Component Procedures: Cylinder Block Assembly

Table of Contents

Component Procedures: Cylinder Block Assembly

Parts and Labor (itype_189)

Parts

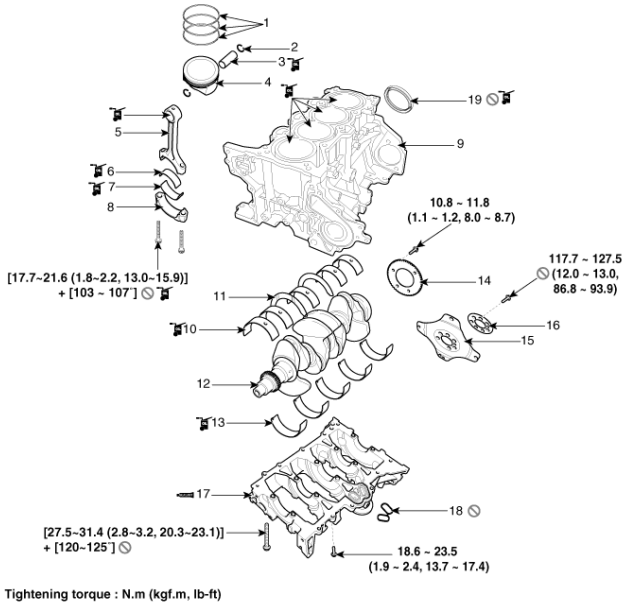
Qualifier	Part #	Name	Price	Note
Pistons, Rings & Bearings > ?	235102E460	22 - Korea Built	139.16	
Pistons, Rings & Bearings > ?	235102E410	22 - Us Built	139.16	
Pistons, Rings & Bearings > ?	230602E005	23 - Standard A (blue)	27.21	One Standard Upper & Lower?
Pistons, Rings & Bearings > ?	230602E015	23 - Standard B (black)	27.40	One Standard Upper & Lower?
Pistons, Rings & Bearings > ?	230602E025	23 - Standard C (white)	26.66	One Standard Upper & Lower?
Pistons, Rings & Bearings > ?	230602E035	23 - Standard D (green)	26.94	One Standard Upper & Lower?
Pistons, Rings & Bearings > ?	230602E045	23 - Standard E (pink)	26.94	One Standard Upper & Lower?
Pistons, Rings & Bearings > ?	230412E801	21 - Standard A	46.68	
Pistons, Rings & Bearings > ?	230412E811	21 - Standard B	46.68	
Pistons, Rings & Bearings > ?	230412E821	21 - Standard C	46.68	
Pistons, Rings & Bearings > ?	230402E101	20 - Korea Build	164.82	Includes Standard Rings Fo?
Pistons, Rings & Bearings > ?	230402E601	20 - Us Built	147.69	Includes Standard Rings Fo?
Crankshaft & Bearings > Cover	214142E021	29 - Cover	32.55	
Crankshaft & Bearings > Cran?	6D0562EU00	25 - Korea Built	844.63	
Crankshaft & Bearings > Cran?	231102E810	25 - Us Built	1375.50	
Crankshaft & Bearings > Main?	210202E001	24 - Standard A (blue)	24.94	Includes One Standard Uppe?
Crankshaft & Bearings > Main?	210202E011	24 - Standard B (black)	24.94	Includes One Standard Uppe?
Crankshaft & Bearings > Main?	210202E021	24 - Standard C (no Co?	24.94	Includes One Standard Uppe?
Crankshaft & Bearings > Main?	210202E031	24 - Standard D (green)	23.37	Includes One Standard Uppe?
Crankshaft & Bearings > Main?	210202E041	24 - Standard E (yello?	24.94	Includes One Standard Uppe?
Crankshaft & Bearings > Rear?	214432E110	28 - Rear Main Seal	35.58	
Crankshaft & Bearings > Thru?	210302E000	24 - Thrust Bearing	25.65	
Crankshaft & Bearings > Vibr?	231242E000	26 - Korea Built	158.60	
Crankshaft & Bearings > Vibr?	231242E502	26 - Us Built	158.60	
Engine > Cylinder Block	51ZN32EX00	Korea Built	1361.74	
Engine > Cylinder Block > Us?	51ZN32EX00	Auto Trans	1361.74	
Engine > Cylinder Block > Us?	211032EK00	Manual Trans	2047.27	

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Remove & Replace	Cooling System > Block Heater, R&R	B	0.5	0.0
Remove & Replace	Cooling System > Expansion Plug, R&R > One	B	0.5	0.0
Remove & Replace	Cooling System > Expansion Plug, R&R > Each A?	B	0.4	0.0
Remove & Replace	Crankshaft & Bearings > Crankshaft, R&R	A	15.8	0.0
Remove & Replace	Crankshaft & Bearings > Main & Rod Bearings, ?	A	15.8	0.0
Remove & Replace	Crankshaft & Bearings > Main Bearings, R&R	A	15.4	0.0
Remove & Replace	Crankshaft & Bearings > Pulley, R&R	B	1.3	0.0
Remove & Replace	Crankshaft & Bearings > Rear Main Seal, R&R	B	0.5	0.0
Remove & Replace	Engine > Lower Crankcase Seal, R&R	A	12.6	0.0
Remove & Replace	Pistons, Rings & Bearings > Connecting Rod Be?	A	2.3	0.0
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?	A	17.0	0.0
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.1	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.2	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.1	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.5	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?	A	0.3	0.0
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.1	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.2	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.1	
Remove & Replace	Pistons, Rings & Bearings > Piston Rings, R&R?		0.5	

Cylinder Block - Components and Components Location (Article 45349)

- Components



1. Piston ring 2. Snap ring 3. Piston pin 4. Piston 5. Connecting rod 6. Connecting rod upper bearing 7. Connecting rod lower bearing 8. Connecting rod bearing cap 9. Cylinder block 10. Crankshaft upper bearing 11. Crankshaft thrust bearing 12. Crankshaft 13. Crankshaft lower bearing 14. Crankshaft position sensor (CKPS) wheel 15. Drive plate 16. Adapter plate 17. Lower crankcase 18. Gasket 19. Rear oil seal

Cylinder Block - Repair Procedures (Article 45360)

- Disassembly

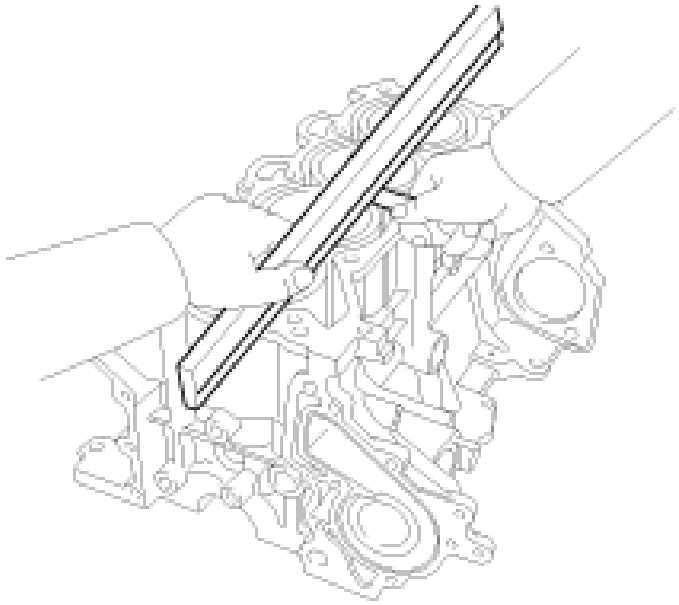
Use fender covers to avoid damaging painted surfaces. To avoid damaging the cylinder head , wait until the engine coolant temperature drops below normal temperature (20°C [68°F]) before removing it. When handling a metal gasket, take care not to fold the gasket or damage the contact surface of the gasket. To avoid damage, unplug the wiring connectors carefully while holding the connector portion.

- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the cylinder head , wait until the engine coolant temperature drops below normal temperature (20°C [68°F]) before removing it.
- When handling a metal gasket, take care not to fold the gasket or damage the contact surface of the gasket.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.

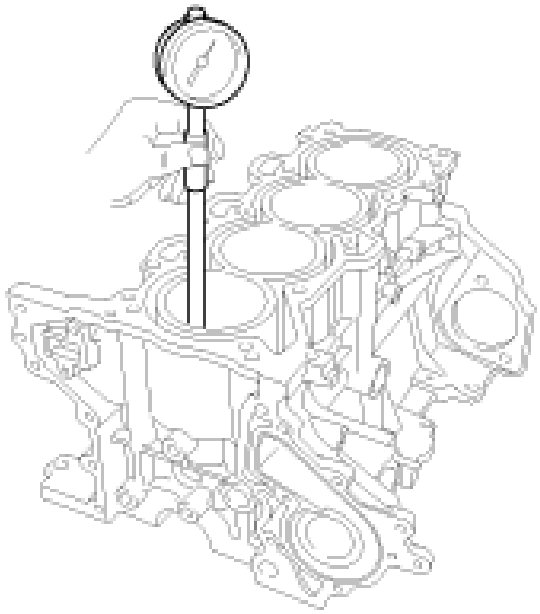
Mark all wiring and hoses to avoid misconnection. Turn the crankshaft pulley so that the No.1 piston isat TDC (Top dead center).

Information

- Mark all wiring and hoses to avoid misconnection.
- Turn the crankshaft pulley so that the No.1 piston isat TDC (Top dead center).
- Remove the engine assembly from the vehicle. (Refer to Engine and Transaxle Assembly - "Engine and Transaxle Assembly")
- Remove the transaxle assembly from the engine assembly. Automatic Transaxle (Refer to Automatic Transaxle System - "Automatic Transaxle")
- Remove the drive plate. (Refer to Cylinder Block - "Drive Plate")
- Remove the rear oil seal . (Refer to Cylinder Block - "Rear Oil Seal")
- Install the engine to engine stand for disassembly.
- Remove the timing chain . (Refer to Timing System - "Timing Chain")
- Remove the water pump assembly. (Refer to Cooling System - "Water Pump")
- Remove the water inlet fitting and the thermostat assembly. (Refer to Cooling System - "Electric Thermostat (ECT)")
- Remove the intake manifold . (Refer to Intake and Exhaust System - "Intake Manifold")
- Remove the A/C compressor. (Refer to Heating, Ventilation Air conditioning - "Compressor")
- Remove the exhaust manifold . (Refer to Intake and Exhaust System - "Exhaust Manifold")
- Remove the cylinder head assembly . (Refer to Cylinder Head Assembly - "Cylinder Head")
- Remove the oil filter . (Refer to Lubrication System - "Engine Oil")
- Remove the oil screen. (Refer to Lubrication System - "Oil Pan")
- Remove the piston and connecting rod assemblies. (Refer to Cylinder Block - "Piston and Connecting Rod")
- Remove the crankshaft . (Refer to Cylinder Block - "Crankshaft")
- Remove the knock sensor. (Refer to Engine Control/Fuel System - "Knock Sensor (KS)")
- Remove the crankshaft position sensor (CKPS). (Refer to Engine Control/Fuel System - "Crankshaft Position Sensor (CKPS)")
- Remove the oil pressure switch . (Refer to Lubrication System - "Oil Pressure Switch")
- Inspection
- Remove gasket material. Using a gasket scraper, remove all the gasket material from the top surface of the cylinder block .
- Clean cylinder block Using a soft brush and solvent, thoroughly clean the cylinder block.
- Inspect top surface of cylinder block for flatness. Using a precision straight edge and feeler gauge, measure the surface contacting the cylinder head gasket for warpage. Flatness of cylinder block gasket surface Standard : Less than 0.05 mm (0.0020 in.) for total area Less than 0.02 mm (0.0008 in.) for a section of 100 mm (3.9370 in.) x 100 mm (3.9370 in.)



- Inspect the cylinder bore Visually check the cylinder for vertical scratches. If deep scratches are present, replace the cylinder block.
- Inspect the cylinder bore diameter. Using a cylinder bore gauge, measure the cylinder bore diameter at position in the thrust and axial direction. Cylinder bore diameter : 81.00 - 81.03 mm (3.1890 - 3.1902 in.) Measure position points (from the top of the cylinder block) : 10mm (0.3937in.) / 71mm (2.7953in.) / 131.5mm (5.1772in.)



Measure position points (from the top of the cylinder block) : 10mm (0.3937in.) / 71mm (2.7953in.) / 131.5mm (5.1772in.)
- Measure position points (from the top of the cylinder block) : 10mm (0.3937in.) / 71mm (2.7953in.) / 131.5mm (5.1772in.)
- Reassembly
- Assemble the other parts in the reverse order of disassembly.

In case the cylinder block is replaced with a new one, select the proper crankshaft main bearing and the piston according to the crankshaft journal bore mark and the cylinder bore mark on the cylinder block. Crankshaft main bearing selection (Refer to Cylinder Block - "Crankshaft") Piston selection (Refer to Cylinder Block - "Piston and Connecting Rod")
- In case the cylinder block is replaced with a new one, select the proper crankshaft main bearing and the piston according to the crankshaft journal bore mark and the cylinder bore mark on the cylinder block.

- Crankshaft main bearing selection (Refer to Cylinder Block - "Crankshaft")
- Piston selection (Refer to Cylinder Block - "Piston and Connecting Rod")

All New Technical Service Bulletins (itype_432)

Tsbs
- BEARING CLEARANCE TEST SERVICE PROCEDURE (25-EM-006H, 2025/07/29)

All Technical Service Bulletins (itype_100)

Tsbs
- BEARING CLEARANCE TEST SERVICE PROCEDURE (25-EM-006H, 2025/07/29)