

## GROUP 11A

# ENGINE MECHANICAL

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**GENERAL DESCRIPTION**

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The 4G63 (2.0L) engine is an in-line four-cylinder engine. The cylinder numbers are assigned as 1-2-3-4 from the front of the engine (timing belt side). This engine's firing order is 1, 3, 4, 2.

ITEMS		SPECIFICATIONS	
Type		In-line DOHC	
Number of cylinders		4	
Bore mm (in)		85 (3.35)	
Stroke mm (in)		88 (3.46)	
Engine displacement cm <sup>3</sup> (cu. in)		1,997 (121.9)	
Compression ratio		8.8	
Firing order		1-3-4-2	
Valve timing	Intake valve	Opens (BTDC)	17°
		Closes (ABDC)	59°
	Exhaust valve	Opens (BBDC)	57°
		Closes (ATDC)	15°

**ENGINE DIAGNOSIS**

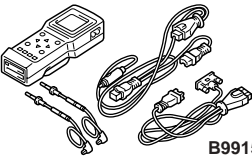
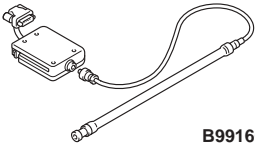
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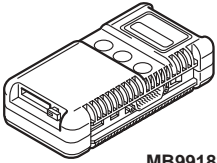
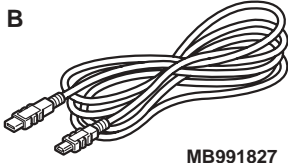
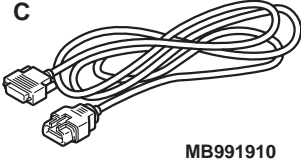
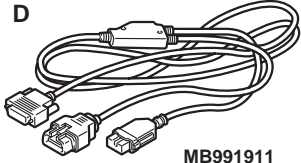
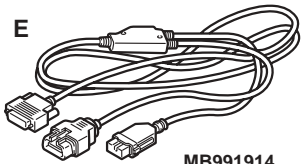
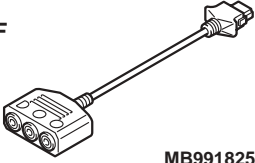
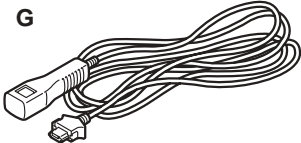
SYMPTOM	PROBABLE CAUSE	REMEDY
Compression is too low	Blown cylinder head gasket	Replace the gasket.
	Worn or damaged piston rings	Replace the rings.
	Worn piston or cylinder	Repair or replace the piston and/or the cylinder block.
	Worn or damaged valve seat	Repair or replace the valve and/or the seat ring.
	Worn or damaged valve guide	Replace the valve guide.
Drop in oil pressure	Engine oil level is too low	Check the engine oil level.
	Malfunction of oil pressure switch	Replace the oil pressure switch.
	Clogged oil filter	Install a new filter.
	Worn oil pump gears or cover	Replace the gears and/or the cover.
	Thin or diluted engine oil	Change the engine oil. Be sure to use the correct viscosity.
	Stuck (open) oil relief valve	Repair the relief valve.
	Excessive bearing clearance	Replace the bearings.
Oil pressure too high	Stuck (closed) oil relief valve	Repair the relief valve.

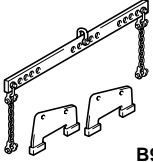
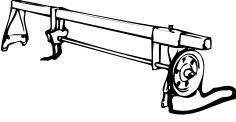
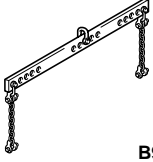
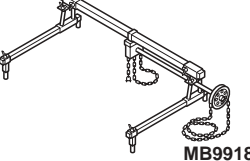
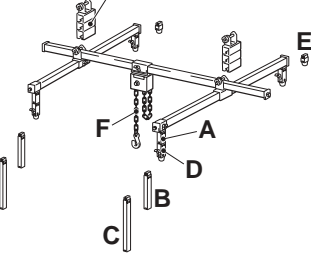
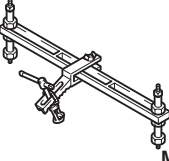
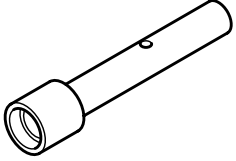
<b>SYMPTOM</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
Noisy valves	Malfunction of lash adjuster (including entry of air into high pressure chamber)	Check the lash adjuster.
	Thin or diluted engine oil (low oil pressure)	Change the engine oil. Be sure to use the correct viscosity.
	Worn or damaged valve stem or valve guide	Replace the valve and/or the guide.
Connecting rod noise/main bearing noise	Insufficient oil supply	Check the engine oil level.
	Low oil pressure	Refer to oil pressure drop symptoms above.
	Thin or diluted engine oil	Change the engine oil. Be sure to use the correct viscosity.
	Excessive bearing clearance	Replace the bearings.
Noisy timing belt	Incorrect belt tension	Adjust the belt tension and/or replace the timing belt.
Excessive engine rolling and vibration	Loose engine roll stopper (Front, Rear) Loose transaxle mount bracket Loose engine mount bracket Loose center member	Retighten.
	Broken transaxle mount insulator Broken engine mount insulator Broken engine roll stopper insulator	Replace.

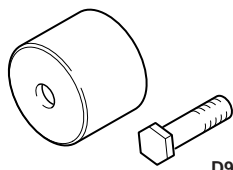
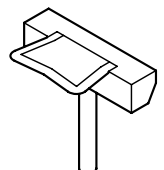
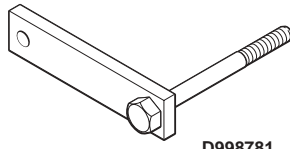
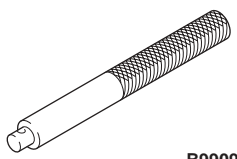
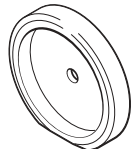
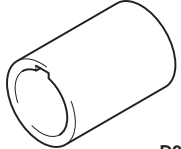
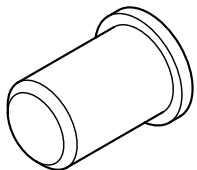
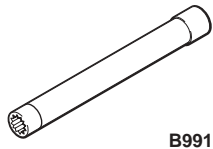
## SPECIAL TOOLS

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<b>TOOL</b>	<b>TOOL NUMBER AND NAME</b>	<b>SUPERSESSION</b>	<b>APPLICATION</b>
 B991502	MB991502 Scan tool (MUT-II)	MB991496-OD	<ul style="list-style-type: none"> <li>• Drive belt tension check</li> <li>• Ignition timing check</li> <li>• Idle speed check</li> </ul>
 B991668	MB991668 Belt tension meter set	Tool not available	Drive belt tension check (used together with scan tool)

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
<p>A</p>  <p>MB991824</p> <p>B</p>  <p>MB991827</p> <p>C</p>  <p>MB991910</p> <p>D</p>  <p>MB991911</p> <p>E</p>  <p>MB991914</p> <p>F</p>  <p>MB991825</p> <p>G</p>  <p>MB991826 MB991958</p>	<p>MB991958 Scan tool (MUT-III sub assembly) A: MB991824 Vehicle communication interface (V.C.I.) B: MB991827 MUT-III USB cable C: MB991910 MUT-III main harness A (Vehicles with CAN communication system) D: MB991911 MUT-III main harness B (Vehicles without CAN communication system) E: MB991914 MUT-III main harness C (for Chrysler models only) F: MB991825 MUT-III adapter Harness G: MB991826 MUT-III trigger harness</p>	<p>–</p>	<ul style="list-style-type: none"> <li>• Drive belt tension check</li> <li>• Ignition timing check</li> <li>• Idle speed check</li> </ul>

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 <p align="center">B991453</p>	MB991453 Engine hanger assembly	MZ203827-01	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
 <p align="center">MZ203827</p>	GENERAL SERVICE TOOL MZ203827 Engine lifter	MZ203827-01	<i>NOTE: Special tool MB991454 is a part of engine hanger attachment set MB991453.</i>
 <p align="center">B991454</p>	MB991454 Engine hanger balancer	MZ203827-01	
 <p align="center">MB991895</p>	MB991895 Engine hanger	-	
<p>SLIDE BRACKET (HI)</p>  <p align="center">B991928</p>	MB991928 Engine hanger A: MB991929 Joint (50) × 2 B: MB991930 Joint (90) × 2 C: MB991931 Joint (140) × 2 D: MB991932 Foot (standard) × 4 E: MB991933 Foot (short) × 2 F: MB991934 Chain and hook assembly	-	
 <p align="center">MD998772</p>	MD998772 Valve spring compressor	General service tool	Compressing valve spring
	MD998737 Valve stem seal installer	MD998737-01	Valve stem seal installation

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 D998713	MD998713 Camshaft oil seal installer	MD998713-01	Camshaft oil seal installation
 D998727	MD998727 Oil pan remover	MD998727-01	Oil pan removal
 D998781	MD998781 Flywheel stopper	General service tool	Supporting the flywheel
 B990938	MB990938 Installer bar	MB990938-01	Crankshaft rear oil seal installation
 D998776	MD998776 Crankshaft rear oil seal installer	MD998776-01	
 D998285	MD998285 Crankshaft front oil seal guide	MD998285-01	Crankshaft front oil seal installation
 D998375	MD998375 Crankshaft front oil seal installer	MD998375-01	
 B991654	MB991654 Cylinder head bolt wrench (12)	General service tool	Removal and installation of cylinder head bolt