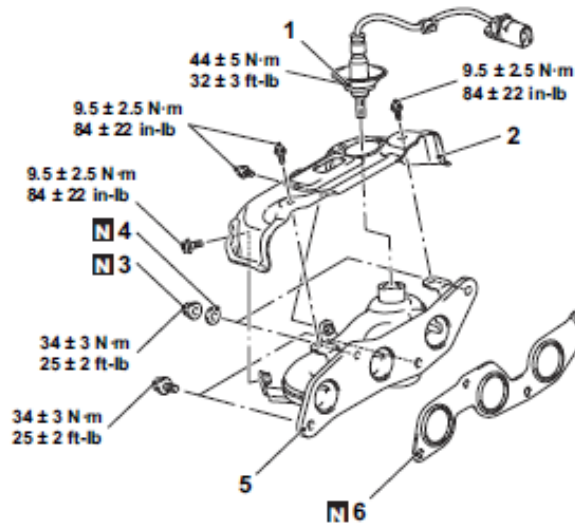
Intake manifold:  $28 \pm 2 \text{ N}\cdot\text{m}$  ( $24 \pm 1 \text{ ft}\cdot\text{lb}$ )

Intake manifold stay:  $19 \pm 1 \text{ N}\cdot\text{m}$  ( $14.0 \pm 0.7 \text{ ft}\cdot\text{lb}$ )

## EXHAUST MANIFOLD

### REMOVAL AND INSTALLATION

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<<A>> >>A<<

- Removal steps**
1. Linear air-fuel ratio sensor
  2. Exhaust manifold cover
  3. Nut

- Removal steps (Continued)**
4. Washer
  5. Exhaust manifold
  6. Exhaust manifold gasket

Please make the indicated changes on the next two pages to the 2014 - 2021 Mirage and 2017 - 2021 Mirage G4 Service Manuals, Group 15-Intake & Exhaust -> Intake Manifold Removal and Installation.

INTAKE AND EXHAUST  
INTAKE MANIFOLD

**INTAKE MANIFOLD**

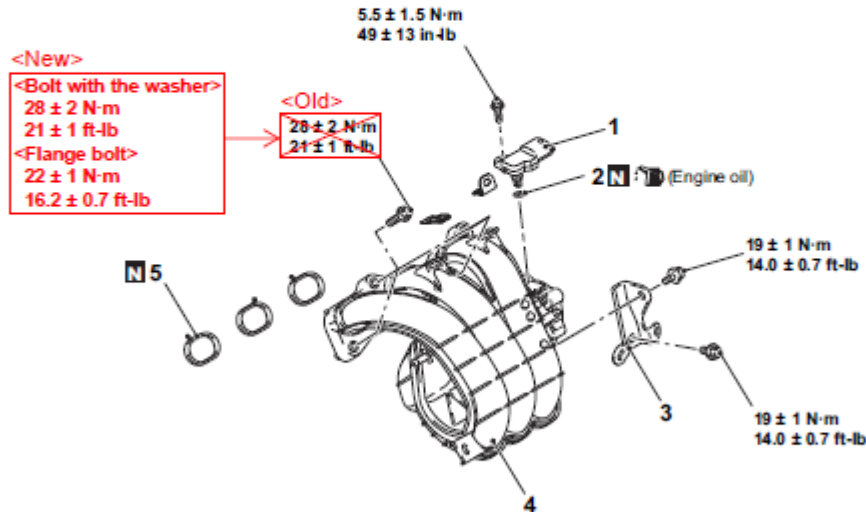
**REMOVAL AND INSTALLATION**

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**CAUTION**

- When removing or installing the manifold absolute pressure sensor, be careful not to apply impact to the sensor.
- Do not reuse the manifold absolute pressure sensor that has been dropped.

Pre-removal Operation	Post-installation Operation
<ul style="list-style-type: none"> <li>• Throttle Body Assembly Removal (Refer to GROUP 13A - Throttle Body Assembly).</li> <li>• Fuel Rail and Fuel Injector Assembly Removal (Refer to GROUP 13A - Injector).</li> </ul>	<ul style="list-style-type: none"> <li>• Fuel Rail and Fuel Injector Assembly Installation (Refer to GROUP 13A - Injector).</li> <li>• Throttle Body Assembly Installation (Refer to GROUP 13A - Throttle Body Assembly).</li> </ul>



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- |   |  |
|---|--|
| <p><b>Removal steps</b></p> <ul style="list-style-type: none"> <li>• Brake booster vacuum hose connection (Refer to GROUP 35A - Master Cylinder Assembly and Brake Booster Assembly).</li> <li>• Purge hose connection (Refer to GROUP 11B - Fuel and Emission Parts).</li> </ul> | <p><b>Removal steps</b></p> <ol style="list-style-type: none"> <li>1. Manifold absolute pressure sensor</li> <li>2. O-ring</li> <li>3. Intake manifold stay</li> <li>4. Intake manifold</li> <li>5. Intake manifold gasket</li> </ol> <p>&gt;&gt;B&lt;&lt;<br/>&gt;&gt;B&lt;&lt;<br/>&gt;&gt;A&lt;&lt;</p> |
|---|--|

INTAKE AND EXHAUST  
INTAKE MANIFOLD

**INSTALLATION SERVICE POINTS**

**>>A<< GASKET INSTALLATION**

Securely insert the gasket in the groove of the intake manifold without causing any torsion or damage to the gasket.

**>>B<<INTAKE MANIFOLD/INTAKE MANIFOLD STAY INSTALLATION**

<Added>

**CAUTION**

For the intake manifold mounting bolts, do not mix bolt with the washer, and flange bolt.

1. Install the intake manifold and intake manifold stay temporarily tighten the mounting bolts.

**CAUTION**

Check that the sealing surfaces of the intake manifold and intake manifold stay contact securely after temporary tightening.

2. Tighten the intake manifold and intake manifold stay bolts to the specified torque.

<New>

$28 \pm 2 \text{ N}\cdot\text{m}$  ( $21 \pm 1 \text{ ft}\cdot\text{lb}$ ) <Bolt with the washer>  
 $22 \pm 1 \text{ N}\cdot\text{m}$  ( $16.2 \pm 0.7 \text{ ft}\cdot\text{lb}$ ) <Flange bolt>

Tightening torque: ↓

<Old>

Intake manifold:  $28 \pm 2 \text{ N}\cdot\text{m}$  ( $21 \pm 1 \text{ ft}\cdot\text{lb}$ )

Intake manifold stay:  $19 \pm 1 \text{ N}\cdot\text{m}$  ( $14.0 \pm 0.7 \text{ ft}\cdot\text{lb}$ )

**INSPECTION**

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Check the following points; replace the part if a problem is found.

**INTAKE MANIFOLD CHECK**

1. Check for damage or cracking of any part.
2. Clogging of the negative pressure (vacuum) outlet port, or clogging of the exhaust gas recirculation passages.
3. Using a straight edge and feeler gauge, check for distortion of the cylinder head installation surface.

Standard value: 0.15 mm (0.006 inch) or less

Limit: 0.20 mm (0.008 inch)