

**U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION**

**Airworthiness Directive**

**86-13-04 R3 Teledyne Continental Motors (TCM):** Amendment 39-5345, as amended by Amendment 39-5555, is further amended by Amendment 39-5850.

Applies to cylinder assemblies (part number (P/N) stamped on flange of cylinder) with P/N's 643985, 646100, 646101, 646652, 646652CP, 646657, 646657CP, 649162, 649162CP, 649169, 649169CP including all these numbers with all "A" dash numbers as a suffix, and also any cylinder reworked from the above part numbers, either of which were manufactured on or after January 1, 1985, with 485 total hours or less installed on, but not limited to, the following Teledyne Continental Motors (TCM) Engines:

<b>NEW ENGINES</b>	<b>SERIAL NUMBERS</b>
GTSIO-520-H	607068 thru 607070
-K	605164
-L	608669 thru 608673
-M	606979 thru 606997
-N	610450 thru 610462
TSIO-520-BE	528133 thru 528242, 528244 thru 528246, 528252 thru 528256, 528259, 528260, 528263, 528270
-CE	530045 thru 530127, 530131, 530132
-C	501603 thru 501610
-EB	510802 thru 510809
-G	507066
-H	506883 thru 506885
-M	520742 thru 520824, 520829 thru 520835, 520837, 520838
-NB	521585 thru 521615
-P	513908 thru 513910
-R	522588 thru 522602, 522604, 522605
-UB	527063 thru 527080
-VB	529014 thru 529060
-WB	518895 thru 518906
IO-520-BB	578073, 578084 thru 578151, 578155, 578156, 578166
-CB	576237 thru 576272
-D	575717, 575747 thru 575806
-E	556594 thru 556603
-F	574844 thru 574988
-K	557516 thru 557518

<b>NEW ENGINES</b>	<b>SERIAL NUMBERS</b>
-L	577121 thru 577147, 577149 thru 577153
-MB	575043 thru 575046
IO-550-B	675125 thru 675237, 675239 thru 675244, 675246 thru 675256, 675258 thru 675266, 675273, 675274, 675277, 675278
-C	676156 thru 676231, 676233 thru 676248, 676250 thru 676271

<b>REBUILT ENGINES</b>	<b>SERIAL NUMBERS</b>
GTSIO-520-C	155546 thru 155550
-D	219429 thru 219435
-H	235236 thru 235290, 235293 thru 235298, 267000 thru 267003
-K	226106 thru 226110
-L	245882 thru 245990, 245992 thru 246008, 246011 thru 246014, 246016 thru 246021, 246023, 246024
-M	243217 thru 243364, 243366, 243367, 243369 thru 243381
-N	241300, 265000 thru 265039, 265041
TSIO-520-AF	245205
-BB	236937 thru 236951
-B	176485 thru 176522
-C	178289 thru 178297
-EB	242984 thru 242999
-E	183816 thru 183939, 183941 thru 183943, 183947
-G	216022 thru 216025
-H	217173 thru 217187
-J	218907 thru 218924
-K	224583, 224584
-LB	237237 thru 237241, 237245, 237246
-L	241883 thru 241900
-M	230223, 230225, 248601 thru 248628, 248632 thru 248638, 248642
-NB	244933 thru 244999, 266500, 266501, 266503 thru 266511, 266513 thru 266517, 266521, 266525
-N	228481 thru 228505, 228509 thru 228516
-P	236453 thru 236467
-R	245645 thru 245696
-T	239316 thru 239321
-UB	240981 thru 241000, 248851 thru 248854, 248858

<b>REBUILT ENGINES</b>	<b>SERIAL NUMBERS</b>
-VB	248288 thru 248499, 266600 thru 266681, 266683, thru 266685, 266687, 266689, 266691, 266699 thru 266702
-WB	248160 thru 248203, 248205 thru 248217
IO-520-A	112547 thru 112569
-BA	241763 thru 241800, 249251 thru 249425, 249427 thru 249429, 249433 thru 249443, 249445, 249446, 249448 thru 249453, 249457
-BB	236000, 236789, 248500 thru 248568, 248572, 248573, 248575
-B	234758
-CB	244047, 244067 thru 244110, 244112 thru 244123, 244126, 244127, 244130, 244131
-C	243728, 243766 thru 243999, 267500, 267505 thru 267510, 267513 thru 267516, 267527
IO-520-D	175381 thru 175531, 175534 thru 175536, 175540 thru 175556, 175559, 175560, 175563, 175565 thru 175567
-E	215674 thru 215690
-F	247574, 247577, 247607 thru 247727, 247731 thru 247742, 247744, 247746 thru 247750, 247752 thru 247756, 247762, 247766, 247767
-J	216515
-K	224045, 224046
-L	242834 thru 242896, 242899
-MB	236383 thru 236400, 266000 thru 266017, 266019
-M	235728 thru 235787, 235789 thru 235793
IO-550-B	249104 thru 249122

These engines are installed in, but are not limited to, the following airplanes:

Aero Commander 200, 500, 685; AISI F, 20 Pegaso; Ambrosini MF-15; Beagles B206S Beech 33, 35, 36, A36, A36TC, 55, 58, 58P, 58TC; Bellanca Viking 300; Cessna 185, 188, 206, 207, 210, 310, T310, 320, 335, 340, 401, 402, 404, 411, 414, 421; Fletcher FU-24A; Janox Javilon; Navion Model H; Omnipal Cmelak; Piper PA-46; Prinair DeHavilland Heron; Procaer F-150 Picchio; Transavia Airtruck; Windecker Eagle; and Yeoman Cropmaster 285.

Compliance required within the next 5 flight hours after the effective date of this AD, except as to those compliance requirements made effective previously as set forth in AD 86-13-04 dated June 20, 1986, priority letter AD 86-13-04 R1 dated September 5, 1986, AD 86-13-04 R2 dated February 19, 1987, and priority letter AD 86-13-04 R3 dated November 10, 1987, unless already accomplished.

To prevent possible cylinder head to barrel separation, engine failure and/or engine compartment fire, accomplish the following:

(a) For the above cylinder assembly part numbers installed on engines including those serial numbered engines listed above:

(1) Determine the part number for each cylinder assembly (part number is stamped on flange of cylinder barrel) and the date of manufacture (month and year of manufacture are stamped underneath rocker cover on the face of the rocker shaft boss).

(i) If the cylinder assembly part number and date of manufacture are as listed above, proceed with paragraphs (2), (3), (4), (5), and (6).

(ii) If the cylinder assembly part number and date of manufacture are not as listed above, proceed to paragraph (6). No further inspections are required by this AD.

(2) 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.

(3) Pressure check all cylinder assemblies using a differential compression tester. The piston should be as close to BDC (Bottom Dead Center) as possible to insure the piston and rings are below the inspection area specified in paragraph (2) but still keeping both valves closed and maintaining pressure in the cylinder. With 80 PSIG (pounds per square inch gauge) air pressure in the cylinder, check the area specified in paragraph (2) with a soap/water solution and inspect for any leakage.

(4) If any leakage is noted from the above inspection and/or pressure check, the cylinder assembly must be changed before further flight.

NOTE: TCM Service Bulletin M86-7, Revision 5, dated November 15, 1986, advises that extreme caution be used in the area of the propeller while performing this inspection.

(5) This visual inspection and pressure check must be repeated at intervals not to exceed 50 flight hours until the last inspection and pressure check required by this AD has been accomplished. The last inspection and pressure check required by this AD must occur between 440 hours and 490 hours of cylinder operation.

(6) The repetitive inspections and pressure checks described above may be discontinued when one of the following has been accomplished:

(i) Suspect cylinder assemblies have been replaced with assemblies having a date of manufacture prior to January 1985.

(ii) Approved replacement cylinder assemblies having different part numbers are installed provided these replacement cylinder assemblies are not reworked from the assembly part numbers listed above.

(iii) New design pistons (as shown below) are installed, and the affected cylinder assembly has the letter "P" stamped or vibro-etched on the face of the rocker shaft boss

adjacent to the manufacture date, i.e. 5-85P.

<b>ENGINE SERIES</b>	<b>NEW PISTON PART NUMBER</b>
IO-550	648046
IO-520	648045
TSIO-520 and GTSIO-520	648044

(7) Make appropriate Engine Logbook entry.

(b) For the above cylinder assembly part numbers not installed on engines, confirm a manufacture date stamp of 1-85 (January 1985) or subsequent (month and year of manufacture are stamped underneath rocker cover on the face of the rocker shaft boss), then notify TCM for disposition and replacement.

(c) Comply with the provisions of this AD for the above cylinder assembly part numbers which are reworked and/or reidentified with a different part number.

NOTE: TCM Service Bulletin No.'s M86-7, Revision 5, dated November 15, 1986, and M87-19, dated September 17, 1987, address this subject.

(d) Aircraft may be ferried in accordance with the provisions of FAR 21.197 and 21.199 to a base where the AD can be accomplished.

(e) Upon request, an equivalent means of compliance with the requirements of this AD may be approved by the Manager, Atlanta Aircraft Certification Office, 1669 Phoenix Parkway, Suite 210C, Atlanta, Georgia 30349.

(f) Upon submission of substantiating data by an owner or operator through an FAA maintenance inspector, the Manager, Atlanta Aircraft Certification Office, 1669 Phoenix Parkway, Suite 210C, Atlanta, Georgia 30349, may adjust the compliance time specified in this AD.

AD 86-13-04, Amendment 39-5345, became effective July 11, 1986. Priority Letter AD 86-13-04 R1, issued September 5, 1986, became effective immediately upon receipt. Amendment 39-5555 (AD 86-13-04 R2) became effective February 19, 1987, as to all persons except those persons to whom it was made immediately effective by Priority Letter AD No. 86-13-04 R2, issued December 24, 1986.

This amendment, 39-5850, (AD 86-13-04 R3) becomes effective February 24, 1988, as to all persons except those persons to whom it was made immediately effective by priority letter AD 86-13-04 R3 issued November 10, 1987, which contained this amendment.