

SERVICE REPAIR

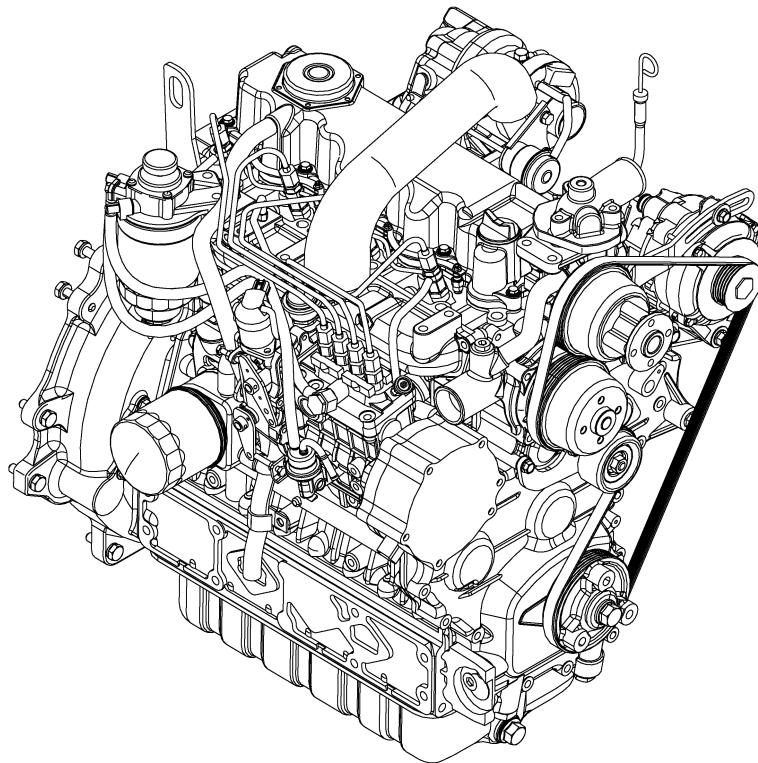
MANUAL

Hyster S005 (H80FT, H90FT, H100FT, H110FT,
H120FT) Forklift Service Repair Manual

HYSTER

KUBOTA DIESEL 3.6L ENGINE

H4.0FT5, H4.0FT6, H4.5FTS5, H4.5FT6,
H5.0-5.5FT (H80-120FT) [R005, S005, U005];
H6.0-7.0FT (H135-155FT) [K006, L006]



HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Hyster® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the Operating Manual or the Periodic Maintenance section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use HYSTER APPROVED parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the WARNING and CAUTION notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the **WARNING** symbol and word are on orange background. The **CAUTION** symbol and word are on yellow background.

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This section is for the following models:

H4.0FT5, H4.0FT6, H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) [R005, S005,
U005];
H6.0-7.0FT (H135-155FT) [K006, L006]

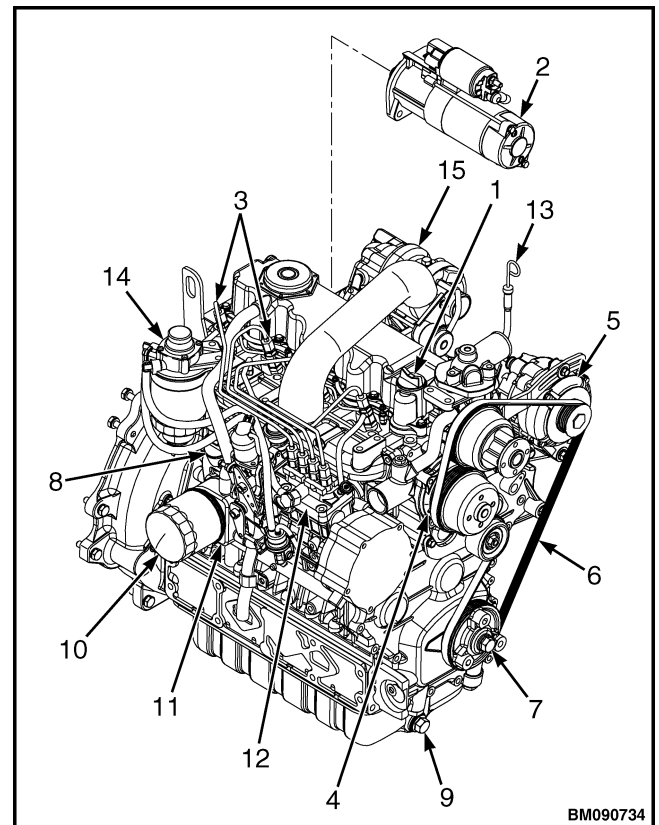
General

This section has the repair instructions for the Kubota 3.6L diesel engine.

ENGINE IDENTIFICATION

Major Engine Component Identification

Figure 1 shows where the major engine components are located.



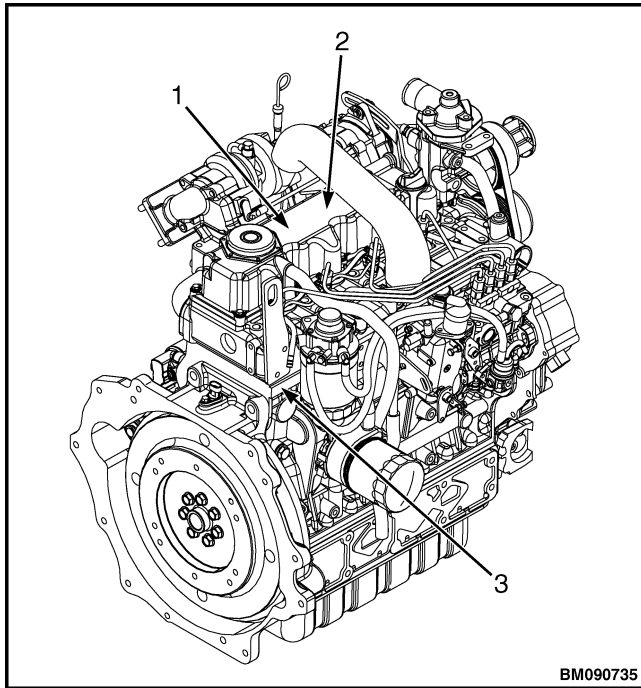
1. TOP FILLER PORT (ENGINE OIL)
2. STARTER MOTOR
3. FUEL INJECTORS/FUEL LINES
4. WATER PUMP
5. ALTERNATOR
6. SERPENTINE BELT
7. CRANKSHAFT PULLEY
8. SIDE FILLER PORT (ENGINE OIL)
9. DRAIN PLUG
10. ENGINE OIL FILTER
11. ENGINE OIL COOLER
12. FUEL INJECTION PUMP
13. DIPSTICK (ENGINE OIL)
14. FUEL/WATER SEPARATOR
15. TURBO CHARGER

Figure 1. Major Engine Components

Location of Labels

The typical location of the emission control information label is shown in Figure 2.

The typical location of the engine nameplate is shown in Figure 2. The emissions exempt label is shown in Figure 3.



- 1. ENGINE NAMEPLATE
- 2. EMISSION CONTROL INFORMATION LABEL
- 3. ENGINE SERIAL NUMBER

Figure 2. Typical Location of Engine Labels



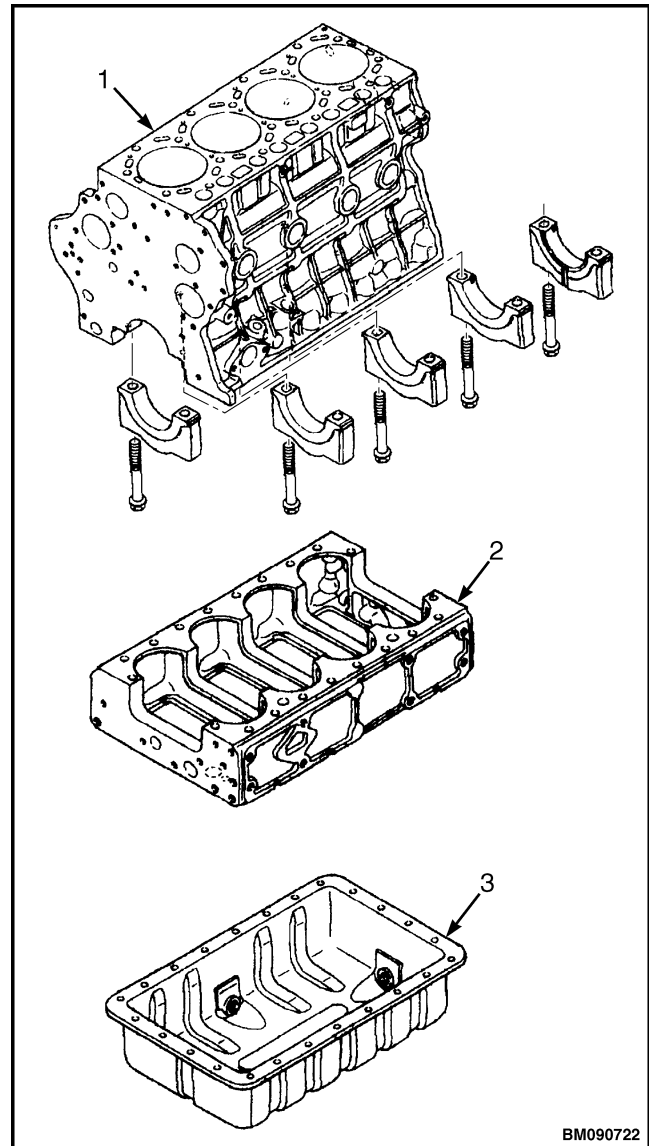
Figure 3. Emissions Exempt Label

CRANKCASE DESCRIPTION

The Kubota diesel engine utilizes a split crankcase to produce greater durability and operate more quietly. The crankcase is split into two parts,

crankcase 1, which houses combustion components and crankcase 2, which completes crankcase 1 and acts as noise reduction baffle. See Figure 4.

The Kubota Diesel engine utilizes a hanger type crankshaft support which allows for easy disassembly/assembly and a linerless type piston cylinder which allows for good cooling performance and excellent resistance to wear. See Figure 4.



- 1. CRANKCASE 1
- 2. CRANKCASE 2
- 3. OIL PAN

Figure 4. Kubota Diesel Crankcase Components

Engine Removal and Installation

The procedures to remove and install engine are not included in this section. For procedures refer to

Frame 0100SRM1243 for lift truck models

- H4.0FT5, H4.0FT6, H4.5FTS5, H4.5FT6, H5.0FT, H5.5FT (H80-120FT) (R005, S005)

Frame 0100SRM1581 for lift truck models

- H6.0-7.0FT (H135-155FT) (K006)

Frame 0100SRM1891 for lift truck models

- H4.0FT5, H4.0FT6, H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (U005)

Frame 0100SRM1948 for lift truck models

- H6.0-7.0FT (H135-155FT) (L006)

Cylinder Head Assembly Repair

VALVE COVERS AND FUEL INJECTORS

Remove

1. Disconnect negative battery cable at battery.

NOTE: Mark connectors/wires during removal to aid in installation.

2. Unclip engine wiring harness and move to side for better access.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

3. Disconnect wiring connector from glow plug strip.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

4. Loosen two clamps at air filter and turbo charger for air intake hose. Remove air intake hose.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

5. Remove clamp and breather tube from valve cover.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

6. Remove turbo outlet hose from turbo charger and air inlet elbows.

See Figure 5 for lift truck models

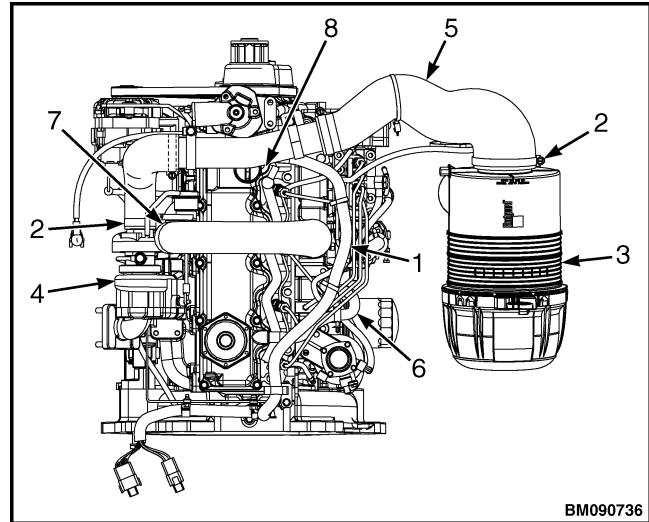
- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

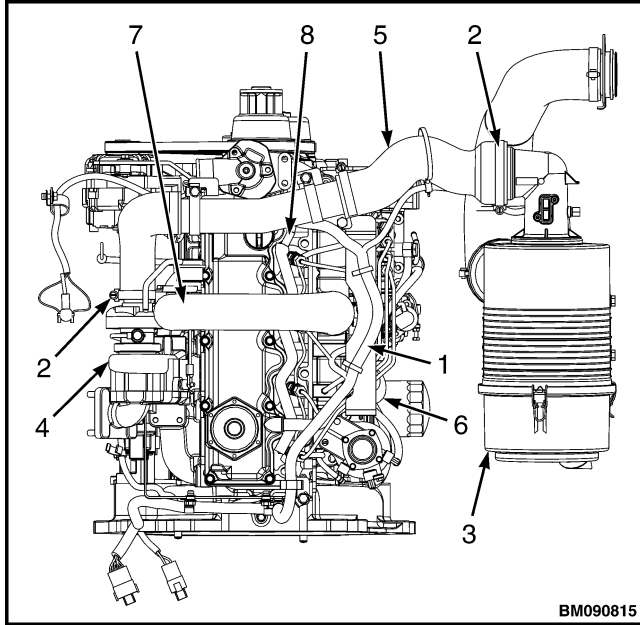
See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)



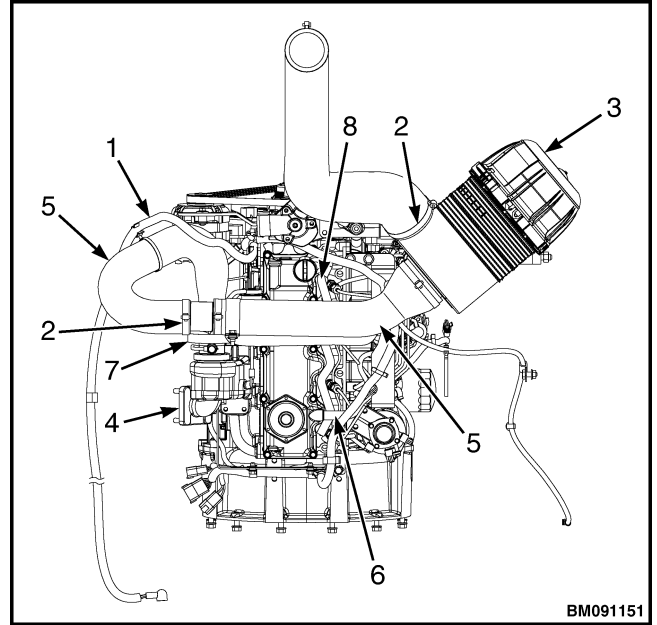
1. ENGINE WIRING HARNESS
2. CLAMP
3. AIR FILTER
4. TURBO CHARGER
5. AIR INTAKE HOSE
6. BREATHER TUBE
7. TURBO CHARGER OUTLET HOUSE
8. GLOW PLUG STRIP CONNECTOR

Figure 5. Breather Tube and Hoses for Lift Truck Models H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005) and H6.0-7.0FT (H135-155FT) (K006)



- 1. ENGINE WIRING HARNESS
- 2. CLAMP
- 3. AIR FILTER
- 4. TURBO CHARGER
- 5. AIR INTAKE HOSE
- 6. BREATHER TUBE
- 7. TURBO CHARGER OUTLET HOUSE
- 8. GLOW PLUG STRIP CONNECTOR

Figure 6. Breather Tube and Hoses for Lift Truck Model H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)



- 1. ENGINE WIRING HARNESS
- 2. CLAMP
- 3. AIR FILTER
- 4. TURBO CHARGER
- 5. AIR INTAKE HOSE
- 6. BREATHER TUBE
- 7. TURBO CHARGER OUTLET HOUSE
- 8. GLOW PLUG STRIP CONNECTOR

Figure 7. Breather Tube and Hoses for Lift Truck Models H6.0-7.0FT (H135-155FT) (L006)

7. Remove ten bolts, valve cover and gasket from cylinder head. Discard gasket. See Figure 8.

8. Remove four flange nuts. Remove glow plug strip from glow plugs. See Figure 9.

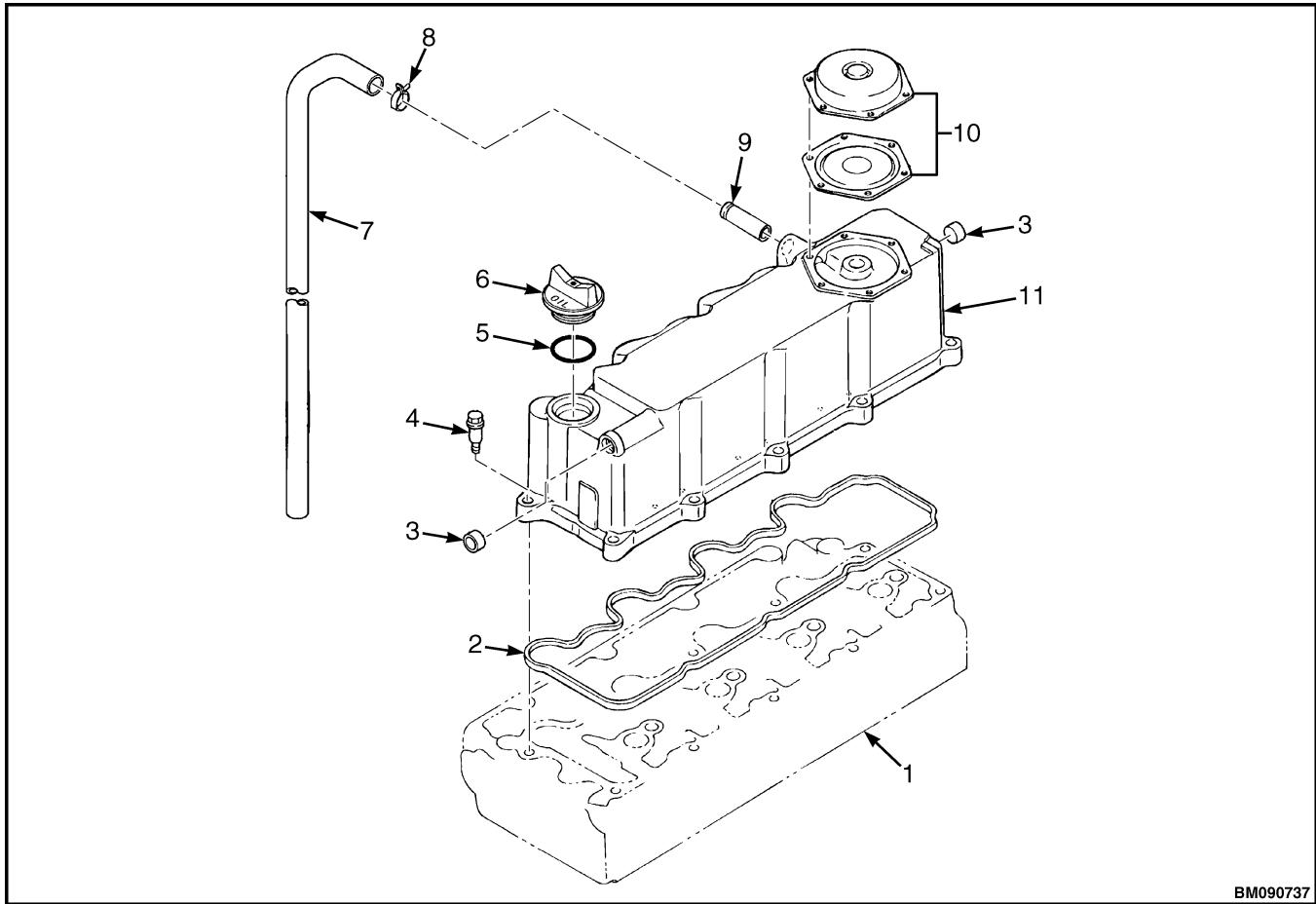
NOTE: Note position and location of fuel line clamps during removal to aid in installation.

9. Remove two pan head screws and four clamps from fuel injector lines. See Figure 9.

10. Remove two hose clamps. Disconnect fuel overflow hoses from overflow pipe assembly. See Figure 9.

11. Loosen four fuel lines at fuel injection pump. See Figure 9.

12. Remove four fuel lines, four nuts, and overflow pipe assembly from fuel injectors. Discard nuts. See Figure 9.

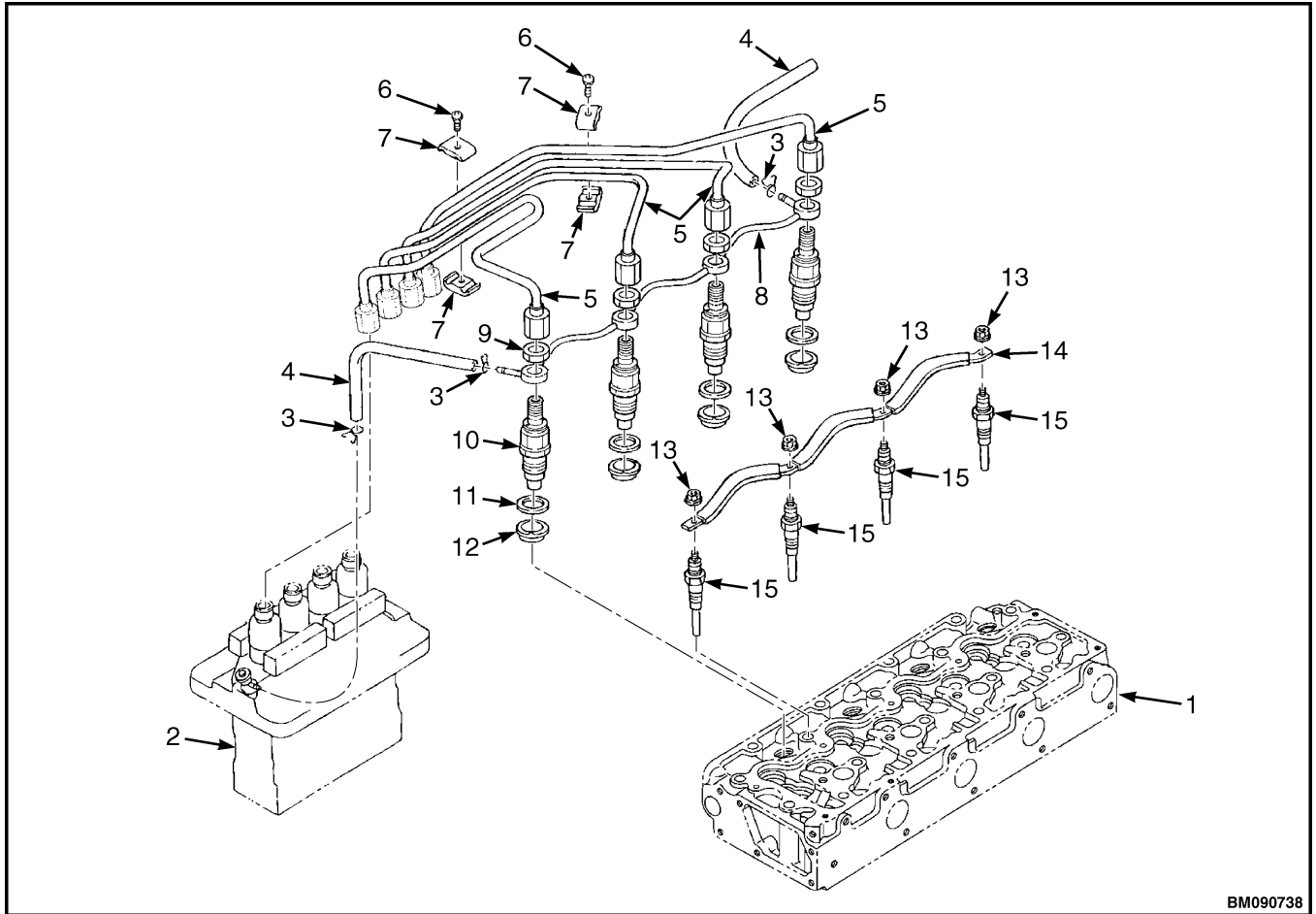


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- 1. CYLINDER HEAD
- 2. VALVE COVER GASKET
- 3. PLUG
- 4. BOLT
- 5. O-RING
- 6. OIL FILL CAP

- 7. BREATHER TUBE
- 8. CLAMP
- 9. VALVE COVER BREATHER
- 10. BREATHER COVER
- 11. VALVE COVER

Figure 8. Valve Cover



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- | | |
|---------------------------|---------------------|
| 1. CYLINDER HEAD | 9. NUT |
| 2. FUEL INJECTION PUMP | 10. FUEL INJECTOR |
| 3. HOSE CLAMP | 11. GASKET |
| 4. FUEL OVERFLOW HOSE | 12. BASE SEAL |
| 5. FUEL LINES | 13. FLANGE NUT |
| 6. PAN HEAD SCREW | 14. GLOW PLUG STRIP |
| 7. CLAMP | 15. GLOW PLUG |
| 8. OVERFLOW PIPE ASSEMBLY | |

Figure 9. Fuel Injectors and Fuel Lines

13. Remove four injectors, four gaskets and four base seals from cylinder head. Discard gaskets and base seals. See Figure 9.
14. Remove four glow plugs. See Figure 9.

Clean and Inspect



WARNING

Cleaning solvents can be flammable and toxic and can cause skin irritation. When using cleaning solvents, always follow the recommendations of the manufacturer.



WARNING

Compressed air can move particles so that they cause injury to the user or to other personnel. Make sure that the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent injury to the eyes.



CAUTION

Use caution not to scratch the gasket mating surfaces when cleaning the valve cover and cylinder head.

Carefully remove all gasket residue from valve cover and cylinder head.

Clean valve cover in cleaning solvent. Dry valve cover with compressed air. Inspect for wear, cracks, and any other damage. If necessary, replace valve cover.

Inspect all O-rings, plugs and grommets for wear, cracks, and any other damage. Replace where necessary.

Inspect valve cover breather and breather cover for cracks, wear, and any other damage (see Figure 8). If necessary see Parts Manual for replacement parts.

Install

1. Install four glow plugs into cylinder head. Tighten to 20 to 24 N•m (15 to 18 lbf ft). See Figure 9.
2. Install four new gaskets and four new base seals onto four fuel injectors. Install four fuel injectors into cylinder head. Tighten to 49 to 68 N•m (37 to 50 lbf ft). See Figure 9.
3. Install overflow pipe assembly and four nuts onto fuel injectors. Tighten nuts to 20 to 24 N•m (15 to 18 lbf ft). See Figure 9.
4. Install four fuel lines onto fuel injectors. Tighten to 23 to 36 N•m (17 to 26 lbf ft). See Figure 9.
5. Install four fuel lines onto fuel injection pump. Tighten to 23 to 36 N•m (17 to 26 lbf ft). See Figure 9.
6. Using two hose clamps, connect fuel overflow hoses to overflow pipe assembly. See Figure 9.
7. Install four clamps and two pan head screws onto fuel injector lines as noted during removal. See Figure 8.
8. Using four flange nuts, install glow plug strip onto glow plugs. See Figure 9.
9. Lightly grease new valve cover gasket.
10. Place new valve cover gasket into groove of valve cover.
11. Install valve cover and ten bolts onto cylinder head. Tighten bolts to 9.8 to 11.2 N•m (86.7 to 99 lbf in). See Figure 8.

- 12.** Install outlet hose from turbo charger and air inlet elbows.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

- 13.** Install breather tube and clamp to valve cover.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

- 14.** Install air intake hose assembly and tighten clamps at air filter and turbo charger.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

- 15.** Connect wiring connector to glow plug strip as noted during removal.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)

- 16.** Install engine wiring harness and attach clips as noted during removal.

See Figure 5 for lift truck models

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 6 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 7 for lift truck model

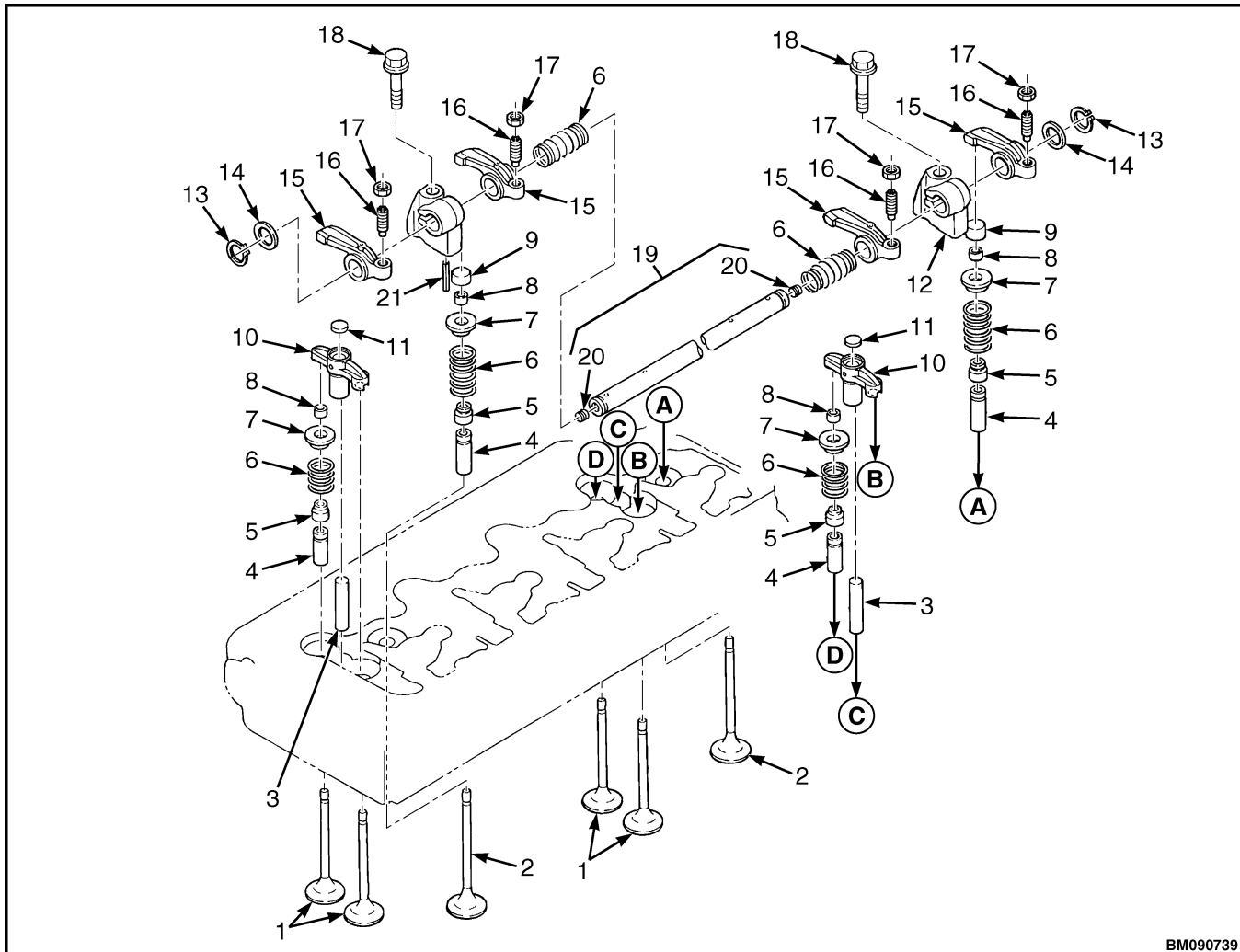
- H6.0-7.0FT (H135-155FT) (L006)

- 17.** Connect negative battery cable at battery.

ROCKER ARM ASSEMBLY

Remove

1. Remove valve cover, fuel injectors, and glow plugs. See Valve Covers and Fuel Injectors, Remove.
2. Remove four flange bolts holding rocker arm brackets to cylinder head. See Figure 10.



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A. EXHAUST VALVE GUIDE LOCATION
B. INTAKE VALVE ARM LOCATION

C. VALVE ARM SHAFT LOCATION
D. INTAKE VALVE GUIDE LOCATION

- | | |
|--|---|
| <ul style="list-style-type: none"> 1. INTAKE VALVE 2. EXHAUST VALVE 3. VALVE ARM SHAFT 4. VALVE GUIDE 5. VALVE STEM SEAL 6. SPRING 7. SPRING RETAINER 8. VALVE SPRING COLLAR 9. VALVE CAP 10. VALVE ARM 11. VALVE ARM PAD | <ul style="list-style-type: none"> 12. ROCKER ARM BRACKET 13. C-CLIP 14. WASHER 15. ROCKER ARM 16. ADJUSTING SCREW 17. LOCK NUT 18. FLANGE BOLT 19. ROCKER ARM SHAFT 20. SLOTTED SCREW 21. SPRING PIN |
|--|---|

Figure 10. Rocker Arm Assembly

3. Lift rocker arm shaft assembly from cylinder head. See Figure 10.

NOTE: Mark push rods so they can be reinstalled in original location during reassembly.

4. Remove push rods from cylinder head.

Disassemble

1. Remove c-clips and washers from each end of rocker arm shafts. Discard washers. See Figure 10.

NOTE: Mark rocker arms so they can be reinstalled in original location during reassembly.

NOTE: The rocker arm shaft fits tightly in rocker arm support brackets. Clamp support bracket in a padded vise and twist and pull rocker arm shaft to remove shaft.

2. Slide rocker arm shaft out of rocker arm brackets, springs, and rocker arms. See Figure 10.
3. If necessary, remove adjusting screw and lock nut from rocker arms. See Figure 10.

Clean and Inspect



WARNING

Cleaning solvents can be flammable and toxic and can cause skin irritation. When using cleaning solvents, always follow the recommendations of the manufacturer.



WARNING

Compressed air can move particles so that they cause injury to the user or to other personnel. Make sure that the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent injury to the eyes.

Clean all parts in cleaning solvent. Dry parts with compressed air. Inspect for wear, cracks, and any other damage. Replace all parts as needed.

Push Rods

1. Place push rods on a flat inspection block.
2. Roll push rods until a gap can be observed between a portion of push rod and surface of inspection block.

3. Use a feeler gauge to measure gap. Refer to Engine Specifications for service limit. See Figure 11.

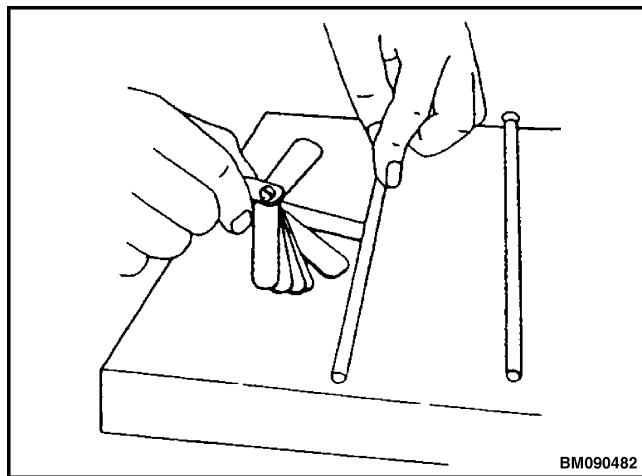


Figure 11. Push Rod Inspection

Rocker Arm Assembly

Rocker Arm and Support Bracket Inside Diameter: Use a test indicator and micrometer to determine if inside diameter of all rocker arm support brackets and rocker arms are within limits. Refer to Engine Specifications for service limit. See Figure 12.

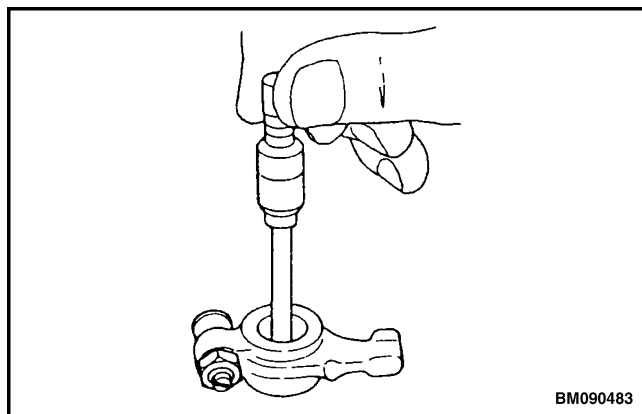


Figure 12. Rocker Arm Inside Diameter

Shaft Outside Diameter: Use a micrometer to measure rocker arm shaft outside diameter. Refer to Engine Specifications for service limit. See Figure 13.

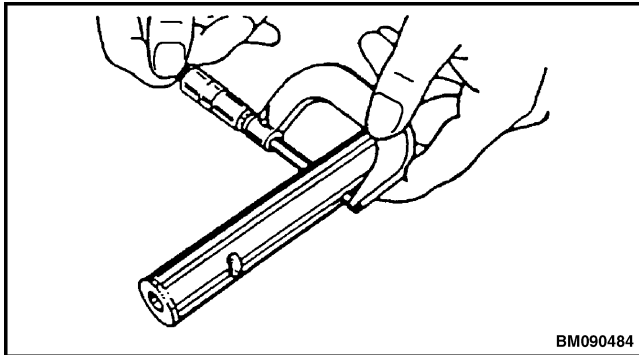


Figure 13. Rocker Arm Shaft Outside Diameter

Assemble

NOTE: The rocker arm shaft fits tightly in rocker arm support brackets. Clamp rocker arm shaft in a padded vise and twist and push support brackets onto rocker arm shaft.

1. Lubricate rocker arm shaft. Slide rocker arm support brackets, springs, and rocker arms onto shaft, as noted during removal.
2. Position rocker arm assembly on a flat surface. Install washers and c-clips onto ends of rocker arm shaft. See Figure 10.
3. If removed, install valve adjusting screws and lock nuts. See Figure 10.

Install

NOTE: When installing push rod, mount it securely in groove located in bottom of lifter.

1. Install push rods.
2. Place rocker arm assembly in position on cylinder head.
3. Install and hand tighten rocker arm shaft retaining flange nuts. See Figure 10.
4. Align push rods with their respective rocker arms, as noted during removal.

5. Tighten rocker arm shaft retaining flange nuts. Tighten nuts to 49 to 55 N•m (37 to 41 lbf in).
6. Adjust valve lash. See Valve Clearance Adjustments.
7. Install valve cover. See Valve Covers and Fuel Injectors, Install.

VALVE CLEARANCE ADJUSTMENTS

NOTE: Make measurements and adjustments while engine is cold.

1. Remove valve cover. See Valve Covers and Fuel Injectors, Install.

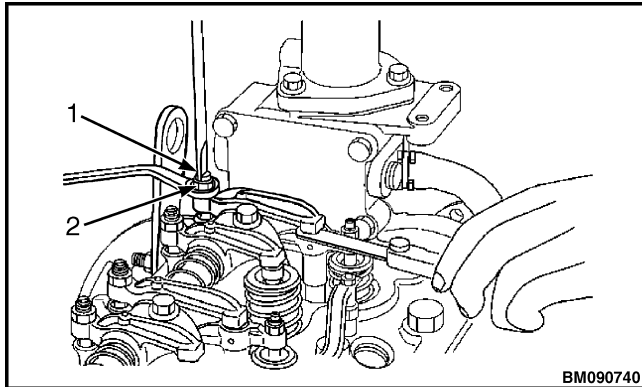
NOTE: The number one piston position is on fly-wheel end of engine, opposite side of radiator, and ignition order is 1-3-4-2 at 180 degree intervals.

2. Rotate crankshaft clockwise, as seen from radiator side, to bring number one piston to top dead center (TDC) (See Fuel Injection Pump for TDC procedure). See Table 1 for reference to help determine which valves will be available for adjustment with number one piston at TDC.

Table 1. Available Valves for Adjustment

Adjustable Cylinder Location Of Piston		Intake	Exhaust
When No. 1 piston is at compression top dead center	1	*	*
	2	*	
	3		*
	4		
When No. 1 piston is at overlap position	1		
	2		*
	3	*	
	4	*	*

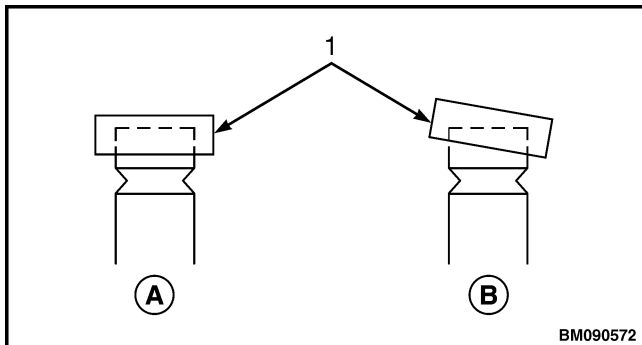
3. Insert a feeler gauge between rocker arm and valve cap. See Figure 14. Record measured valve clearance. The valve clearance should be between 0.23 to 0.27 mm (0.009 to 0.011 in.).



1. VALVE ADJUSTING SCREW
2. VALVE LOCK NUT

Figure 14. Valve Clearance Measurement

4. If adjustment is needed, loosen valve adjusting screw lock nut and valve adjusting screw on rocker arm (see Figure 14) and check valve for any inclination of valve cap, entrance of dirt, or wear. See Figure 15.



- A. NORMAL B. ABNORMAL

1. VALVE CAP

Figure 15. Valve Cap Check

NOTE: There is a tendency for clearance to decrease slightly when lock nut is tightened. It is suggested that you make clearance adjustment slightly on loose side before tightening lock nut.

5. Insert a feeler gauge between rocker arm and valve cap and adjust clearance so there is a slight drag on feeler gauge when sliding it between rocker arm and valve cap. Tighten valve adjusting screw lock nut and recheck clearance. The valve clearance should be between 0.23 to 0.27 mm (0.009 to 0.011 in.).
6. Apply clean engine oil to contact surface between adjusting screw and push rod.
7. Turn crankshaft 180 degrees and make measurement and adjustment for number three cylinder. Then turn crankshaft 180 degrees and make measurement and adjustment for number four cylinder. Then turn crankshaft 180 degrees and make measurement and adjustment for number 2 cylinder.
8. Install valve cover. See Valve Covers and Fuel Injectors, Install.

CYLINDER HEAD ASSEMBLY

Remove

1. Disconnect negative battery cable at battery.

NOTE: Place a suitable container with a capacity of at least 12.0 liter (13 qt) under radiator and lower radiator hose.

2. Remove lower radiator hose and radiator cap. Allow cooling system to drain.
3. Remove two hose clamps, two retaining clamps and air intake hoses from air cleaner and turbo charger.

See Figure 16 for lift truck models

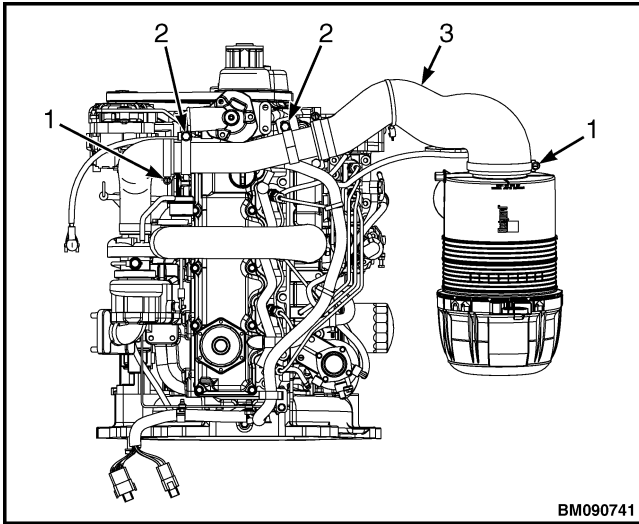
- H4.0FT5/FT6; H4.5FTS5, H4.5FT6, H5.0-5.5FT (H80-120FT) (R005)
- H6.0-7.0FT (H135-155FT) (K006)

See Figure 17 for lift truck model

- H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

See Figure 18 for lift truck model

- H6.0-7.0FT (H135-155FT) (L006)



- 1. HOSE CLAMP
- 2. RETAINING CLAMP
- 3. AIR INTAKE HOSE

Figure 16. Air Intake Hoses for Lift Truck Models H6.0-7.0FT (H135-155FT) (K006)

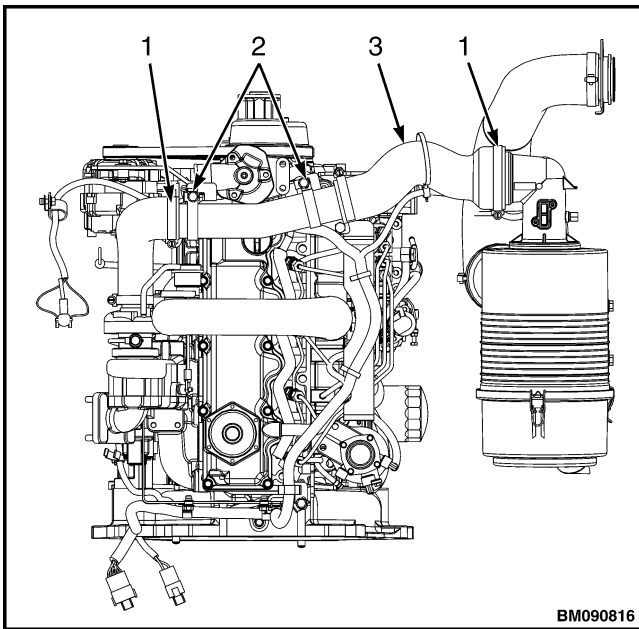
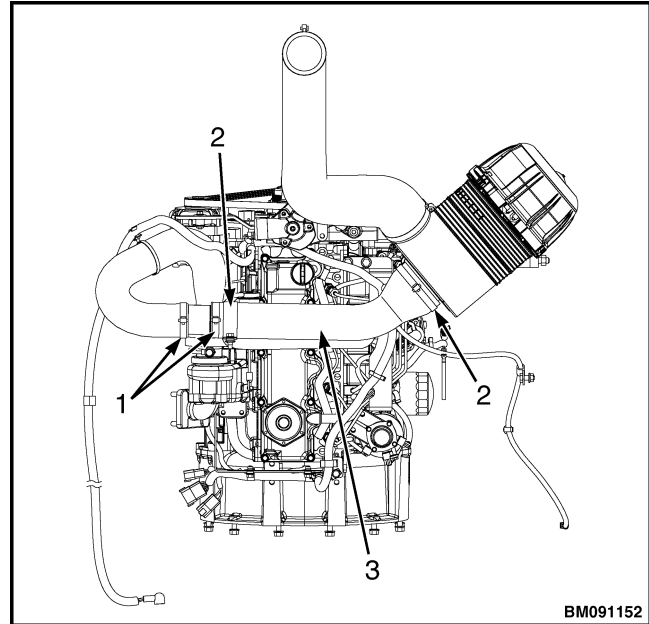


Figure 17. Air Intake Hoses for Lift Truck Model H4.0FT5/FT6; H4.5FTS5, H4.5FT6; H5.0-5.5FT (H80-120FT) (S005, U005)

Legend for Figure 17

- 1. HOSE CLAMP
- 2. RETAINING CLAMP
- 3. AIR INTAKE HOSE

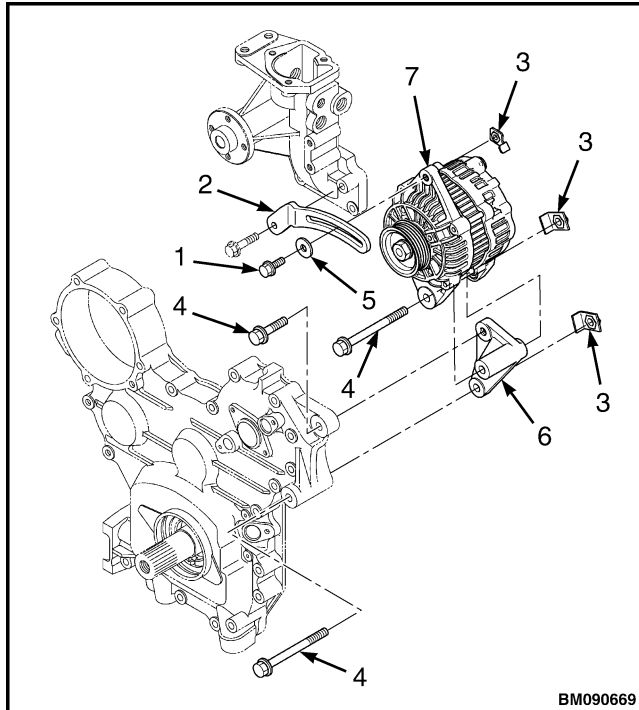


- 1. HOSE CLAMP
- 2. RETAINING CLAMP
- 3. AIR INTAKE HOSE

Figure 18. Air Intake Hoses for Lift Truck Models H6.0-7.0FT (H135-155FT) (L006)

NOTE: Tag wiring connectors and wiring harness before removal to aid during installation.

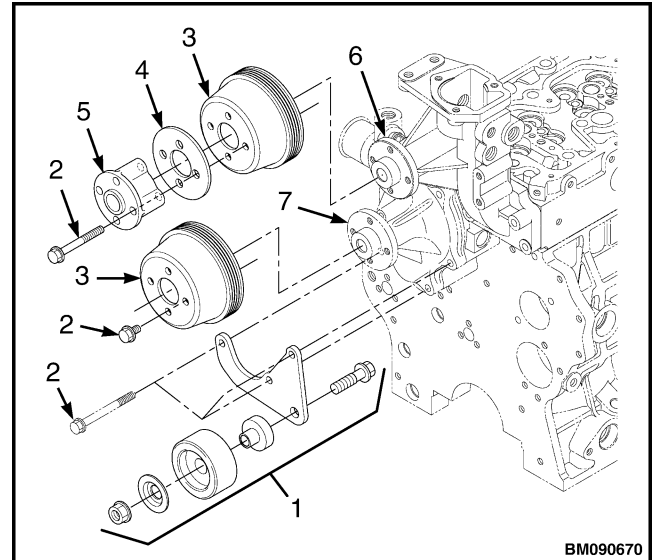
- 4. Tag and disconnect connectors for engine wiring harness. Move harness aside for better access.
- 5. Loosen adjustment bolt for alternator and release tension on serpentine belt. Remove serpentine belt. See Figure 19.



1. ADJUSTMENT BOLT
2. ADJUSTER BRACKET
3. RETAINING NUT
4. MOUNTING BOLT
5. WASHER
6. MOUNTING BRACKET
7. ALTERNATOR

Figure 19. Alternator Mounting and Adjustment

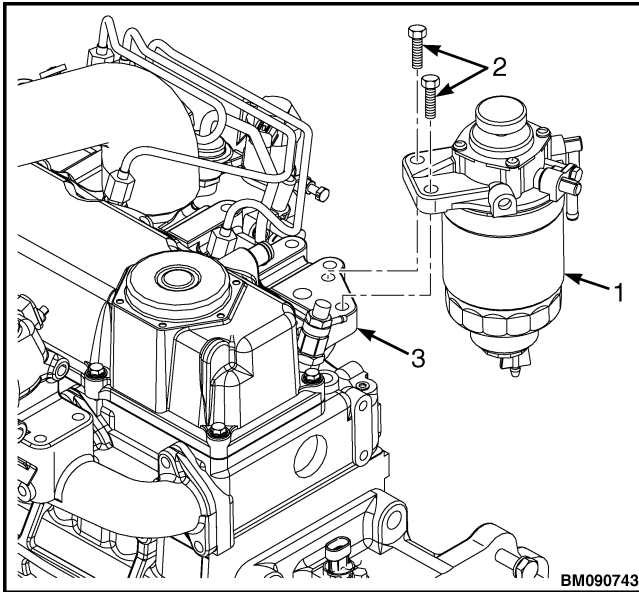
6. Remove three mounting bolts, three retaining nuts, mounting bracket and alternator from lift truck. See Figure 19.
7. Remove three bolts and idler assembly from water pump assembly. See Figure 20.



1. IDLER ASSEMBLY
2. BOLT
3. PULLEY
4. SPACER
5. COLLAR
6. WATER FLANGE
7. WATER PUMP

Figure 20. Engine Pulleys

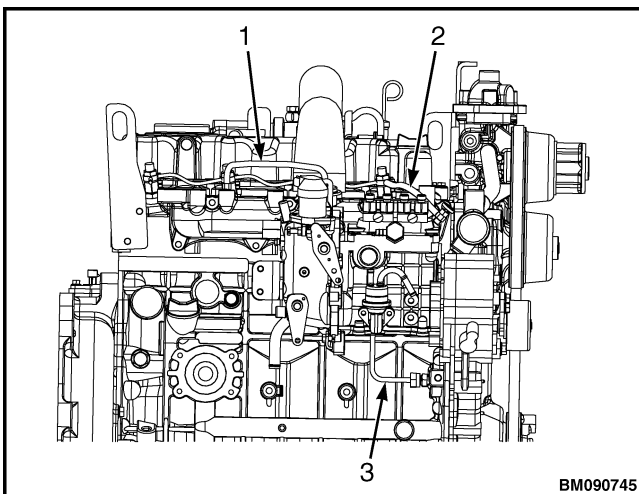
8. Remove eight bolts, collar, spacer, and two fan pulleys from water pump and water flange. See Figure 20.
9. Tag and disconnect fuel hoses from fuel filter.
10. Remove two capscrews holding fuel filter housing assembly to intake manifold. Remove fuel filter assembly. See Figure 21.



1. CAPSCREW
2. FUEL FILTER ASSEMBLY
3. INTAKE MANIFOLD

Figure 21. Fuel Filter Assembly

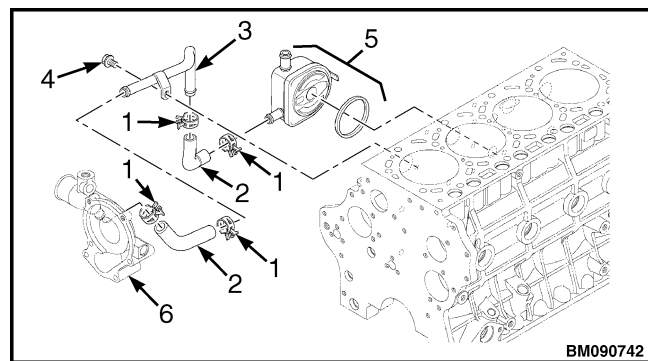
11. Remove boost compensator hose and fuel overflow return hose from fuel injection pump. See Figure 22.
12. Disconnect lubricating pipe from block just below injection pump. See Figure 22.



1. BOOST COMPENSATOR HOSE
2. FUEL OVERFLOW RETURN HOSE
3. LUBRICATING PIPE

Figure 22. Fuel Lines

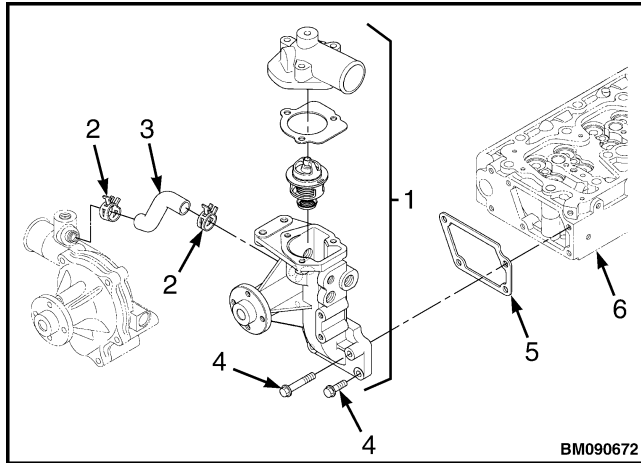
13. Remove valve cover, fuel injectors and related parts. See Valve Covers and Fuel Injectors, Remove section of this manual.
14. Remove fuel injection pump. See Fuel System Repair section for procedures.
15. Loosen two hose clamps and remove hose from water pump and oil cooler tube. See Figure 23.
16. Loosen two clamps and remove hose from oil cooler tube and oil cooler. See Figure 23.
17. Remove oil cooler pipe bolt from engine block. Remove oil cooler pipe from engine block. See Figure 23.



1. CLAMP
2. HOSE
3. OIL COOLER PIPE
4. BOLT
5. OIL COOLER
6. WATER PUMP

Figure 23. Water Pump Components

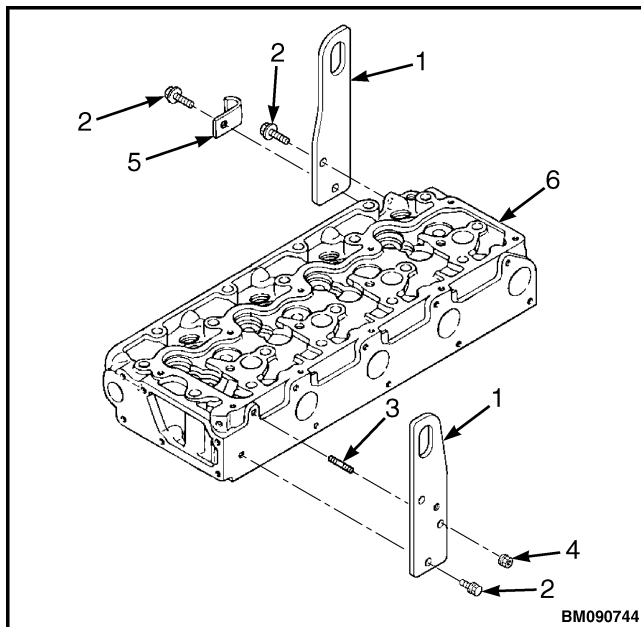
18. Loosen two clamps and remove coolant by pass hose from water pump and water flange assembly. See Figure 24.
19. Remove water pump. See Cooling System Repair section for procedures.
20. Remove four bolts, water flange assembly, and gasket from cylinder. Discard gasket. See Figure 24.



1. WATER FLANGE ASSEMBLY
2. CLAMP
3. BYPASS HOSE
4. BOLT
5. GASKET
6. CYLINDER HEAD

Figure 24. Water Flange

21. Remove two bolts, clamp and lifting eye bracket from cylinder head. See Figure 25.

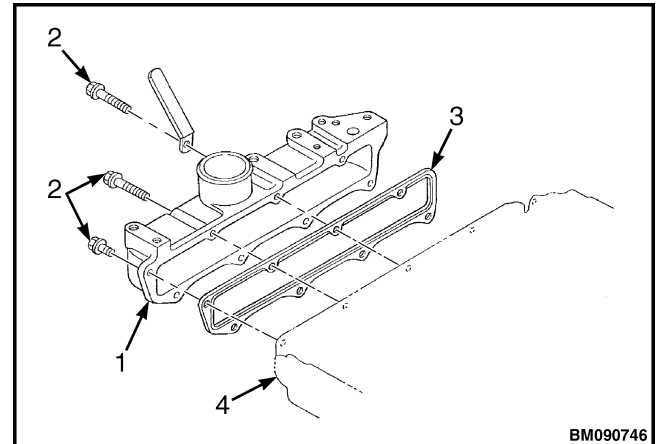


1. LIFTING EYE BRACKET
2. BOLT
3. STUD
4. FLANGE NUT
5. CLAMP
6. CYLINDER HEAD

Figure 25. Lifting Eye Bracket

22. Remove bolt, flange nut, and lifting eye bracket from cylinder head. See Figure 25.

23. Remove eight flange bolts, intake manifold and gasket from cylinder head. Discard gasket. See Figure 26.

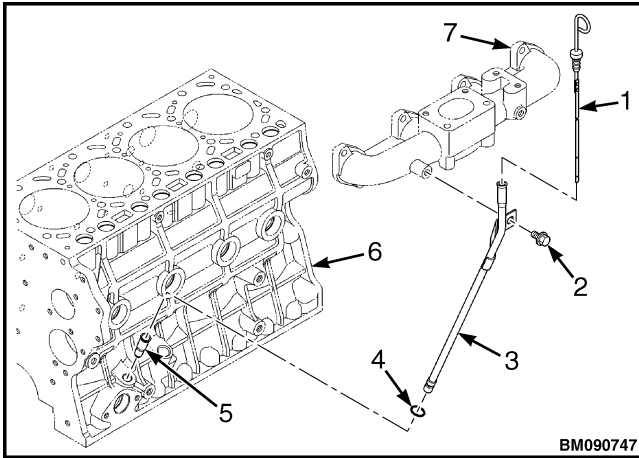


1. INTAKE MANIFOLD ASSEMBLY
2. FLANGE BOLT
3. GASKET
4. CYLINDER HEAD

Figure 26. Intake Manifold

NOTE: Have container that will hold at least 13.5 liter (14 gal).

24. Remove oil pan drain plug and drain engine oil into container.
25. Remove capscrew from dipstick tube and exhaust manifold. See Figure 27.
26. Remove dipstick, dipstick tube, O-ring, and dipstick tube guide from engine block. Discard O-ring. See Figure 27.

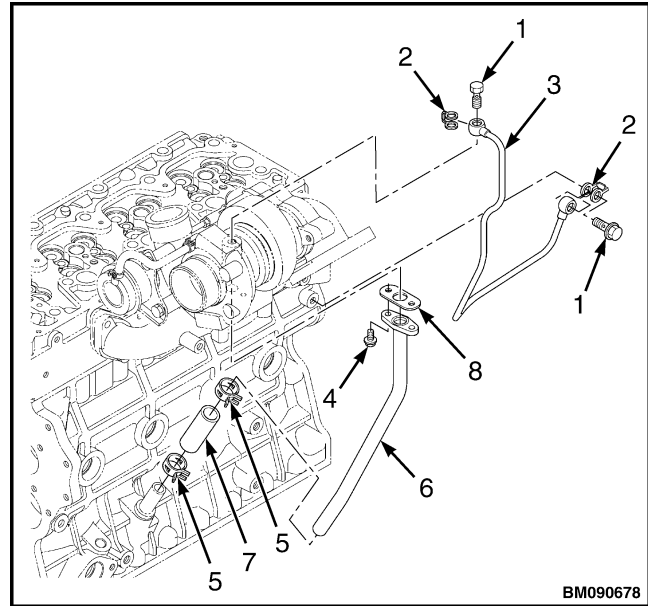


- 1. DIPSTICK
- 2. CAPSCREW
- 3. DIPSTICK TUBE
- 4. O-RING
- 5. GUIDE
- 6. ENGINE BLOCK
- 7. EXHAUST MANIFOLD

Figure 27. Engine Oil Dipstick

27. Remove two banjo bolts, two washer sets and turbocharger oil supply line. Discard washer sets. See Figure 28.

28. Remove two capscrews, two clamps, oil drain tube, hose and gasket from turbocharger and block. Discard gasket. See Figure 28.



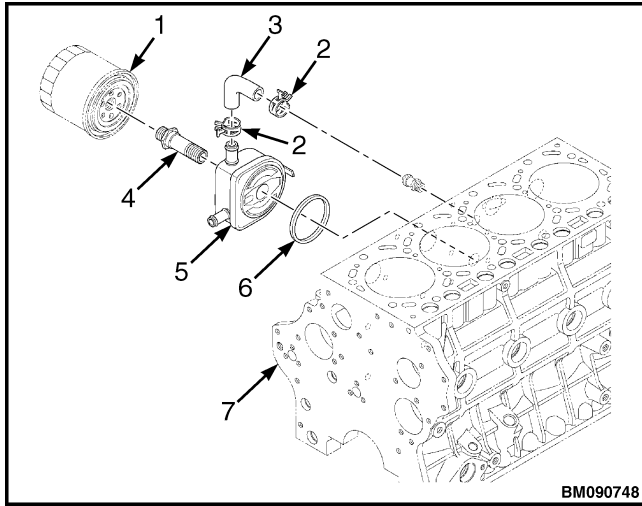
- 1. BANJO BOLT
- 2. WASHER SET
- 3. OIL SUPPLY LINE
- 4. CAPSCREW
- 5. CLAMP
- 6. DRAIN TUBE
- 7. HOSE
- 8. GASKET

Figure 28. Turbocharger Oil Lines

29. Remove engine oil filter from oil cooler. See Figure 29.

30. Remove two clamps and hose from oil cooler and engine block. See Figure 29.

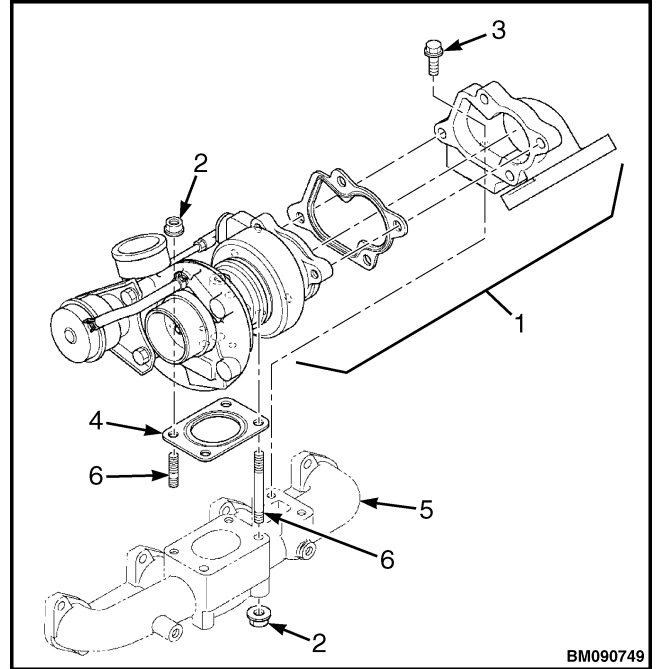
31. Remove oil cooler joint, oil cooler and O-ring from engine block. Discard O-ring. See Figure 29.



- | | |
|---------------------|-----------------|
| 1. OIL FILTER | 5. OIL COOLER |
| 2. CLAMP | 6. O-RING |
| 3. HOSE | 7. ENGINE BLOCK |
| 4. OIL COOLER JOINT | |

Figure 29. Oil Cooler

32. Remove six flange nuts, two flange bolts, gasket and turbocharger from exhaust manifold. Discard gasket. See Figure 30.



- | |
|---------------------|
| 1. TURBOCHARGER |
| 2. FLANGE NUT |
| 3. FLANGE BOLT |
| 4. GASKET |
| 5. EXHAUST MANIFOLD |
| 6. STUD |

Figure 30. Turbocharger