DETROIT DIESEL

Installation Instructions

18SP627* – MBE4000 Oil Gallery Cup Plug Repair Kit

***Revision – 3/17/06**

KIT DESCRIPTION

A new service kit (P/N: 23536000) is now available for replacement of three oil gallery cup plugs on the MBE4000 engine.

NOTICE:
This kit should only be used on unit serial number range 0460817468 through 0460838092.

KIT CONTENTS

The new replacement kit contains the following parts listed in Table 1.

Part Number	Quantity	Description
4039970620	3	Cup Plug
4570140222	1	Oil Pan Gasket
4570150180	1	Flywheel Housing Gasket
0259975047	1	Rear Crankshaft Seal
18SP627	1	Instruction Sheet

Table 1 Content for Service Kit (P/N: 23536000)

INSTALLATION PROCEDURE

Remove the two former rear cup plugs and install the two new rear cup plugs as follows (see Figures 1-6):

1. Apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Disconnect vehicle battery power.
3. Remove the transmission and clutch. Refer to the applicable vehicle service manual.
4. Remove the flywheel. Refer to section 1.12 of the *MBE4000 Service Manual* (6SE412).
5. Select one of the two scenarios below:
    a. If the engine has actually suffered a cup plug failure and subsequent loss of oil pressure, remove the oil pan. Refer to section 3.1 of the *MBE4000 Service Manual* (6SES412). After removing the oil pan, support the engine by placing suitable jack stands on the cylinder block pan rails. Make sure not to damage the sealing surfaces of the pan rails. Remove one main

bearing (refer to section 1.9.1 of the MBE4000 Service Manual) and one connecting rod bearing (refer to section 1.17.1 of the *MBE4000 Service Manual*), preferably from cylinder #3 or 4, and inspect for damage from loss of oil pressure.

b. If the engine has NOT suffered a cup plug failure, DO NOT remove the oil pan and DO NOT replace the oil pan gasket. Support the engine by placing a suitable floor jack under the shallow portion of the oil pan. Place a board between the oil pan and the jack. This board needs to be at least ¾ in. thick plywood that covers most of the shallow part of the oil pan. See Figure 1. Wrap a suitable chain around the frame rails and under the engine to act as a safety sling in case the floor jack fails.

Figure 1 Floor Jack Engine Support by Shallow Portion of Oil Pan

6. Remove the rear engine mounts. Refer to the applicable vehicle service manual.

7. Remove the flywheel housing. Refer to section 1.16 of the *MBE4000 Service Manual* (6SE412).

NOTICE:
If you are not removing the oil pan, use extra care when removing the flywheel housing to avoid damaging the oil pan gasket.

8. Remove the cup plug(s) using the following procedure. Make sure not to damage the plug bores in the cylinder block. See Figures 2 - 4.

   a. Use a punch or chisel to hit the bottom of the cup plug near one side to turn it sideways. See Figure 3.

   b. After turning the plug sideways, use pliers to grab the cup plug as shown in Figure 4.

   c. Carefully pull the cup plug from the engine block as shown in Figure 4.

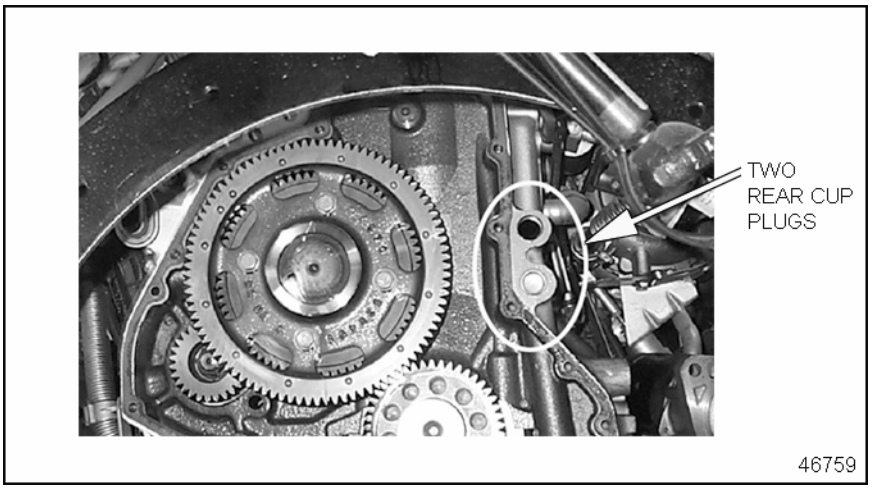


Figure 2 Removal of Two Rear Cup Plugs

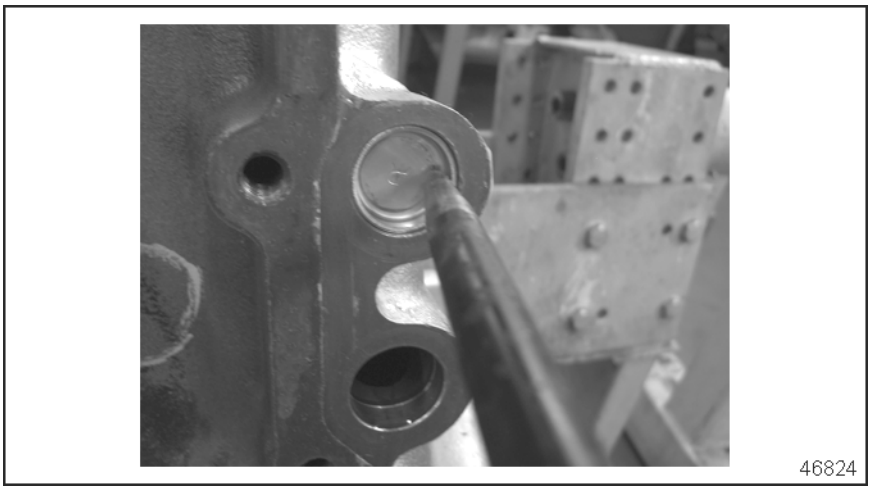


Figure 3 Proper Location of Punch to Turn Plug Sideways

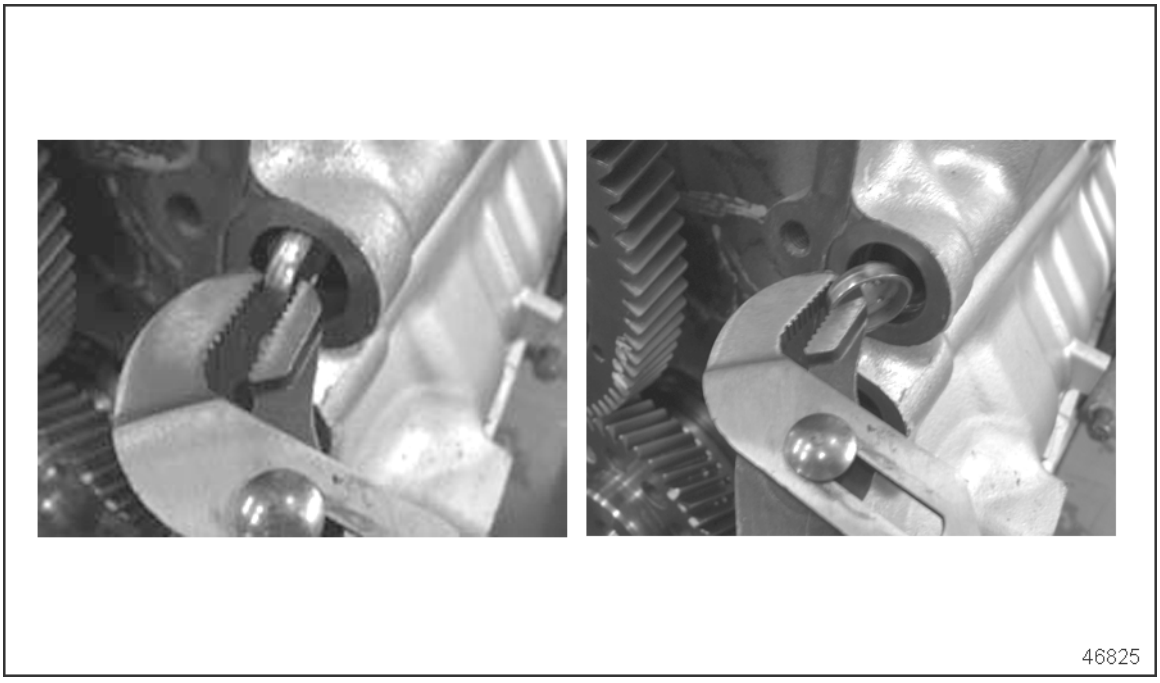


Figure 4 Attaching and Removing Plugs with Pliers

NOTICE:
• **Do NOT drill through the cup plug to attach slide hammer or similar device**. • Drilling can introduce metal chips into the oil gallery and cause subsequent engine damage.

9. Using a dry shop towel, clean both cylinder block plug bores so they are clean and dry.

10. Apply a uniform layer of Loctite 680 all around the side surface of the new cup plugs.

11. Using Kent-Moore tool J-47394, carefully drive the new plugs into the cylinder block until the tool seats against the block. When properly installed, the plugs will be 1.4-1.7mm (0.055-0.066 in.) below the block surface. See Figures 5 and 6.

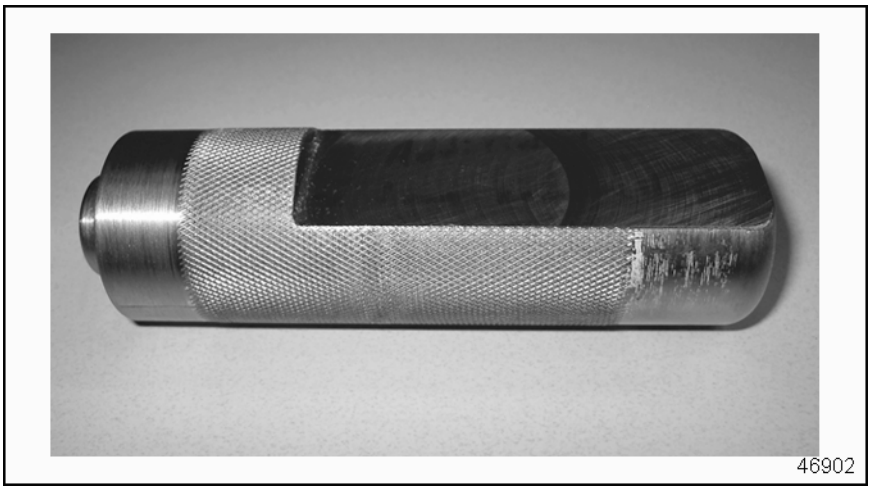


Figure 5 Kent-Moore Tool J-47394

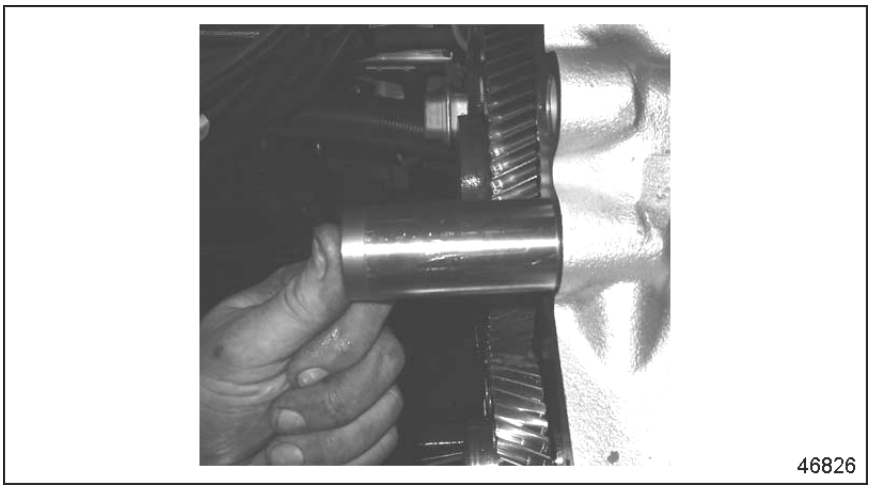
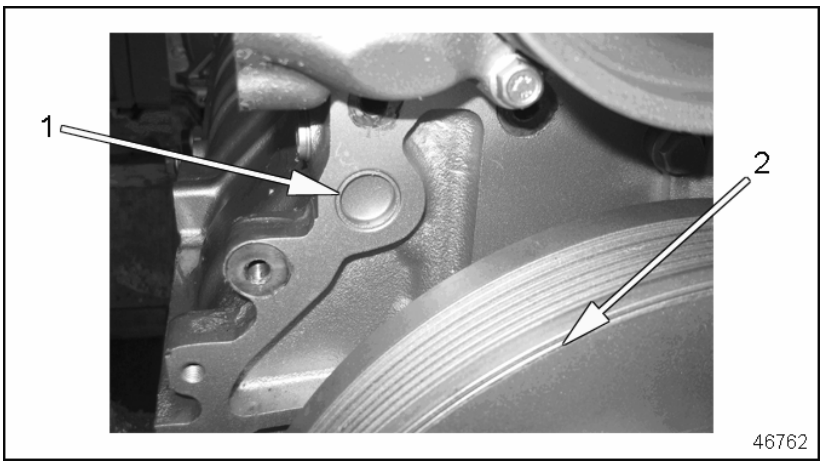


Figure 6 Tool Properly Seated Against Block

12. Reinstall the removed components in reverse order.

Install the new front cup plug as follows (see Figure 7):



1. Front Plug 2. Damper

Figure 7 Front Cup Plug Location

1. Apply the parking brake, chock the wheels, and perform any other applicable safety steps.
2. Disconnect vehicle battery power.
3. Remove the former cup plug. Make sure to not damage the plug bore in the cylinder block. See Figures 3 and 4.
4. Using a dry shop towel, clean the cylinder block plug bore so it is clean and dry.
5. Apply a uniform layer of Loctite 680 all around the side surface of the new cup plug.
6. Using Kent-Moore tool J-47394, carefully drive the new plug into the cylinder block until the tool seats against the block. When properly installed, the plug will be 1.4-1.7mm (0.055-0.066 in.) below the block surface. See Figures 5 and 6.

7. Reinstall the removed components in reverse order.

8. After all three plugs have been replaced, start and run the engine and verify there are no leaks.

DETROIT DIESEL

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.detroitdiesel.com