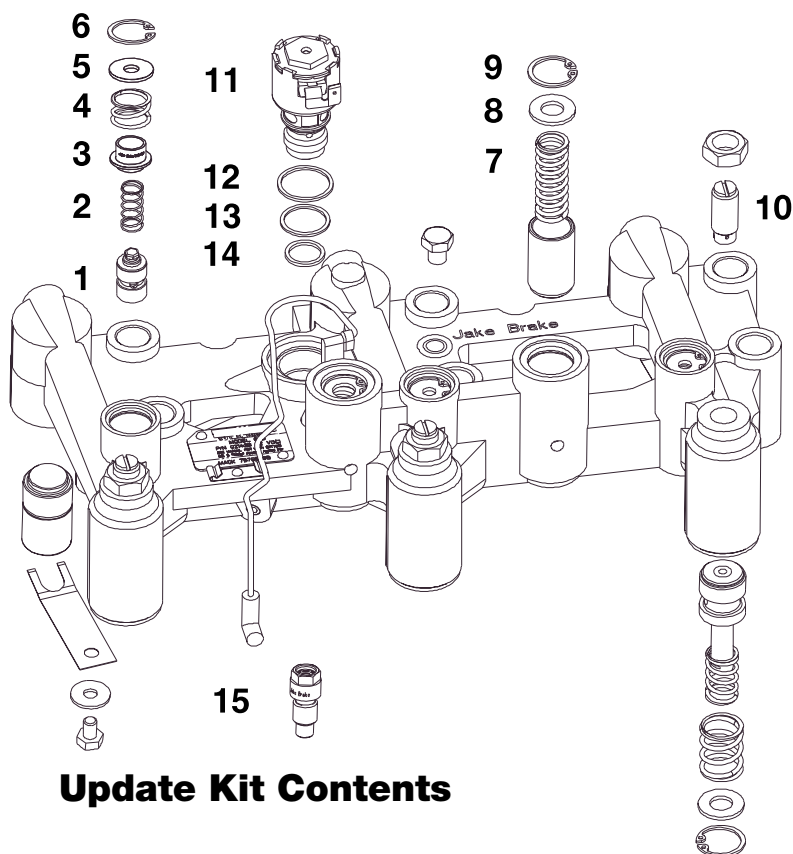




690 J-TECH™ Engine Brake Conversion Kit P/N 4559-30950



Update Kit Contents

Illus. No.	P/N	Part Name	Quantity per kit
1	4559-11283	Valve, Control	6
2	4559-18756	Spring, Inner, Control Valve	6
3	4559-28149	Collar, Control Valve	6
4	4559-28189	Spring, Outer, Control Valve	6
5	4559-16505	Washer, Retaining, Control Valve	6
6	4559-12991	Ring, Retaining	6
7	4559-30764	Spring, Accumulator	4
8	4559-24861	Washer, Accumulator	4
9	4559-24862	Ring, Retaining Accumulator	4
10	4559-30740	Reset Screw	6
11	4559-24614	Solenoid Valve	2
12	4559-20229	Upper Seal	2
13	4559-01082	Center Seal	2
14	4559-01083	Lower Seal	2
15	4559-25132	Screw, Oil Check	2

General Information

These instructions describe how to properly remove the engine brake components and install the new components supplied in the 4559-30950 conversion kit. For additional information on the J-TECH™ engine brakes, refer to Mack E-TECH engine manual (Engine 5-106).

Use OSHA-approved cleaning solvent for cleaning parts.

The standard Jacobs Vehicle Systems Service Parts Warranty applies to the components of this conversion kit. The warranty is administered by Mack Trucks, Inc.

Safety Precautions

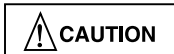
The following symbols in this manual signal conditions potentially dangerous to the mechanic or equipment. Read this manual carefully. Know when these conditions can exist. Then take necessary steps to protect personnel as well as equipment.

THIS SYMBOL WARNS OF POSSIBLE PERSONAL INJURY.



WARNING

THIS SYMBOL REFERS TO POSSIBLE EQUIPMENT DAMAGE.



CAUTION

NOTE: INDICATES AN OPERATION, PROCEDURE OR INSTRUCTION THAT IS IMPORTANT FOR CORRECT SERVICE.

Fuels, electrical equipment, exhaust gases and moving engine parts present potential hazards that could result in personal injury. Take care when installing equipment or parts. Always wear safety glasses. Always use correct tools and follow proper procedures as outlined in this manual.

Instructions

Access Engine Brake

1. Thoroughly clean engine.
2. Remove valve rocker covers and spacers.
3. Disconnect any oil supply lines connected to the brake housing.
4. Loosen slave piston adjusting screws and jam nuts. Back out the slave piston adjusting screws so that the slave pistons are fully retracted into the housing.
5. Remove six mounting bolts from each housing and lift the housing straight off of the oil supply or locating screw.
6. Place housings on a clean bench.

Install new solenoid and seals

1. Disconnect the solenoid wire from the solenoid.
2. Remove solenoids with 3/4" (32mm) socket. Discard solenoids and seals (2 or 3 seals).
3. Brake housings starting with S/N 690A110000 and later do not require lower solenoid seals. For brakes with lower serial numbers the new lower seals (14) is to be dipped in clean oil and placed in the bottom of the solenoid bores.
4. Oil the upper seals (12) and center seals (13) and place them on the solenoid valve. Oil the threads of the solenoid bore. Install the solenoid in the housing and tighten with a 3/4" (32mm) socket and torque to 15 lb-ft (20 N•m).
5. Reconnect the Solenoid wires.

Install Control Valve Components



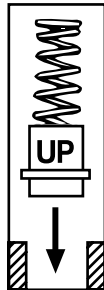
WARNING

WEAR SAFETY GLASSES. REMOVE CONTROL VALVE COVERS CAREFULLY TO AVOID PERSONAL INJURY. COVERS ARE UNDER LOAD FROM CONTROL VALVE SPRINGS (2).

1. Depress the control valve washer and remove the retaining rings (6). Remove and discard all parts. A magnet should be used to remove the control valves.
2. Coat all parts to be installed into housings with clean lube oil.
3. Install the new control valves (1), collars (3), springs (2,4), Retaining washers (5) and retaining rings (6). Make sure the retaining rings and washer are installed with sharp edge up.

NOTE: INSTALL THE COLLAR (3) WITH LONG SIDE UP. IF THE COLLAR IS INSTALLED UPSIDE DOWN, THE BRAKE WILL NOT FUNCTION PROPERLY.

Install Accumulator Components



LONG SIDE OF COLLAR

SHORT SIDE OF COLLAR

WARNING ACCUMULATOR SPRINGS (7) ARE UNDER HEAVY PRELOAD. BE CAREFUL WHEN REMOVING.

1. Depress washers and remove accumulator retaining rings. Remove old accumulator springs, washers and retainers and discard.
2. Install new accumulator springs (7) into housing followed by washers (8) and retaining rings (9). Make sure the retaining rings and washers are installed with the sharp edge up.

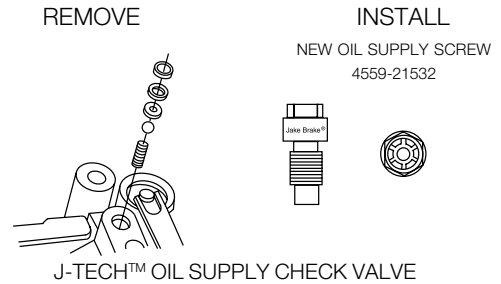
Install New Reset Screws

1. Remove the slave piston adjusting screw and locknut. Discard adjusting screws(10). Retain the adjusting screw locknuts.
2. Carefully blow out oil from the slave piston hole. Inspect the top of the slave piston through the adjusting screw hole for damage. An even wear-in mark (ring) should be seen resulting from contact between the adjusting screw and slave piston. Any breaks in the ring indicate leak paths Which will inhibit proper functioning of the engine brake. If leak paths are observed replace slave piston as necessary (ref. P/N 4559-21423).

WARNING All slave piston, accumulator and control valve bores are interconnected. Blowing air into bore will cause oil to spray from connected bores.

3. Install the new reset screws (10) and the jam nuts from step 1. Install screws only until they contact the top of the slave piston. Do not tighten at this time.

Install New Oil Supply Screws



1. Turn over housing and inspect the oil feed passage. If there are check valve components remove them at this time and discard.
2. Remove the oil feed screws from the rocker pedestal and discard.
3. Replace the oil feed screws with the new ones provided with the kit. The new oil feed screw(15) has an integrated check valve.
4. Torque oil feed screw to 5 lb-ft (7 N•m).

Install Engine Brakes

1. Slide housing down over oil feed screws and into position. New oil supply screws do not have o-rings.
2. Place mounting bolts in the brake housing mounting bolt holes. Starting with the center pair of mounting bolts, tighten all six bolts on each housing. Make sure the brake housing comes down level to avoid possible damage to the rocker shaft brackets. After each brake housing is seated on the cylinder head, torque the mounting bolts to 45 lb-ft (61 N•m).

Engine Adjustments

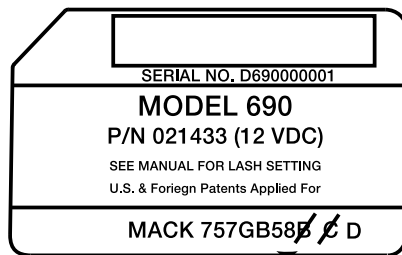
1. Refer to engine service manual for Valve adjustments and Yoke Level.

Engine Brake Adjustments

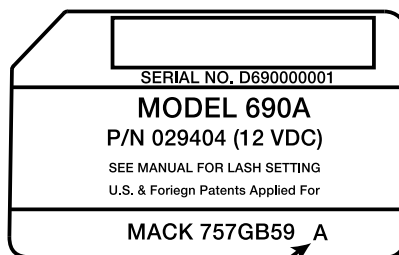
1. Use a 0.017 inch (0.432 mm) thickness gauge to adjust the engine brake slave lash.
2. If engine data placard on cylinder head cover shows the old .015" spec., Restamp to .017".
3. Refer to Mack Engine Service Manual for setting procedure.

Mark Housing

1. The engine brake plate should be stamped with a 1/8" letter "D" as follows.



or



Spacer and Cover Installation

1. Check gaskets on engine brake cylinder head cover spacers. Make sure the surfaces are clean. Place valve cover spacers in position on engine.
2. Reconnect wires from the engine harness to the spacer and from the solenoid to the spacer. Check for frayed or broken wires and corrosion. Repair or replace as necessary.
3. Reconnect oil supply lines if used.
4. Check the gasket on the cylinder head valve Covers and position the covers on the spacers. Make sure the surfaces are clean
4. Install six mounting bolts in each of the cylinder head covers/spacers and tighten the bolts to 16 lb-ft (21.7 N•m).

