



VOLVO D13 / MACK MP8 SERIES

Professional Injector Sleeve Removal & Installation Manual
451-6681-00



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VOLVO D13 / MACK MP8 SERIES INJECTOR SLEEVE REMOVAL & INSTALLATION



**The Professional VOLVO D13 / MACK MP8 Kit with Toolbox
451-6681-00**

Image #	Description	Part #
1	Sleeve Removal Tool	445-6682-10
2	Tip Expander Driver	445-6681-25
3	Permatex 64000 High Heat Sleeve Retainer	468-9640-00
4	Tool Box	467-1950-25
5	Driving Arbor	414-6114-10
6	End Facing Counter Bore Cutter	445-6683-30
7	Combo Large Brush-Upper Bore/Face	450-6951-07
8	Tip Expander	445-6681-21
9	Permatex Anti-Seize Lubricant	468-9771-34
10	Small Tip Bore Brush	450-6951-08
11	Counter Bore Pilot	416-6158-62
12	Guide Bushing	416-6158-32
13	"EA" Tap & Lube	468-9910-08
N/A	Kit Instructions	451-3540-13

CONSUMABLES

Volvo D13 / Mack MP8 Stainless Steel Injector Sleeve w/O-Ring

419-6681-05

Made in USA

REMOVAL and INSTALLATION

Injector Sleeve Removal Instructions

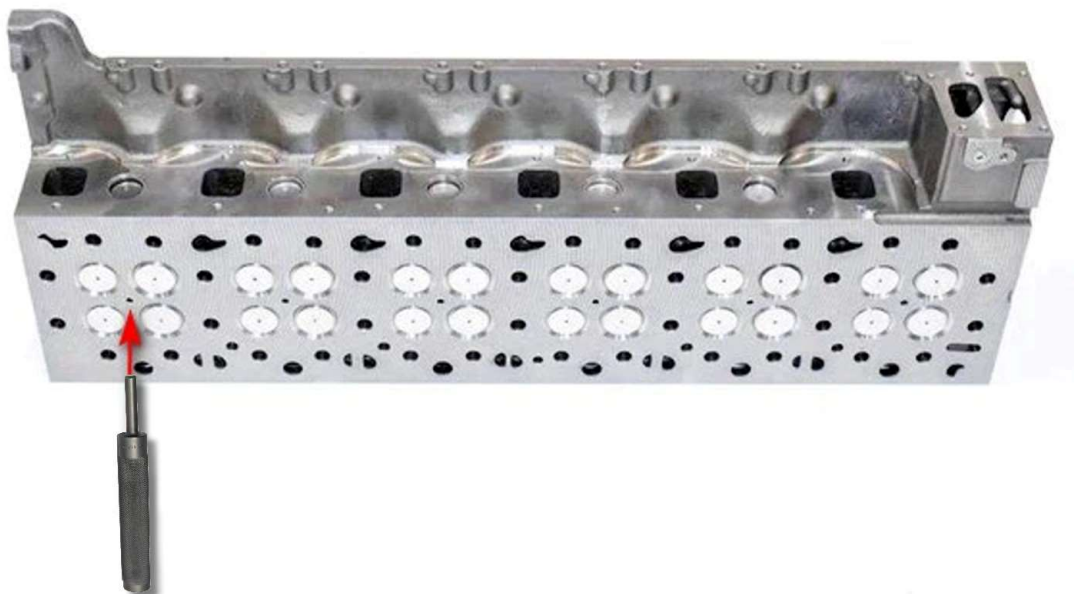
Prerequisite: The cylinder head must be removed before starting this procedure.

Required Tool

- Removal Tool: **445-6682-10**
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Procedure Steps

1. **Prepare the Tool:** Take the pilot tip of **Removal Tool 445-6682-10**.
2. **Insert Pilot Tip:** Insert the pilot tip into the **small opening** at the **combustion-chamber end** of the injector sleeve.
3. **Ensure Seating:** Verify that the pilot tip seats **fully** into the opening.
4. **Position the Tool:** Hold the removal tool **square** (perpendicular) to the injector sleeve.
5. **Remove the Sleeve:** While maintaining the square position, **tap the tool with a hammer** to drive the sleeve out.
 - **Note:** The sleeve will be driven out toward the **injector bore** (the top side of the cylinder head).



Sleeve Installation

1. Using the Combo Large Brush-Upper Bore/Face Brush (450-6951-07) clean the inside of the injector sleeve bore/face area.



2. Using the Small Tip Carbon Steel Bore Brush (450-6951-08) clean the tip of the injector sleeve bore area.



Sleeve Installation (Continued)

3. Clean out the injector Seat in the Casting

- 1) Set up the cutter (445-6683-30) and pilot (416-6158-62) - Put the counterbore pilot into the cutter and tighten the set screw.
 - a. The pilot can be left in the cutter. You don't need to remove it unless it breaks and you replace it, then move the pilot to the new cutter.
- 2) Add the guide bushing, then mount the tool - Slide the guide bushing over the cutter first (over the end that will go into the machining center).
 - a. Now put the cutter (with the pilot attached and bushing in place) into the driving arbor (inside diameter).
 - b. Insert the whole tool assembly into the injector bore in the cylinder head.
- 3) Use cutting fluid - Apply EA Lube to the cutter and the bore. Keep it wet while cutting.
- 4) Set the speed - Run the machine at 60 to 80 RPM. (Adjust speed as required to get good cutting action.)
- 5) How much to cut - Clean up only a small amount of metal in the seat area of the casting:
 - a. Minimum: 0.002" to 0.003"
 - b. Maximum: 0.005"
 - c. The goal is to remove pitting or corrosion so the new injector sleeve will seal properly.
- 6) Start the cut - Slowly lower the cutter into the bore. - Let the pilot guide the tool. Stop when the pilot bottoms out.
- 7) After cutting - Clean the area.

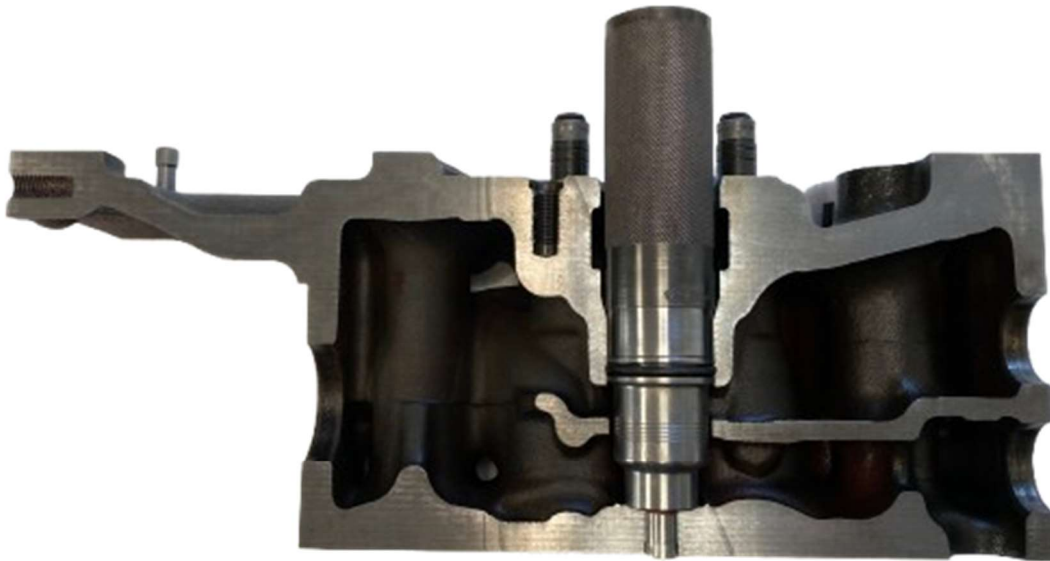


Tips

- Go slow and steady. Don't force the cutter.
- Keep using EA Lube so the cutter stays cool and cuts smoothly.
- If you see chatter or rough cutting, add more EA Lube and check that RPM is within 60–80 or maybe even less.

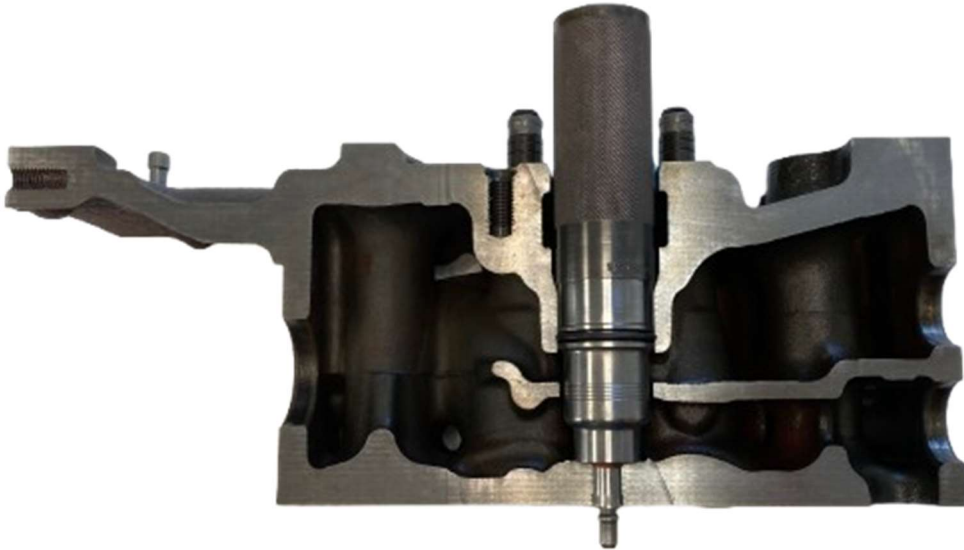
Sleeve Installation Continued

4. Install the O-ring onto the injector sleeve (419-6681-05).
 - Apply Permatex 64000 High Heat Sleeve Retainer (468-9640-00) to the lower end of the injector sleeve (419-6681-05).
 - Position the injector sleeve in the bore of the casting.
 - Using the tip expander driver (445-6681-25) and a hammer, drive the injector sleeve (419-6681-05) fully down until it seats at the bottom of the casting.



Sleeve Installation Continued

5.
 - Assemble the tip expander driver (445-6681-25) with the tip expander (445-6681-21).
 - Apply Permatex anti-seize lubricant to the tip expander.
 - Position the tip expander at the nose of the injector sleeve.
 - Using a hammer, drive the tip expander through the nose of the injector sleeve.
 - From the combustion face of the cylinder head, remove the tip expander.
 - Remove the tip expander driver from the injector sleeve.





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