



SERVICE INSTRUCTION

DATE: 8/29/51
Revised 7/1/55

AIRCRAFT MOTORS DIV.
BRIDGE PLAZA, NEW YORK

NO: I-3

SUBJECT: REPLACEMENT OF CYLINDER LINERS ON MODELS 6A4-150, 6A4-165, 6V4-178 and 6V4-200

REMOVAL OF CYLINDER LINER FROM CYLINDER

- 1) With a standard 5/32" Allen wrench, remove the cylinder liner lock screws located at the cylinder flange. From the inside of the cylinder, drive the liner lock pin from its position.
- 2) Heat the cylinder in an oven to a temperature of 650°F. (343°C.) to expand the aluminum casting. When the cylinder is heated sufficiently (approximately 15 minutes) the liner may readily be removed by grasping the liner skirt with a pair of pliers and pulling the liner from the cylinder. Tapping the cylinder flange with a light hammer will aid in starting the liner from the cylinder.
- 3) Cool the cylinder casting to room temperature. Carefully gauge the inside diameter of the cylinder casting, in the area of the cooling fins, to determine the proper size replacement liner for installation.

By use of the following table, select the proper cylinder liner to obtain specified cylinder liner and cylinder casting interference fit.

<u>Liner</u> <u>Outside Diameter</u>	<u>Cylinder Casting</u> <u>Inside Diameter</u> <u>at Fin Area</u>	<u>Interference</u> <u>Fit</u>	<u>Symbol</u>	<u>Size</u>	<u>Liner</u> <u>Part No.</u>
4.622 - 4.6234	4.608 - 4.610	.012 - .0155	A	Under	17518M002
4.624 - 4.626	4.609 - 4.612	.012 - .017	---	Std.	17518
4.6265 - 4.628	4.611 - 4.613	.0135- .017	B	Over	17518P002
4.6285 - 4.630	4.6135 - 4.6165	.012 - .0165	C	Over	17518P004

Oversize and undersize replacement liners may be identified by the symbol letter which is acid-etched on the outside of the skirt adjacent to the inspector's stamp.

INSTALLING REPLACEMENT LINER

- 1) Heat the cylinder casting in an oven to a temperature of 650°F. (343°C.) for thirty minutes.

- 2) Remove the cylinder from the oven and place it, head down, on a suitable bench. Lower the replacement cylinder liner into the cylinder casting until the liner skirt projects .500" to .515" from the cylinder base.

NOTE

INSTALL THE LINER WITH THE INSPECTOR'S STAMP AND
SYMBOL IDENTIFICATION AT THE FLANGE END OF THE CYLINDER.

- 3) Allow the cylinder to cool to room temperature.
- 4) Drill the liner lock pin hole thru the cylinder liner with a 9/64" drill. Ream the drilled hole to .1555" to .1565".
- 5) Install a new liner lock pin in the drilled hole. Make certain the pin is firmly seated at the base of the hole in the cylinder casting. Install two liner lock screws which secure the liner lock pin using a sealing compound on the second screw.
- 6) With the cylinder piloted by the outside diameter of the liner rough and finish bore the inside diameter of the liner on a suitable boring machine (example; Excello or Heald), to a diameter of 4.497" - 4.499". It is necessary to remove .052" - .059" (.026" - .029" on a side). Rough bore should be set to leave .015" (.0075" on a side) for the finish boring operation. The speed of the boring bar should be 236 RPM and the feed .003" per revolution. The finished bore must be square with the cylinder flange with .002" total indicated run-out.
- 7) Break the sharp edge at the top of the liner and cut a 45° chamfer .010 - .015 inches wide on the inside diameter of the liner skirt.
- 8) Hone the cylinder liner using a straight hone to a finish dimension of 4.500" to 4.501". For honing, use 150K grit hone revolved at 305 RPM. Hone at the rate of approximately 47 cycles per minute. A cross-hatch pattern with a surface finish measurement of 20-27 micro-inches RMS is desired.