SERVICE BULLETIN

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(Also applies to Mack Trucks Australia)
(Supersedes bulletin SB-213-032 dated 3/1/02)

VALVE LIFTER, CAMSHAFT AND OTHER VALVE TRAIN CHANGES — ASET™ AND E-TECH™ ENGINES

Beginning January 16, 2002, (engine serial No. 1Y2008), several changes were made to the valve lifters, camshaft, pushrods and upper valve train components for ASET™ and E-Tech™ engines. These changes, along with revisions to the valve adjustment procedures brought about by the new-style pushrods, are described in this bulletin.

Valve Lifters

The roller lifter has been totally redesigned, with two longer lands that provide more bearing area than the previous design, and the lifter body is now made of hardened steel for greater scuff resistance. The bronze axle used in the previous design has been replaced with a steel axle having a smaller diameter for optimization of roller and axle sizes. The pressure oil feed hole to the axle has been eliminated and replaced with oil grooves on the inside of the lifter legs. The lifter roller is composed of a ceramic material specifically designed for use in engine components. The part number for the ceramic roller lifter assembly is 72GC372.

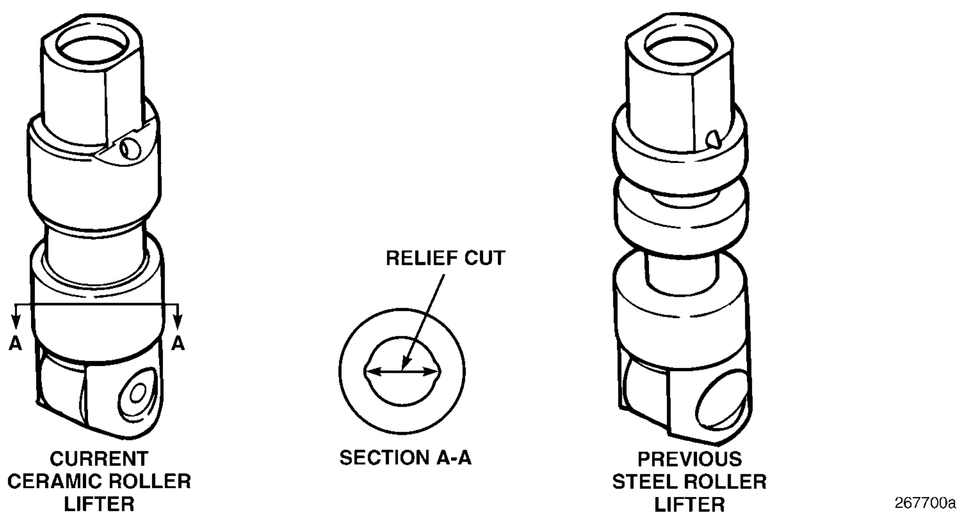

Figure 1 — Ceramic Roller Lifter Assembly

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NOTE

REV A steel roller variation of the ceramic roller lifter was developed and implemented into a limited production run of 1,100 engines manufactured during July through September 2002 (engine serial No. series 2N through 2R). These steel roller lifter equipped engines were installed in certain CV, RD, DM, MR and LE model chassis that were manufactured during the same July through September time frame. Any CV, RD, DM, MR or LE model chassis equipped with an E-Tech™ CCRS engine having a serial number beginning with 2N, 2O or 2R should be considered as having the new steel roller lifters. Any MR chassis having an ASET™ engine with a serial No. series 2N, 2O or 2R may have steel roller lifters.

The new steel roller lifters (part No. 72GC373A) incorporate all the improvements that were developed for the ceramic roller lifter body, and are different only by having a bronze axle and steel roller. This group of engines equipped with the steel roller lifters retained the spring-loaded pushrods and the associated hardware changes that were incorporated with the ceramic roller lifters.

REV **Ceramic Roller Lifters and Impact Damage**

Ceramic roller lifters have been used in heavy-duty diesel engines for a number of years, and have provided excellent durability. They are particularly tolerant of roller skidding which is inherent to roller lifter applications. Ceramic rollers, however, will not tolerate high impact loads. Such loads can crack the ceramic, resulting in breakage or spalling of the roller. It is extremely important that a ceramic roller which has been subjected to high impact not be used. Some typical causes of impact damage are as follows:

- Mishandling or dropping the roller lifter prior to, or during assembly. Do not use a lifter that has been dropped or mishandled.
- Ceramic roller lifters require the use of spring-loaded pushrods at the exhaust locations. DO NOT use standard pushrods at the exhaust locations. The exhaust lobes of camshafts used in domestic engines have a base circle and a sub-base circle, a design sometimes referred to as a “brake-bump.” If standard pushrods are used with this type or exhaust lobe design, the brake bump will transmit impact loads to the ceramic roller, resulting in roller breakage.
- A pushrod that is not properly installed into the lifter cup as the rocker shaft is being installed, and subsequently “snaps” into the cup when the engine is rotated will break or damage the roller. Replace any ceramic roller lifter that has been subjected to such an impact load.
- When installing a camshaft, or performing any other type of service or repair in which removal/reinstallation of the rocker shaft assembly was necessary, failure to have the rocker adjusting screws completely retracted into the rocker arm adjusting screw bore at reassembly can cause breakage of the ceramic rollers. If even one screw is

extended too far, and either the rocker shaft mounting bolts are tightened or the engine is rotated for valve lash adjustment, immense pressure can be generated against the lifter roller. Even when using just the engine barring tool to rotate the engine, extreme loads can be generated for only a small resistance in turning the engine. This improper assembly can cause a crack or a complete failure of the ceramic roller, a slightly bent pushrod or slightly bent valve. In some cases, the ceramic roller, pushrod or valve will fail later in service due to the damage caused by improper assembly during cam installation or valve train service.

If engine lock-up occurs when rotating the engine to adjust valves, first determine the cylinder where the valves were starting to open and valve-to-piston contact has resulted in engine lock-up. After determining the affected cylinder, determine and correct the root cause. Additionally, with the rocker shaft assembly and the nozzles removed, apply shop air pressure to the affected cylinder through the nozzle hole. If there is air leakage past the affected valve, the valve has been bent and must be replaced. In all cases, the pushrod and the ceramic roller lifter affected by the engine lock-up MUST be replaced.

- A lifter that does not move freely in the lifter bore can be impacted by the cam lobe during engine operation. This will result in damage or breakage of the ceramic roller. During lifter installation, always ensure free movement of the lifter in the lifter bore. If the lifter does not move free in the bore, try installing it into another bore. If it moves freely in another bore, it is OK to use the lifter. If the lifter does not move freely when tried in another bore, do not use the lifter.
- When installing an H-ring, it is possible for Loctite® to run down the lifter bore. The Loctite® will not cure until the lifter is installed, because the tight clearance between the lifter and bore produces the environment in which the Loctite® can cure.

  If a lifter is adhering to the lifter bore because of dried Loctite®, it may “snap” into place when the rocker shaft assembly is installed, or when the engine is rotated. It may also be possible that the lifter is far enough down the bore that it will not “snap” into place. In any event, the lifter will not have free movement in the lifter bore if it is contaminated with dried Loctite®. The result of either of these conditions (snap into place or adhered to the bore), is possible impact damage to the ceramic roller.

  To prevent this from occurring, use a suitable solvent to clean any excess Loctite® from the lifter bore immediately after installing the H-ring. If a lifter is installed into a bore that has been contaminated with Loctite®, remove the lifter and use a suitable solvent to thoroughly clean any Loctite® residue from the lifter body. However, replace any lifter that has been subjected to impact damage due to Loctite® contamination in the lifter bore.
- Any type of valve train failure that results in excessive valve lash (0.100″ [2.54 mm]) will most likely cause a ceramic roller to crack or break. These types of failures include a bent or dislodged pushrod, broken rocker arm, broken rocker shaft or broken rocker shaft mounting bolts or a broken valve yoke guide pin. When any such failure occurs, the oil pan must be removed and the lifter roller inspected at the locations affected by the valve train failure. The roller inspection can be performed with the cam in the engine by rotating the engine so that the cam lobe is pointing down.

- An engine overspeed which is severe enough to have resulted in the types of damage described in service bulletin SB-212-001, *Engine Overspeed Damage*. Of particular concerns are overspeeds of long duration that resulted from a turbocharger failure where the engine ran on the crankcase oil supply.

  If an engine overspeed has occurred, inspect for obvious damage in the same way as described above for “any type of valve train failure that results in excessive valve lash.” If no valve train failure is noted, perform a cursory valve lash check. At any cylinder where excessive valve lash is seen, a broken ceramic roller is indicated.

NOTE

Before installing roller lifters in the engine, it is important to pre-lube the lifter by submerging in clean engine oil and turning the roller by hand to work oil into the roller/axle interface.

Camshaft

The closing profile of the exhaust lobe was revised to improve the transition from base circle to the sub-base circle. This change is effective with the pre-CCRS camshaft part No. 454GC5227C, CCRS camshaft part No. 454GC5236A and all ASET™ camshaft part numbers.

Spring-Loaded Pushrods

REV The pushrods (part Nos. 369GC336 from January 2002 through approximately September 2002, and 369GC339 from September 2002 and later) are of a spring-loaded design. These pushrod assemblies have a spring at the rocker arm end, and are designed to keep the roller lifter in constant contact with the cam. Additionally, this pushrod design reduces valve clatter that results from the engine brake camshaft exhaust lobe clearances and operating dynamics of the exhaust valve train. The spring-loaded pushrods are used at the exhaust valve locations only, and only on engines that are equipped with camshafts having the engine brake profile on the exhaust lobe (all E-Tech™ and ASET™ camshafts used in domestic engines). Effective during fourth quarter 2002, pushrod part No. 369GC336 was replaced in production with pushrod part No. 369GC339. The 369GC339 pushrod cup is made from a material that has greater resistance to wear and galling.

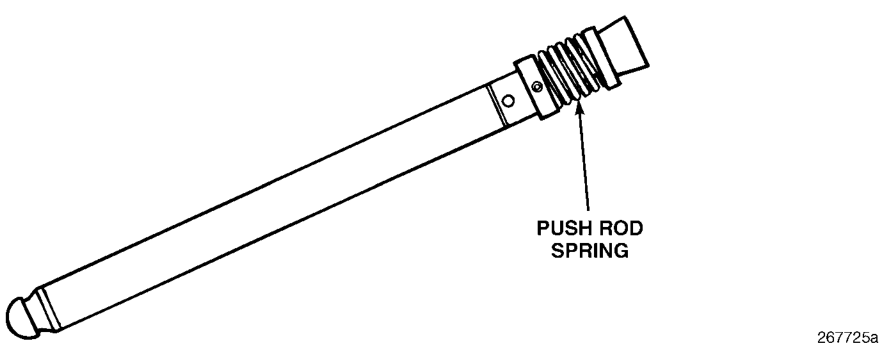

Figure 2 — Spring-Loaded Pushrod Assembly

During the “valve opening” cycle, as the lifter roller rides up the ramp of the cam lobe, the pushrod spring compresses, making the pushrod a solid assembly that transmits the upward force of the lifter to the rocker arm. The pushrod spring never becomes fully compressed; the pushrod becomes “solid” when the internal stops of the upper and lower spring seats contact each other.

During the “valve closing” cycle, as the lifter roller travels down the ramp and into the cam lobe sub-base circle area, the pushrod spring expands making the pushrod longer, thus eliminating excessive lash from the valve train. Spring pressure keeps the roller in contact with the cam and eliminates valve clatter. In the free-state, the length of pushrod travel is 3/16″, from fully compressed to fully expanded (during engine operation, the entire 3/16″ of free-travel is not utilized).

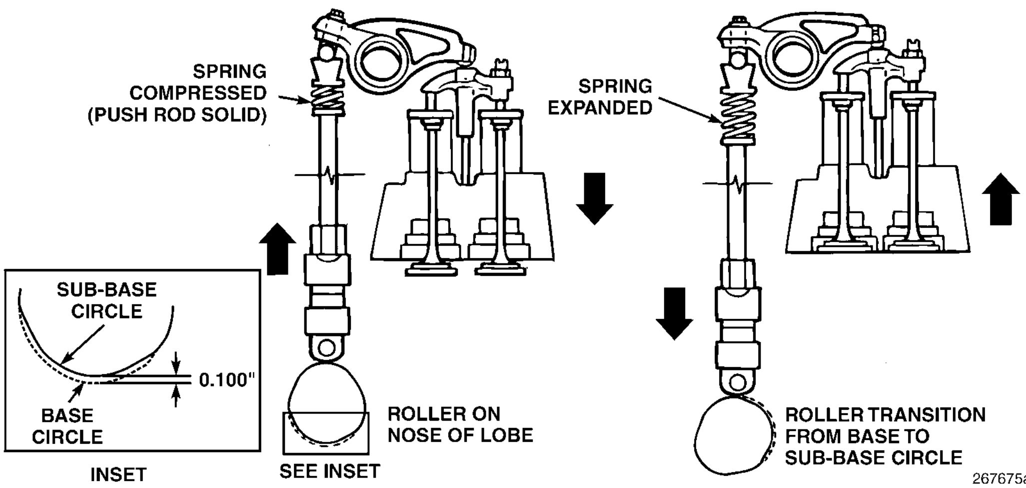

Figure 3 — Spring-Loaded Pushrod Operation

NOTE

Spring-loaded pushrods must be pre-lubed by submerging the spring end of the pushrod in clean engine oil prior to installation.

Pressure OIl Feed Rocker Arm Adjusting Screws

Effective January 2002, pressure oil feed rocker arm adjusting screws were implemented into production on all inlet and exhaust valve rocker arms. Part numbers for the screws are as follows:

- **417GC31M —** Inlet and exhaust rocker arms
- **417GC310M —** J-Tech™ engine brake exhaust rocker arms

The pressure oil feed adjusting screws have a groove around the center of the screw, an oil passage cross-drilled through the shank of the screws and an oil passage drilled along the vertical center line of the screw. These oil passages provide lubrication to the ball end of the adjusting screw and pushrod cup.

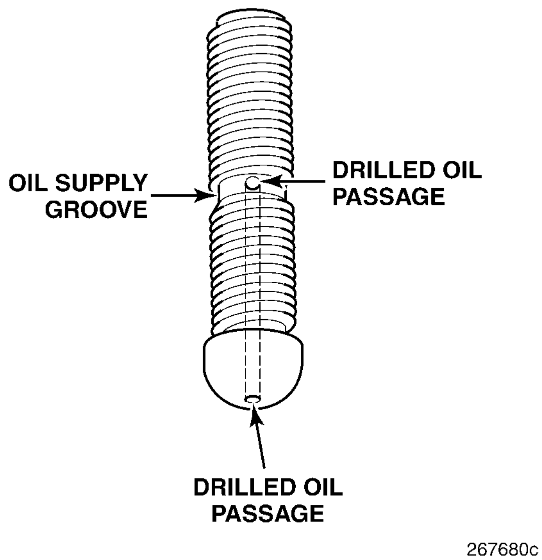

Figure 4 — Pressure Oil Feed Rocker Arm Adjusting Screw

NOTE

Spring-loaded pushrods require that pressure oil feed adjusting screws be used for non-brake and brake exhaust rocker arms, and flanged jam nuts (part No. 142GC242M) be used with all inlet and non-brake exhaust rocker adjusting screws. If an engine is being converted to spring-loaded pushrods, the standard adjusting screw jam nuts must be replaced with flanged jam nuts. Additionally, the standard jam nuts used for the inlet rocker arm adjusting screws must be replaced with flanged jam nuts (part No. 142GC242M), and the valve yoke jam nuts must be replaced with flange jam nuts (part No. 142GC243M). Do not use Loctite® on any of the flange-type jam nuts when the engine is equipped with spring-loaded pushrods.

REV

Revised Rocker Arms (Effective January 2003)

New inlet rocker arms (part No. 44GB54M) and exhaust rocker arms (part No. 44GB55M) were introduced into production engines during mid-January 2003. The changes to these rocker arms include a heavier strengthened casting, a carbonitrided steel bushing in the shaft bore and a relocated oil hole at the rocker arm adjusting screw bore.

NOTE

REV Effective January 2003, adjusting screw part Nos. 417GC31M and 417GC310M were Armoloy™ coated.

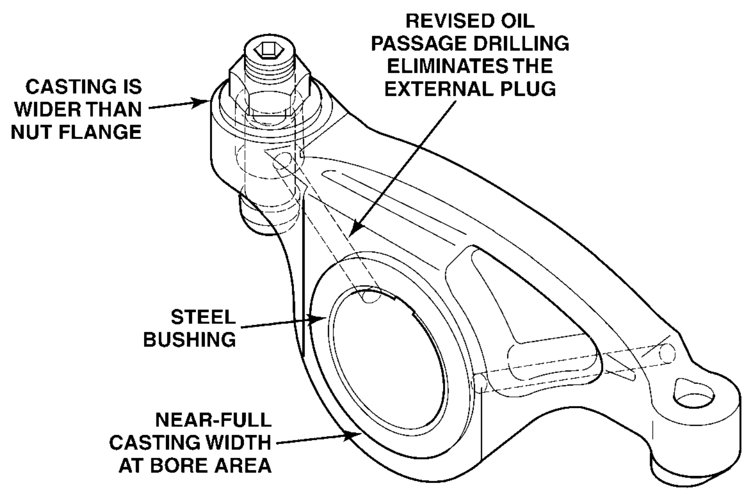

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Figure 5 — New-Style Rocker Arm

CAUTION

With the 44GB54M and 44GB55M rocker arms, it is mandatory to use pinless yoke part number 891GC328A. The inboard top corner of this valve yoke is chamfered for clearance with the heavier rocker arm (reference service bulletin SB-213-025). It is also mandatory to use the rocker shaft having the three oil feed holes at the rocker arm locations as described in the ***Rocker Shaft*** *section of this bulletin.*

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NOTE

Pressure oil feed adjusting screws are optional at the inlet valve positions on E-Tech™ engines and mandatory for both inlet and exhaust positions on ASET™ engines.

If an engine having standard pushrods is being converted to spring-loaded pushrods at the exhaust positions, pressure oil feed adjusting screws (part No. 417GC31M for non-brake applications and 417GC310M for J-Tech™ applications) are required. The first rocker arms designed for use with the pressure feed oil screws were the 44GB487M and 44GB488M, first introduced during January 2002. On engines manufactured prior to the implementation of the 44GB487M and 44GB488M rocker arms, the existing exhaust rocker arms may be used by installing a steel closure plug (part No. 421GC2125) into the drilling in the rocker arm adjusting screw boss. Applying Loctite® to the plug is not required.

If a basic or complete engine manufactured after the January 16, 2002 (ceramic roller lifter and associated hardware) tie-in date is having a J-Tech™ engine brake installed, it is mandatory that the existing exhaust rocker arm adjusting screws be replaced with J-Tech™ pressure oil feed screws (part No. 417GC310M).

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Revised Rocker Shaft

Along with the implementation of the new rocker arms, revised rocker shafts were also implemented into production during January 2003. The rocker shaft that is used for engines not equipped with the MACK PowerLeash™ engine brake has two additional oil supply holes at each of the rocker arm locations to direct oil to the rocker arm tip-end and the adjusting screw. Additionally, the wall thickness of the shaft has been increased, and pipe plugs, rather than cup plugs, are used at the shaft ends. This revised shaft (part No. 466GC4100) requires that rocker arm part Nos. 44GB54M and 44GC55M be used.

The PowerLeash™ rocker shaft is a totally different design from the non-PowerLeash™ rocker shaft. The only change that applies to the PowerLeash™ rocker shaft is the addition of two oil supply holes at the inlet rocker arm locations. The part number for the PowerLeash™ rocker shaft having this revision is 466GC4106M. PowerLeash™ rocker shaft part No. 466GC4106M requires that inlet rocker arm part No. 44GB54M be used.

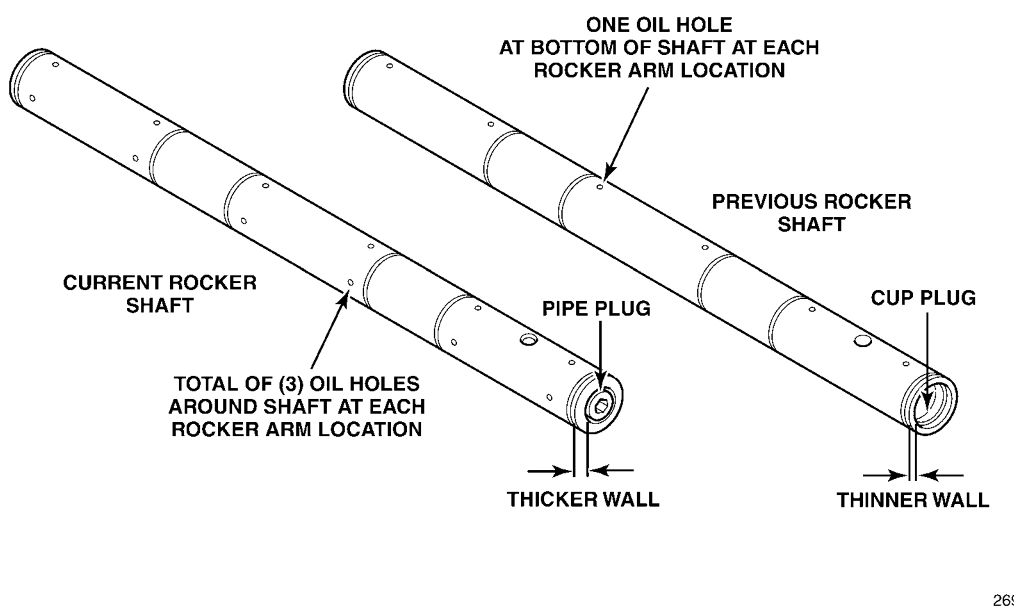

Figure 6 — Revised Rocker Shaft

Electronic Unit Pump (EUP) Roller Tappets

EUP roller tappets (part No. 72GC266) were revised in January 2002 with the introduction of an improved material bronze axle. These revised EUP roller tappets can be identified by a “1” stamped on one end of the axle. During July 2002, the surface of the roller tappet was changed to a Complex Crown™ design. This style roller has better load distribution over the roller surface, resulting in less surface load and less surface stress on the roller. Complex Crown™ rollers can be identified by a ground finish on the visible side surfaces of the roller, whereas the simple crown rollers have a machine-turned finish on the roller sides.

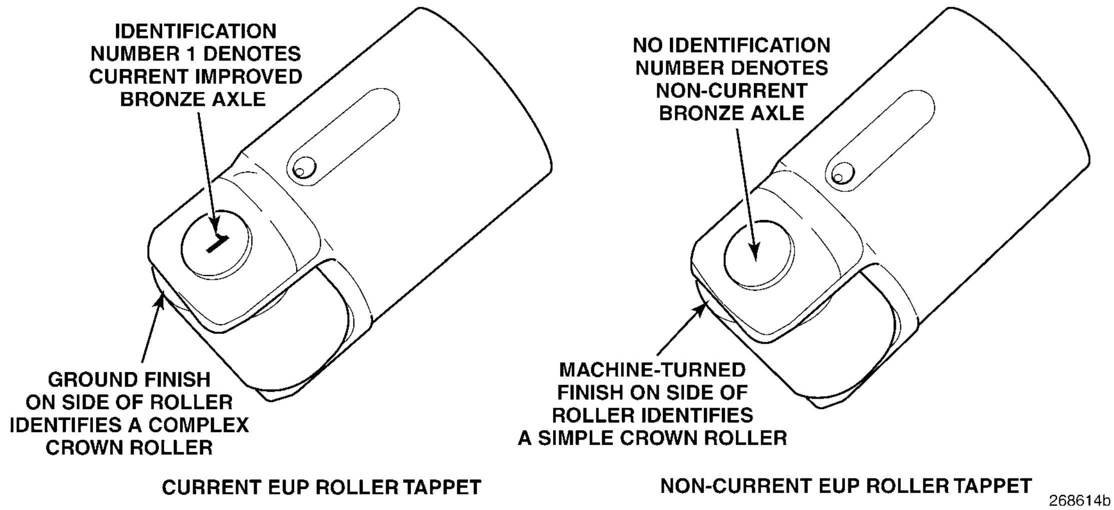

Figure 7 — EUP Roller Tappets

Valve Adjustment Procedures for Engines Equipped with Spring-Loaded Pushrods

Due to the pushrod spring load, valve lash adjustment procedures for engines equipped with spring-loaded pushrods are now different than the procedures used on engines equipped with solid pushrods. Valve lash clearances, however, remain the same at 0.016″ (0.406 mm) for the inlet valves and 0.024″ (0.610 mm) for the exhaust valves. When adjusting exhaust valve lash, the pushrods must be fully compressed. In addition to the hand tools normally used to adjust valves, the following additional tools are necessary:

- T-handle torque screwdriver, J 29919. Torque value of this screwdriver is preset to 6 lb-in.

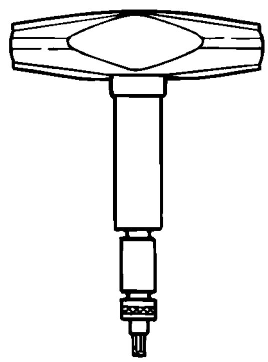

Figure 8 — T-Handle Torque Screwdriver, J 29919

- 5 mm internal hex bit

NOTE

Some earlier engines (prior to the introduction of the modified rocker arms and adjusting screws) have been retrofitted with spring-loaded pushrods. The rocker arm adjusting screws on these engines will have a screwdriver slot rather than the 5 mm internal hex. The screwdriver slot-type screws do not provide pressure oil feed to the adjusting screw and pushrod cup. Screwdriver slot screws must be replaced with pressure oil feed screws, and the closure plug described in the NOTE in the section under the heading **Rocker Arms**, must be installed.

For engines equipped with a J-Tech™ engine brake, the following tools are also required:

- 3/8″ drive 14 mm crow's foot wrench
- 3/8″-to-1/4″ adapter
- long 1/4″ drive extension

⚠ CAUTION

The following procedures explain how to adjust valves on engines equipped with spring-loaded pushrods. These procedures involve using a torque screwdriver to turn the adjusting screw. When the preset torque value of the screwdriver is reached, the pushrod is compressed far enough that the spring stops are in contact with each other, thus ensuring a proper valve lash setting. If Loctite® was applied to the rocker arm adjusting screw jam nuts when originally installed, dried Loctite® residue will cause an improper valve lash adjustment. If the torque screwdriver method is used to adjust valve lash, all Loctite® residue must be cleaned from the adjusting screws, jam nut and rocker arm threads, and the parts must be lubricated with clean engine oil. If Loctite® is NOT thoroughly and completely cleaned, do not use the torque screwdriver method to adjust valve lash. Instead, valve lash should be adjusted by using the alternate procedure described under the headings ***Alternate Valve Lash Adjustment Procedures for Non-Brake Engines*** *and* ***Alternate Valve Lash Adjustment Procedure for J-Tech™ Equipped Engines.***

Valve adjustments must be made in firing order sequence, with the engine cold (coolant temperature below 100°F [38°C]), not running and with the piston at top dead center on the compression stroke (inlet and exhaust valves closed). The flywheel is marked in 120-degree increments to indicate engine position at which the valves must be adjusted. Access the valve adjustment markings on the flywheel by removing the cover from the bottom of the flywheel housing. Tool No. J 38587, which engages the flywheel through an access hole in the flywheel housing, is recommended to rotate the engine.

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Figure 9 — Flywheel Valve Adjustment Markings

Valve adjustments are made in two stages. The exhaust valve yoke (and the inlet valve yoke if equipped with pin-style valve yokes at both the inlet and exhaust positions) is adjusted first, and then the valve lash. Rotate the engine in the direction of normal rotation until the valve adjustment marking is aligned in the center of the access window.

Valve Yoke Adjustment

1. Loosen the rocker arm adjusting screw locknut and back the adjusting screw out several turns.

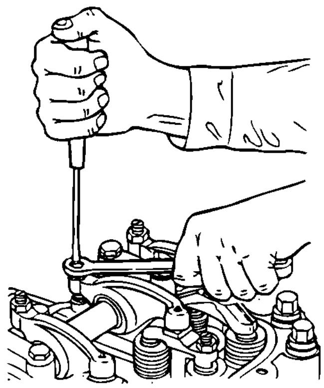

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Figure 10 — Loosening Exhaust Rocker Arm Locknut and Backing Out Adjusting Screw

2. Loosen the valve yoke adjusting screw locknut.

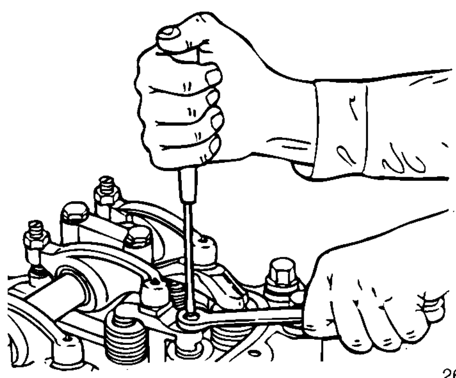

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Figure 11 — Loosening Valve Yoke Adjusting Screw Locknut

3. Exert moderate force on the valve yoke by pressing on the rocker arm slipper end. Turn the yoke adjusting screw clockwise until it solidly contacts the outboard valve stem tip (a light drag should be felt on the adjusting screw).

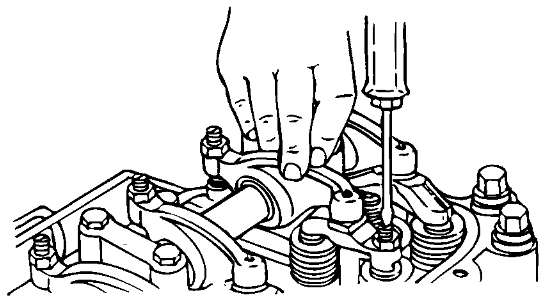

Figure 12 — Turning Yoke Adjusting Screw Until it Contacts Valve Stem

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4. After the adjusting screw solidly contacts the valve stem, turn the screw clockwise an additional 30 degrees. (A 30-degree turn is equal to 1/2 of a flat on the adjusting screw jam nut.)

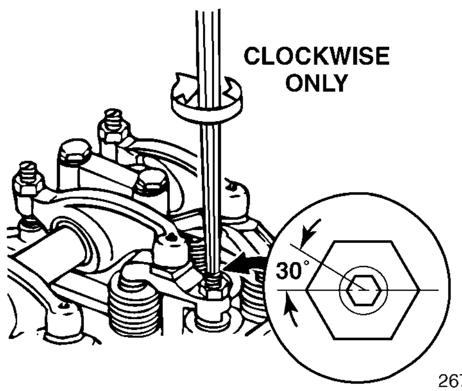

Figure 13 — Turning Adjusting Screw an Additional 30 Degrees (1/2 Flat)

NOTE

When the jam nut is tightened, the adjusting screw is drawn upward within the thread clearances. The purpose of the additional clockwise turn on the adjusting screw is to compensate for the change in the yoke setting that results when the jam nut is tightened. Effective February 2004, the previous recommended 60-degree (one jam nut flat) additional turn was changed to 30 degrees (1/2 flat). It has been determined that the 30 degree additional turn of the adjusting screw results in not having to readjust the yoke when the adjustment is rechecked. Regardless of which procedure is used (60 degrees or 30 degrees), valve yoke adjustment must be rechecked to ensure the proper setting is attained.

5. Holding the valve yoke adjusting screw in this position, tighten the adjusting screw locknut to 33 lb-ft (44 N·m).

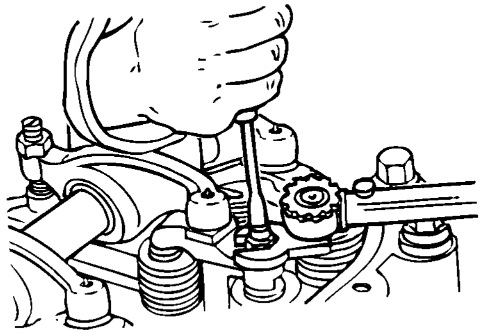

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Figure 14 — Tightening Valve Yoke Locknut

6. Check the valve yoke adjustment by inserting 0.010″ (0.25 mm) thickness gauges between the inboard and outboard valve stem tips and the valve yoke while exerting a moderate force on the rocker arm slipper end. An equal “drag” should be felt on both thickness gauges. If drag is not equal, readjust the valve yoke.

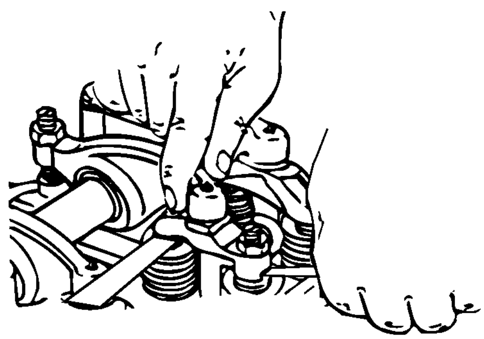

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Figure 15 — Checking Valve Yoke Adjustment

Exhaust (Non-Brake) Valve Lash Adjustment

NOTE

The following procedure was developed for adjusting exhaust valve lash on engines equipped with spring-loaded pushrods. This same procedure, however, can be used for adjusting inlet valve lash, even though the inlet valves use standard pushrods.

1. Loosen the rocker arm jam nut and back the adjusting screw out a couple turns.

NOTE

If the inlet and exhaust rocker arm adjusting screws have the standard jam nut, replace the nuts with flanged jam nuts (part No. 142GC242M).

2. Push down on the adjusting screw side of the rocker arm and insert the appropriate thickness gauge (inlet — 0.016″ [0.406 mm], exhaust — 0.024″ [0.610 mm]) between the slipper face of the rocker arm and the top of the valve yoke. **Leave the thickness gauge in place**.

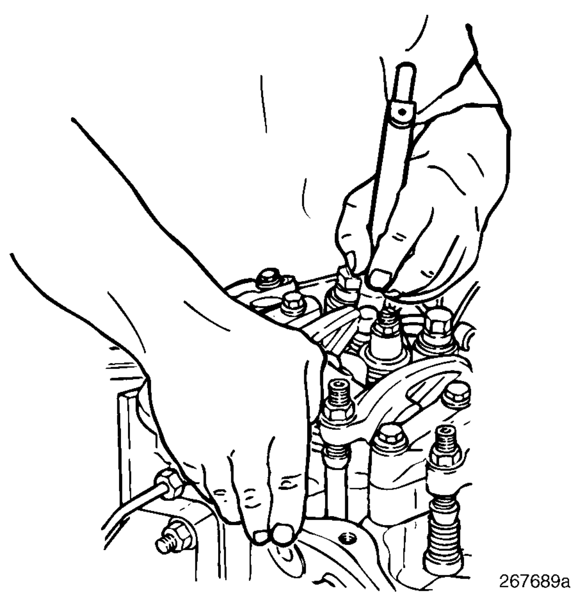

Figure 16 — Inserting Thickness Gauge

3. Using the torque screwdriver (tool No. J 29919), slowly turn the rocker arm adjusting screw clockwise. At the exhaust locations, the pushrod spring will compress as the adjusting screw is being tightened. At the inlet locations, the extra clearance will be "taken-up" as the adjusting screw is being tightened.

4. Continue tightening the adjusting screw until the torque screwdriver clicks. At the exhaust locations, the pushrod spring seats are now in contact, the pushrod is solid and valve lash is now properly set. Do not tighten the adjusting screw any further. At the inlet locations, when the torque screwdriver clicks, all excessive lash has been “taken-up,” and inlet valve lash is now set to the thickness of the gauge.

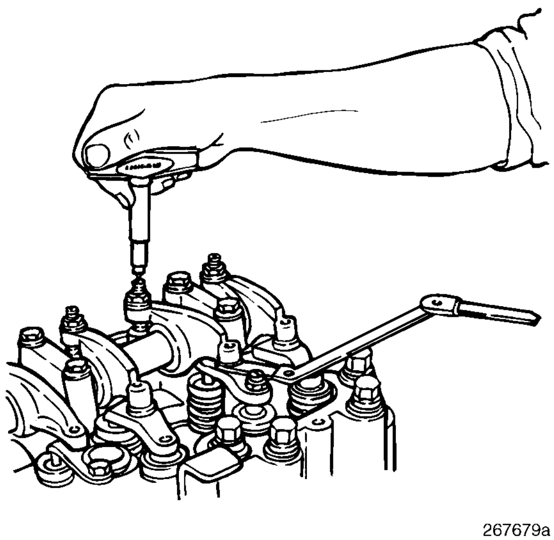

Figure 17 — Adjusting Valve Lash

5. Remove the torque screwdriver and hold the adjusting screw in position with a 5 mm Allen wrench (or standard screwdriver if the engine was manufactured prior to the use of the pressure oil feed adjusting screws at the inlet rocker arms). Use an accurately calibrated torque wrench to tighten the jam nut to 45 lb-ft (61 N·m).

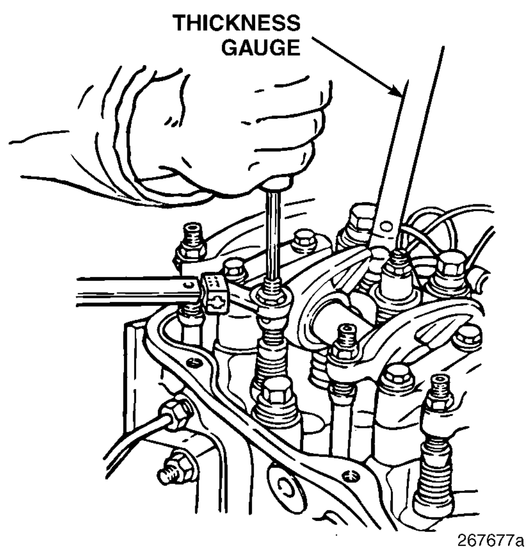

Figure 18 — Tightening Adjusting Screw Jam Nut

6. Remove the thickness gauge.
7. Check exhaust lash adjustment by pushing down on the adjusting screw end of the rocker arm to compress the pushrod spring and inserting the appropriate thickness gauge between the rocker arm slipper face and the valve yoke. Continue exerting downward pressure on the rocker arm to keep the pushrod spring compressed while checking the adjustment. The thickness gauge should be snug between the slipper face and valve yoke. If not, repeat the adjustment procedure. (Inlet valve lash adjustment may be checked in the same manner, except there is no pushrod spring to compress.)

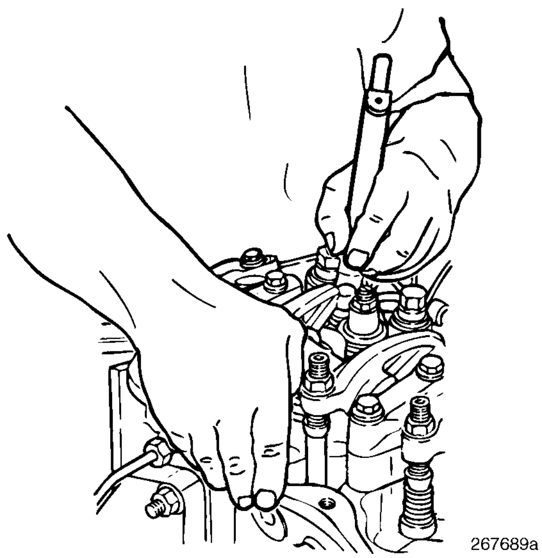

Figure 19 — Checking Valve Lash Adjustment

NOTE

DO NOT apply Loctite® to the adjusting screw jam nuts on engines equipped with spring-loaded pushrods at the exhaust positions and flanged jam nuts at the inlet and on non-brake engines, non-brake exhaust positions.

Alternate Valve Lash Adjustment Procedure for Non-Brake Engines

If an oz-in or lb-in torque screwdriver or torque wrench is not available, valve lash can be adjusted (for both brake and non-brake engines) in the same manner as described above (by installing the appropriate thickness gauge and tightening the adjusting screw). Use a standard screwdriver or 5 mm internal hex wrench in place of the torque screwdriver to turn the adjusting screw. Turn the screw clockwise until a large increase in resistance is felt, indicating that the pushrod is fully compressed and the spring has hit the stop. At that point, valve lash should be properly set and the adjusting screw jam nut can be tightened to 45 lb-ft (61 N·m). Always recheck the adjustment by exerting downward pressure by hand on the adjusting screw end of the rocker arm to fully compress the pushrod while rechecking with the thickness gauge.

Exhaust Valve Lash Adjustment on J-Tech™ Equipped Engines

When adjusting exhaust valve lash on an engine equipped with a J-Tech™ engine brake, the same procedure is used as on a non-brake equipped engine except that the 14 mm crow's foot wrench, adapter and long extension are required in place of the screwdriver. These tools are required because the spherical nut covers the top of the adjusting screw, so the 14 mm hex at the bottom side of the adjusting screw must be used.

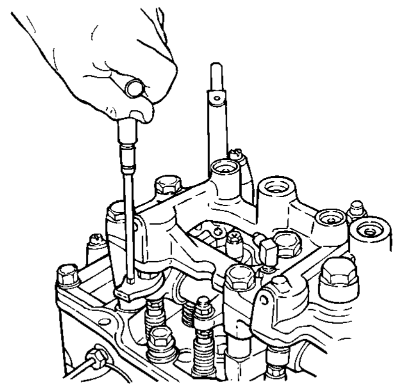

Figure 20 — Adjusting Valve Lash on an Engine Equipped with a J-Tech™ Engine Brake

Alternate Valve Lash Adjustment Procedure for J-Tech™-Equipped Engines

If an oz-in or lb-in torque screwdriver or torque wrench is not available, valve lash can be adjusted (for both brake and non-brake engines) in the same manner as described above (by installing the appropriate thickness gauge and tightening the adjusting screw). Use a standard screwdriver or 5 mm internal hex wrench in place of the torque screwdriver to turn the adjusting screw. Turn the screw clockwise until a large increase in resistance is felt, indicating that the pushrod is fully compressed and the spring has hit the stop. At that point, valve lash should be properly set and the adjusting screw jam nut can be tightened to 45 lb-ft (61 N·m). Always recheck the adjustment by exerting downward pressure by hand on the adjusting screw end of the rocker arm to fully compress the pushrod while rechecking with the thickness gauge.

NOTE

DO NOT apply Loctite® to the adjusting screw jam nuts on engines equipped with spring-loaded pushrods at the exhaust positions and flanged jam nuts at the inlet and non-brake exhaust positions.

J-Tech™ Slave Lash Adjustment

Adjust J-Tech™ slave piston lash according to the procedures outlined in the applicable engine service manual.

REV

PowerLeash™ Valve Adjustment

For engines equipped with the MACK PowerLeash™ engine brake, refer to service bulletin SB-266-016 for valve adjustment procedures.