Single Engine

Service Bulletin

December 3, 1991

TITLE
ENGINE CYLINDER BARREL INSPECTION

EFFECTIVITY

The following airplanes equipped with Teledyne Continental Motors (TCM) IO-520 or TSI0-520 engines that have any cylinders(s) installed that were manufactured on or after January 1, 1981.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>YEAR</th>
<th>SERIAL NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>1966</td>
<td>thru 1969</td>
</tr>
<tr>
<td>185</td>
<td>1970</td>
<td>thru 1985</td>
</tr>
<tr>
<td>188</td>
<td>1966</td>
<td>thru 1969</td>
</tr>
<tr>
<td>188</td>
<td>1970</td>
<td>thru 1981</td>
</tr>
<tr>
<td>188</td>
<td>1972</td>
<td>thru 1983</td>
</tr>
<tr>
<td>188</td>
<td>1979</td>
<td>thru 1983</td>
</tr>
<tr>
<td>206</td>
<td>1964</td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>1965</td>
<td>thru 1969</td>
</tr>
<tr>
<td>206</td>
<td>1970</td>
<td>thru 1986</td>
</tr>
<tr>
<td>P206</td>
<td>1965</td>
<td>thru 1969</td>
</tr>
<tr>
<td>P206</td>
<td>1970</td>
<td></td>
</tr>
<tr>
<td>207</td>
<td>1969</td>
<td>thru 1984</td>
</tr>
<tr>
<td>210</td>
<td>1964</td>
<td>thru 1986</td>
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<td>T210</td>
<td>1966</td>
<td>thru 1969</td>
</tr>
<tr>
<td>P210</td>
<td>1978</td>
<td>thru 1986</td>
</tr>
</tbody>
</table>

SERIAL NUMBERS

185-0968 thru 185-1599
18501600 thru 18504448
188-0001 thru 188-0572
18800573 thru 18803856
18800967 thru 18803968
T18803307 thru T18803968
206-0001 thru 206-0275
U206-0276 thru U206-1444
U20601445 thru U20607020
P206-0001 thru P206-0603
P20600604 thru P20600647
2070001 thru 20700788
21058221 thru 21065009
T210-0001 thru T210-0454
P2100001 thru P21000874

PURPOSE

To transmit TCM Mandatory Service Bulletin M91-6; Cylinder Barrel Inspection, which requires a special repetitive inspection of specific cylinders for indications of cylinder barrel cracking.

To transmit TCM Mandatory Service Bulletin M91-7; Cylinder Barrel Ultrasonic Inspection, which provides an alternate method of inspection to relieve the repetitive inspections of M91-6.
COMPLIANCE

Mandatory; shall be accomplished as specified in TCM Mandatory Service Bulletin M91-6 (or later revision) and TCM Mandatory Service Bulletin M91-7 (or later revision).

NOTE: This Service Bulletin supersedes Cessna Single Engine Service Bulletin SEB86-3 thru Revision 3.

APPROVAL

FAA approval has been obtained on technical data in this publication that affects airplane type design.

MAN-HOURS

Approximately 1.0 man-hour per engine to inspect for cracks per TCM Service Bulletin M91-6.

MATERIAL

Replacement cylinders and pistons are available from the Cessna Supply Division thru an appropriate Cessna Service Station.

ACCOMPLISHMENT INSTRUCTIONS

Refer to the attached TCM Mandatory Service Bulletin M91-6, Cylinder Barrel Inspection (or later revision) and TCM Service Bulletin M91-7, Cylinder Barrel Ultrasonic Inspection (or later revision).

CREDIT

Refer to the Warranty section of TCM Service Bulletins M91-6 and M91-7.

OWNER NOTIFICATION

On December 10, 1991 the following Owner Advisory Message will be sent to applicable owners of record in SEB91-12A.

Dear Cessna Owner,

TCM has issued Mandatory Service Bulletin M91-6 Cylinder Barrel Inspection, which requires a special repetitive inspection of a specific group of cylinders for indications of cylinder barrel cracking. Airplanes equipped with IO-520 or TSIO-520 engines that have cylinder(s) installed that were manufactured on or after January 1, 1981 are affected.

Compliance is mandatory; shall be accomplished within the next 35 hours of operation and every 35 hours thereafter as specified in Teledyne Continental Mandatory Service Bulletin M91-6.

Please contact a Cessna Single Engine Service Station for detailed information regarding the accomplishment of this Service Bulletin on your airplane.

* * * * * * * * *
TELEDYNE CONTINENTAL® AIRCRAFT ENGINE

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, 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/covers and determine the date of manufacture stamped on the rocker shaft boss, (i.e. 1-85 is January 1985). Any cylinders with 1-81 (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 on page 2), 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.

(continued)
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 GTSO 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>
</tr>
</tbody>
</table>

(continued)
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.
Mandatory service bulletin

20 March 1991

Subject: Cylinder Barrel Ultrasonic Inspection

Models Affected: IO520, TSIO520, GTSIO520, IO550

Compliance: Prior to reconditioning (Chroming or Oversizing) of Affected Cylinders...

WARNING... This service bulletin does not alter or modify manufacturer's specifications regarding oversizing or chrome-plating of cylinders. See applicable overhaul manuals for this information.

Affected Cylinder Part Numbers:

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

An alternate method of inspection has been developed to detect discrepancies in TCM manufactured cylinders between the first and second cylinder barrel fins from the bottom of the head casting. The areas of concern are the 12 o'clock and 6 o'clock positions. Compliance with this inspection will be required only once and will relieve the inspection requirements of Service Bulletin M91-6, as long as the new piston as described in Service Bulletin M91-6 is utilized and the piston to cylinder fit is as specified by TCM.

WARNING... This inspection cannot be performed satisfactorily on Channel Chrome Cylinders.

The equipment used to perform this inspection can be purchased from:

Krautkramer-Branson, Inc.
P.O. Box 350
Lewistown, PA 17044
Phone: (717) 242-0327

Training will be provided by TCM at no charge, but you must supply your own equipment. Contact TCM Service Department, (205) 438-3411 Ext. 305 to schedule training sessions or for locations of facilities that are equipped to perform the inspection.

Inspection Equipment:

Flaw Detector: Krautkramer-Branson USL-42 or equivalent
Fixture: Krautkramer-Branson P/N 291-678-000 60° axial
Transducer: Krautkramer-Branson 5.0 MHz, .125 diameter SMSWS P/N 113-214-585.
Cable: 6' MMD to BNC Krautkramer-Branson P/N C-047.

(continued)
Inspection Equipment: (cont’d)

Filter
1.5 Microhenry BNC to BNC Krautkramer-Branson
P/N 281-678-200

Reference Standard
Purchase from TCM at the time of training.

Couplant
Engine Oil SAE 30 to SAE 50 weight

NOTE...The wheel Fax Jr. Mark IV Model O instrument is not suitable for performing this inspection.

Identification:
Identify affected cylinders which have complied with this inspection by steel stamping the letter ‘T’ at the cylinder head rocker cover flange. See Figure A.

WARRANTY

If, as a result of this inspection, a cylinder must be replaced, 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.

Figure A.