



CUMMINS M-11 SERIES

Sleeve Removal & Installation Manual

IRONTITE PRODUCTS INC

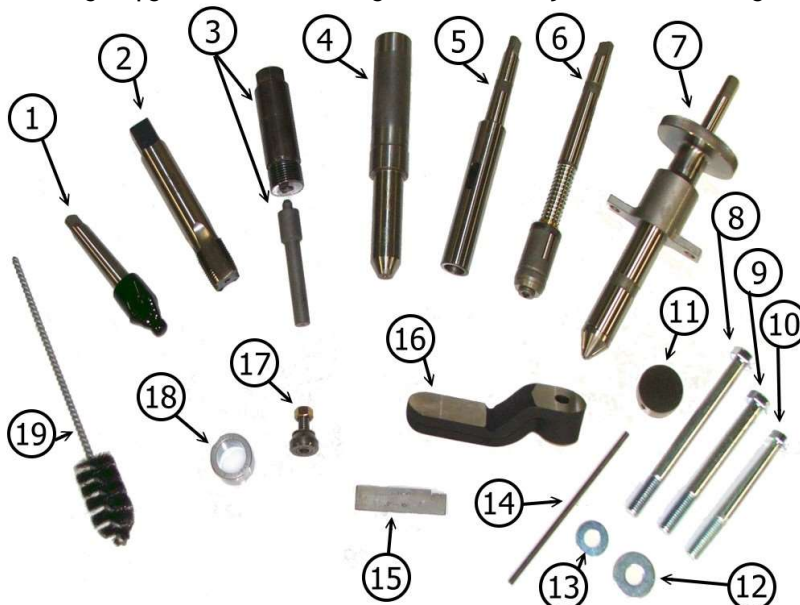
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CUMMINS M-11 STAINLESS STEEL INJECTOR SLEEVE REMOVAL & INSTALLATION KIT

Cummins has updated the M-11 Series Cylinder Heads from Copper Injector Sleeves and Small Viton O-Rings to **Stainless Steel Injector Sleeves with Large Viton O-Rings**

Tooling is **upgradeable** from existing Cummins L-10 Injector Sleeve Tooling.



The Complete M-11 Series Kit with Toolbox - 450-6152-30

Image #	Description	Part #
1	Sleeve Seat Cutter (Carbide)	416-6152-27
2	M-11 Tap	437-5331-36
3	M-11 Complete Tool *Includes Tool Body & Mandrel *Sleeve Removal Tool Puller Body (415-6132-41) *Sleeve Removal Puller Mandrel (415-6132-49)	415-6132-40
4	Sleeve Drive In Tool	415-6152-61
5	Driving Arbor	414-6114-10
6	M-11 Sleeve Body Roll-in Tool	416-6152-43
7	M-11 Sleeve Nose Roll-in Tool	416-6152-45
8,9,10,12,13,16	Gauge Finger Assembly (This includes marked "←" items Below)	433-6991-00
8	½" - 13 x 6" Bolt ←	467-1686-00
9	½" - 13 x 5" Bolt ←	467-1685-00
10	½" - 13 x 4-½" Bolt ←	467-1684-50
11	Gauge	416-6152-98
12	½" U S S Washer ←	467-1520-50
13	½" SAE Washer ←	467-1520-51
14	Gauge Handle	414-6111-30
15	Flat Tip Protrusion Gauge	414-6111-19
16	Gauge Finger (Without Bolts & Washers) ←	433-6991-02
17	M-11 Injector Tube Clamp Assembly	416-6154-40
18	Guide Bushing	414-6114-36
19	Casting Cleaning Brush (Carbon Steel)	450-6951-02
	"EA" Lube (8 oz)	468-9910-08
	Tool Box	467-1950-50

ADDITIONAL AVAILABLE ITEMS

Description	Part #
M-11 Stainless Steel injector Sleeve	419-6192-41
Viton O-Ring	419-6192-42

Made in USA

REMOVAL and INSTALLATION

Sleeve Removal

- 1) Install the sleeve hold down clamp (416-6154-40) through the inside of the sleeve. Install washer and nut onto stud sticking out from face of head and tighten.
- 2) The clamp will keep the sleeve from turning while tapping the sleeve.
- 3) Using tap (437-5331-36) and guide bushing (414-6114-36), lubricate the tap with "EA" Lube (468-9910-08) while tapping the injector sleeve about 3/8" to 1/2" deep.
- 4) Unbolt and remove the hold down clamp. Install puller mandrel (415-6132-49), long end though the sleeve from the top side of the head then thread the sleeve puller body (415-6132-41) into the tapped sleeve.
- 5) Turn the head over. Using a hydraulic press, press on the mandrel to push the sleeve from the head.

Sleeve Installation

- 1) Use the carbon steel brush (450-6951-02) to clean the inside of the injector sleeve bore. Be sure to remove the old "O" ring and replace it with a new one available from Irontite Products (419-6192-42).
- 2) Use the Sleeve Drive-In Tool (416-6152-61) and a hammer to drive the Sleeve (419-6192-41) to the bottom of the casting.
- 3) Use the Sleeve Nose Roll-In tool (416-6152-45). Back off the hand knob before installing the tool into the head. Bolt the tool to the head using the two bolts provided. You can use a drill motor or a seat and guide machine to drive the tool.
- 4) Turning the tool at a slow RPM (40-60rpm), turn the knob clockwise, rolling the nose of the sleeve in.
- 5) Use the Sleeve Body Roll-In Tool (416-6152-43) to roll in the upper end of the injector sleeve. This can also be done using a seat and guide machine.
- 6) Roll in the upper end of the sleeve by running the machine clockwise and letting the roll-in tool feed itself.
- 7) To remove the tool, reverse the machine.
- 8) Using the Sleeve Nose Roll-In Tool (416-6152-45) repeat step (3) of Sleeve Installation.

Cutting Injector Tip Protrusion

- 1) Set up the Guide Bushing (414-6114-36), Sleeve Seat Cutter (416-6152-27) and the Driving Arbor (414-6114-10) in a seat and guide machine. Bolt the Gauge Finger (433-6991-00) to the face of head. Set the Gauge (416-6152-98) with the Gauge Handle (414-6111-30) onto the Gauge Finger.
- 2) Use a good cutting fluid like our "EA" Lube (468-9910-08). Run the machine at a slow RPM (40-60rpm) and you may have to vary the speed to get a good finish.
- 3) Cut the Sleeve until the pilot end of the Cutter touches the Gauge.
- 4) You can check the tip protrusion with the Flat Tip Protrusion Gauge (414-6111-19) and the Injector.
- 5) The protrusion should be between the steps of the gauge.

Note: It is always a safe practice to install an injector with Prussian Blue Compound applied at the Seat Area to insure proper seating of Injector.



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