ROY LALLY

M.I. 9614
*Rev. A

ELECTRO-MOTIVE DIVISION • GENERAL MOTORS CORPORATION
SERVICE DEPARTMENT

MAINTENANCE INSTRUCTION

MODERNIZATION RECOMMENDATION

ENGINE WATER MANIFOLD INSERT AND SLEEVE

PURPOSE: To upgrade engine water manifolds and crankcase rear end plate to current design in order to eliminate end plate bore wear and extend the life of the manifold assembly.

APPLICATION: All Model 645 engines prior to Serial No. 72A —.
NOTE: Pilot run production of upgraded manifolds and crankcases occurred as early as 1969.

REFERENCE DRAWINGS: Figs. 1, 2, and 3 of this instruction.

DISCUSSION: The rework consists of boring out the crankcase end plate holes that accept the removable water manifolds and installing hard steel sleeves 8433263, which will eliminate further wear of the crankcase bores. A tool drawing to assist in local fabrication of a tool required for application of the sleeves is included in this instruction.

Because of the dimensions of the new sleeves, new inserts 8433264 must be applied to the water manifolds. This is accomplished by cutting off the previous inserts and welding new inserts accurately in place.

NEW MATERIAL REQUIRED: The following material is required to upgrade one engine.

Quantity Required	Part Number	Description
2	8433264	Insert, Water Manifold
2	8433263	Sleeve, Water Manifold
4	8433272	Seal, Water Manifold

The approximate price of the above material is $72.00. The price is for job estimating purposes only. Material will be billed at prices in effect at the time of shipment.

PROCEDURE

1. Bore crankcase end plate water manifold hole to 3.625" (+0.003" -0.000), with a surface finish of 200 micro inch, maximum.
2. Apply the hardened sleeve 8433263, Fig. 1, such that the outer edge is recessed 0.250" ± 0.010" from the face of the end plate. The tool shown in Fig. 2 should be made for this purpose.
3. The original water manifold insert must be removed. This is most easily accomplished by

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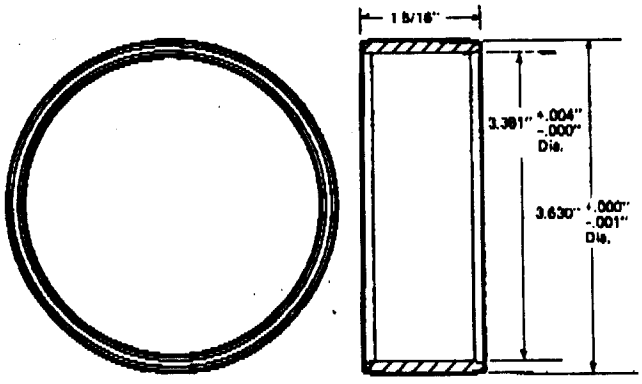
using a tool bit while the manifold is turning in a lathe. Care should be taken to cut as little as possible off of the manifold so as not to shorten it too much.

4. The new water manifold insert should now be applied taking care to insert it to a depth which will maintain the original manifold length for the engine as shown on Fig. 3. Weld all around the insert using 5/32 scarf weld with a 1/16" root opening. The weld must be water tight.

5. Apply two seals 8433272 to the water manifold and apply the water manifold to the crankcase.



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