L-10, M-11 Copper Series

SLEEVE REMOVAL AND INSTALLATION TOOLING INSTRUCTIONS

Parts Listing and Instructions for PN: 450-6152-40

Rev. 200428
Doc. PN: 451-3540-10

L-10, M-11 COPPER SERIES – SLEEVE REMOVAL & INSTALLATION

450-6152-40 – L-10, M-11 (Copper) SERIES KIT with Toolbox

Kit includes the following;

Description	Part #
Drive-In Tool	416-6152-61
Seat Cutter (Carbide)	416-6152-27
Driving Arbor	414-6114-10
Roll-In Tool w/Tension Spring	415-6152-53
Seat Cutter Gauge	416-6152-98
Guide Bushing	414-6114-36
Tip Protrusion Gauge	414-6111-19
Gauge Finger	433-6991-00
Gauge Handle	414-6111-30
Casting Cleaning Brush	450-6951-02
Toolbox	
CONSUMABLES	
L-10 & M-11 Series Injector Sleeve (COPPER)	419-6192-51
L-10 & M-11 O-Ring (COPPER)	419-6192-52
“EA” Lube (8 oz.) – (Highly Recommended)	468-9910-08

Tooling, Made in USA

SLEEVE REMOVAL TOOLING - ORDER SEPERATELY

Complete Removal Tools – L-10 & M-11 (Copper Injector Sleeves)

415-6132-50 – for L-10 and Early M-11 (Copper Injector Sleeves) includes Mandrel & Tool body

Mandrels

415-6132-29 – for L-10 and Early M-11 (Copper Injector Sleeves)

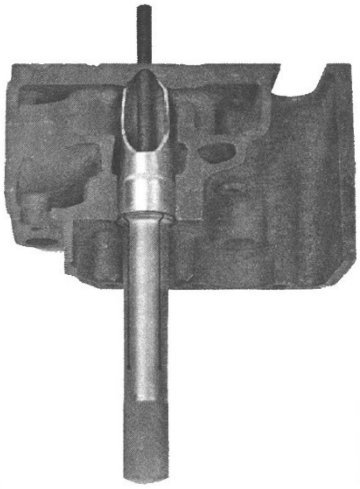
Tool bodies

415-6132-51 – for L-10, Early M-11 (Copper Injector Sleeves)

The sleeve removal tools consist of a mandrel, with tapered end, and a removal tool body with buttress threads at one end.

The mandrel is positioned up in the used sleeve with the tapered end down.

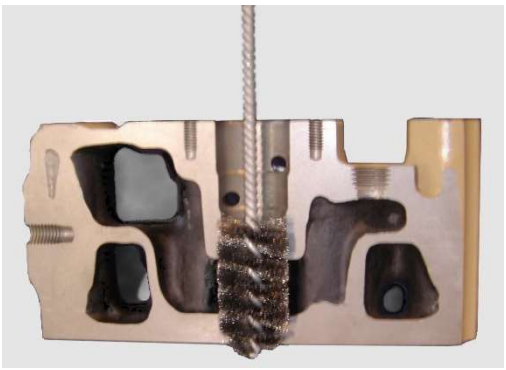
With upward pressure, turn the tool body by hand to cut threads into the copper sleeve. Turn by hand until you can't turn it any further. The buttressed threads on the tool body expand and grab a hold on the sleeve, and then use a hydraulic press to press the mandrel, copper sleeve, and tool body out as one unit. The use of a hydraulic press is required.



INSTALLATION OF NEW INJECTOR SLEEVE

1) Clean the casting area before installing new injector sleeves
   a) At the bottom of the injector seat in the casting are a series of small serrations. These serrations must be clean so that when the sleeve is driven in place the tip on the sleeve will be seated right into these serrations. These serrations help the injector sleeve prevent water from leaking in from the water jacket.

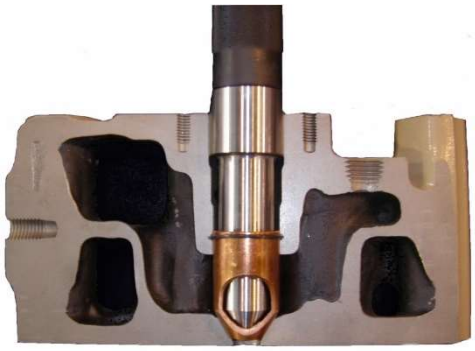
   b. Using the carbon steel brush (450-6951-02) clean the inside of the injector sleeve bore.



   c. If the seat of the casting has just been rebuilt the serrations will be new and clean. If not, besides using carbon steel brush, then consider using the “optional” casting seat cutter (414-6114-26) to clean them out.

   d. Before installing the new sleeve brush Irontite ceramic seal onto the nose of the sleeve and onto the seat in the casting. Ceramic seal here will further help seal the nose of the seat and prevent water leakage. Lubricate and install an O-Ring in the casting groove. Drop the sleeve into the hole or put it on the appropriate drive-in tool (416-6152-61) and insert the sleeve into the hole.

e. With a machinist's hammer, drive the sleeve down into the casting seat until the sleeve bottoms in the casting.



Expand the upper end of the injector sleeve

a. Insert the roll in tool (416-6152-53) into the injector sleeve in a seat and guide machine and operating the tool at about 50RPM roll it slowly down into the sleeve until the tool bottoms. All operating parts of the tool must be kept lubricated with a "Quality Motor Oil" (NOT "EA" Lube) at all times.
b. As the tool is brought down into the sleeve the rollers on the tool expand and the upper end of the sleeve in turn expands to a diameter within the specified limits.
c. Now to remove the tool, reverse the direction and draw it back out.

Cut the seat in the new injector sleeve for proper tip protrusion

a. Using the guide bushing (416-6154-36), sleeve seat cutter (416-6152-27) and driving arbor (414-6114-10), set up in a seat and guide machine, bolt gauge finger (433-6991-00) to face of head, set gauge (416-6152-98) with gauge handle (414-6111-30) onto gauge finger.
b. Using “EA” Lube (468-9910-08) as lubricant, using the slots at the sides of the guide bushing, run the machine at a slow (60-85) RPM and may have to be varied to get a good finish. Cut sleeve until pilot end of cutter touches the gauge.
c. While any head resurfacing should be done before the installation of the new injector sleeves, if, by chance. Any future resurfacing is contemplated, the sleeve seat cutter gauge should be shimmed up accordingly.

Checking Tip Protrusion

1. Tip Protrusion can be checked with the tip protrusion gauge (416-6111-19) obtaining an indicated tip protrusion of .090-.100.
2. With an injector placed into the injector sleeve, placing the tip protrusion gauge down on the face of the head which tells you if the tip protrusion falls within range. This is essential prior to placing the cylinder head back into service.

Irontite Products Inc.
2525 18th Street SW, Suite D, Cedar Rapids, IA 52404 USA
800-423-3384
+1-319-377-9421
FAX 319-377-9101
www.irontite.com