MANDATORY
service bulletin

20 March 1991

SUBJECT: CYLINDER BARREL INSPECTION

MODELS
AFFECTED: IO520, TSIO520, GTSIO520, IO550

COMPLIANCE: Within the next 35 hours and then at intervals not exceeding 35 hours.

Affected Cylinder Part Numbers:

639272, 639272CP, 639272CE, 639274, 639274CP, 639274CE, 642320, 642320CP,
642320CE, 642594, 642594CP, 642594CE, 642691, 642691CP, 642691CE, 643771,
643771CP, 643771CE, 643985, 646100, 646101, 646652, 646652CP, 646652CE,
646657, 646657CP, 646657CE, 649156, 649162, 649162CP, 649162CE, 649169, 649169CP,
649169CE and all "A" dash numbers (example 646657CP-A3)

Recent information has necessitated the re-evaluation of the inspection criteria called for in the
previous M86-7 R6 and M87-19 service bulletins. As a result the following information should be
noted and checked for compliance.

Part I.

A. Any cylinder of the above listed part numbers that were manufactured by Teledyne
Continental Motors on or after January 1, 1981 are affected by this bulletin.

(1) If a cylinder has a part number listed above and was purchased on or after
January 1, 1981, remove the rocker cover/cover and determine the date of
manufacture stamped on the rocker shaft boss, (i.e. 1-85 is January 1985).
Any cylinders with1-81 (January 1981) or subsequent date must be inspected
per part II below.

(2) Any cylinder in A. (1) that has complied with Service Bulletin M87-19 and has
the new part number piston installed (see chart below), must comply with
inspections per Part II until the cylinder has a total operating time of 300
consecutive hours with the new piston.

(3) If the cylinder has not been installed on an engine and is identified as
described in the paragraph above, notify Teledyne Continental Motors for
disposition.

M91-6
Supersedes M90-21
Technical Portions Are
FAA Approved
Part II.

A. Visually inspect all cylinders for oil stains or leakage between the first and second barrel fins from the bottom of the head casting. The area of concern on direct drive engines is at the 12 o'clock position on the 1-3-5 cylinder side and the 6 o'clock position on the 2-4-6 side. On the GTSIO series engine, the area of concern is at the 6 o'clock position on the 1-3-5 cylinder side and the 12 o'clock position on the 2-4-6 cylinder side.

B. Pressurize each cylinder using a differential compression tester. The piston should be as close to BDC (Bottom Dead Center) as possible with both valves closed and maintaining pressure in the cylinder.

NOTE...The pressure is checked at BDC to assure the piston and rings are below the inspection area specified in paragraph A.

With 80 PSIG (Pounds Per Square Inch Gauge) air pressure in the cylinder, check the area specified in, Part II, paragraph A with a soap/water solution and inspect for any leakage.

WARNING...Use extreme caution in the area of the propeller while performing this inspection.

C. If any leakage is noted from the above inspection, the cylinder must be changed.

Notify TCM immediately if any evidence of leakage is detected. (Service Department: 205-438-3411.)

Part III.

The inspection requirements for cylinders listed in Part I is eliminated by the installation of cylinders P/N 649315, 649316, 649317, 649317CE, 649317CP, 649318, 649318CE, 649318CP, 649329, 649357, 649357CE, 649357CP, 649358, 649358CE, 649358CP and all "A" dash numbers appropriate for that model engine.

New pistons have been developed with skirt contours which reduce cylinder barrel stress levels. These pistons supersede previous design pistons. The superseded pistons should be removed from stock.

<table>
<thead>
<tr>
<th>Engine Series</th>
<th>Superseded and No Longer Available</th>
<th>New Piston</th>
</tr>
</thead>
<tbody>
<tr>
<td>IO550</td>
<td>646533 S/S by</td>
<td>648046</td>
</tr>
<tr>
<td>IO520</td>
<td>646072, 648013 S/S by</td>
<td>648045</td>
</tr>
<tr>
<td>TSIO520, GTSIO520</td>
<td>641782, 642761, 646303 and 648033 S/S by</td>
<td>648044</td>
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</tbody>
</table>
Part III. (cont’d)

Teledyne Continental Motors is developing an alternative testing procedure for the cylinder. When this procedure has been finalized a revision to this bulletin will be issued.

WARRANTY

If, as a result of this inspection, a cylinder must be changed, it will be covered by the TCM Gold Medallion Warranty, subject to its terms and conditions. Warranty claims may be filed through any TCM distributor.

Make appropriate Engine Log Book entry upon completion of each inspection.