

**TELEDYNE CONTINENTAL<sup>®</sup> AIRCRAFT ENGINE**  
**CRITICAL SERVICE BULLETIN**  
 Compliance Necessary To Maintain Safety

**CATEGORY 2**

**CSB96-5**  
 FAA APPROVED  
 SUPERSEDES M93-6.

**SUBJECT:** OIL PUMP DRIVE GEARS, P/N 649506 AND 649681

**PURPOSE:** This bulletin supersedes M93-6. The inspection requirements and corrective actions that were mandated by Service Bulletin M93-6 have not been revised and are incorporated in this Service Bulletin. This Service Bulletin provides information on replacement oil pump drive gears for the affected engine models. Additional replacement gear information is provided in TCM Service Bulletin SB96-4.

**COMPLIANCE:** At next scheduled maintenance interval not to exceed 100 hours.

**MODELS  
 AFFECTED:**


**MODEL SERIAL NUMBER**

**NEW ENGINES**

IO-360	DB	351388 thru 351392
	HB	353383 thru 353397
	KB	356742, 356743
TSIO-360	EB	311749, 311750
	FB	318016, 318017
	HB	308144, 308145
	JB	313034, 313035
	KB	320028, 320029, 320041 thru 320043, 320045 thru 320051, 320053 thru 320071, 320075 thru 320100, 320103, 320104, 320106 thru 320112
	LB	316130
LTSIO-360	MB	317241 thru 317247
	EB	312732
	KB	319026, 319027, 319030 thru 319052, 319054 thru 319070, 319074 thru 319078, 319080 thru 319100, 319103, 319104, 319106 thru 319112


**REBUILT ENGINES**

O-300	A	16109D-R
	C	230815-R thru 230818-R
	D	25618D-R thru 25622D-R,
		25624D-R thru 25627D-R
		25356-R, 25363-R, 29723-R, 35774-R, 35977-R, 35978-R

ISSUED			REVISED			 <b>TELEDYNE CONTINENTAL MOTORS</b> P.O. Box 90 • MOBILE ALABAMA 36601 334-438-3411	PAGE NO	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		<b>1 of 5</b>	
04	11	96					CSB96-5	


**MODEL****SERIAL NUMBER****REBUILT ENGINES (cont'd)**

IO-360	A	020131-R
	CB	236516-R
	C	060602-R thru 060610-R
	DB	239661-R thru 239666-R, 239668-R thru 239670-R, 239675-R, 239676-R, 239683-R, 239689-R thru 239692-R
	D	062921-R thru 062929-R, 062931-R, 062932-R, 062937-R, 062938-R, 062940-R thru 062948-R
	GB	236665-R thru 236671-R
	G	226545-R, 244555-R thru 244557-R, 244559-R thru 244562-R
	HB	265161-R thru 265169-R, 265171-R thru 265178-R
	H	226537-R thru 226544-R, 226546-R thru 226548-R
	J	238720-R thru 238723-R
	KB	235962-R thru 235972-R, 235974-R thru 235983-R 235985-R thru 235993-R
	K	240102-R thru 240107-R, 240109-R, 240110-R
	TSIO-360	A
CB		236097-R, 236106-R thru 236122-R, 236124-R thru 236153-R, 236155-R, 236156-R, 236158-R thru 236164-R
C		230801-R, 230802-R, 283501 thru 283507-R, 283509-R thru 283512-R
EB		265734-R, 265736-R, 265740-R thru 265755-R, 265757-R thru 265763-R, 265765-R thru 265779-R, 265781-R thru 265801-R, 265803-R thru 265808-R, 265810-R
E		225132-R thru 225134-R, 225136-R
FB		281023-R thru 281025-R, 281027-R thru 281030-R, 281032-R thru 281055-R, 281057-R thru 281062-R, 281064-R thru 281070-R, 281072-R thru 281078-R, 281080-R, 281081-R
F		232804-R, 232805-R
HB		239964-R thru 239969-R
KB		268086-R, 268088-R thru 268093-R, 268095-R thru 268105-R, 268108-R thru 268110-R, 268112-R thru 268126-R, 268128-R, 268129-R
LB		247163-R, 247164-R, 247166-R thru 247195-R
MB		279211-R thru 279225-R
LTSIO-360	EB	266257-R, 266261-R thru 266282-R, 266284-R thru 266326-R, 266345-R, 266347-R, 266348-R, 266351-R, 266352-R
	E	225637-R, 225640-R thru 225642-R, 225644-R
	KB	268318-R thru 268366-R

ISSUED			REVISED			 <b>TELEDYNE CONTINENTAL MOTORS</b> P.O. Box 90 • MOBILE ALABAMA 36601 334-438-3411	PAGE NO	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		<b>2 of 5</b>	
04	11	96					CSB96-5	

**MODEL****SERIAL NUMBER****OVERHAUL ENGINES**

O-300	D	25179-H, 27903-H, 29712-H, 29899-H	
IO-360	CB	60475-H, 236505-H	
	C	060088-H	
	D	056217-H, 056495-H, 062900-H	
	GB	244523-H	
	G	244514-H, 352152-H	
	H	353252-H	
	J	238710-H	
	KB	256240-H, 355032-H, 355303-H, 355315-H, 355554-H	
	LTSIO-360	EB	233760-H, 233849-H, 233876-H, 233882-H, 233906-H, 233907-H, 233926-H, 233938-H, 266113-H, 266127-H, 266129-H, 266131-H, 304546-H, 304623-H, 306072-H, 306334-H, 306607-H, 306927-H, 306965-H, 312145-H, 312214-H, 312345-H, 312376-H, 312538-H, 312575-H
		E	304596-H, 304646-H, 304708-H, 304899-H
TSIO-360	KB	314041-H, 314052-H, 314096-H, 314100-H, 314150-H, 314153-H, 314180-H, 314204-H, 314206-H, 314273-H, 314276-H, 314295-H, 314307-H, 314491-H, 314570-H, 314618-H, 314850-H	
	EB	225091-H, 234598-H, 234668-H, 265582-H, 265591-H, 265607-H, 265630-H, 265683-H, 303127-H, 303616-H, 303881-H, 306318-H, 307451-H, 307582-H, 307679-H, 311034-H, 311188-H, 311283-H, 311407-H, 311455-H, 311525-H, 311549-H	
	E	303017-H	
	FB	305070-H, 305238-H, 305398-H, 305402-H, 305933-H, 305950-H, 310104-H, 310207-H, 310219-H, 310228-H, 310356-H, 310555-H, 310723-H, 310758-H, 310762-H, 310844-H, 310848-H	
	F	305067-H, 305448-H	
	GB	309254-H, 309807-H	
	KB	268026-H, 311592-H, 314055-H, 314135-H, 315038-H, 315227-H, 315255-H, 315274-H, 315300-H, 315449-H	
	LB	316026-H, 316065-H, 316094-H, 316103-H	

ISSUED			REVISED			 <b>TELEDYNE CONTINENTAL MOTORS</b> P.O. Box 90 • MOBILE ALABAMA 36601 334-438-3411	PAGE NO	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		<b>3 of 5</b>	
04	11	96					CSB96-5	

All O-300, IO-360, TSIO-360 & LTSIO-360 engines having one of the subject gears installed at engine overhaul or oil pump repair in the field, if the gear was purchased from TCM within the dates listed below.

MODEL	GEAR P/N	PURCHASE DATE
O-300, IO-360, TSIO-360	649506	March 27, 1990 - Dec. 1, 1991
LTSIO-360	649681	Nov. 6, 1989 - Dec. 1, 1991

TCM has determined that a number of oil pump drive gears, P/N 649506 and 649681, may be susceptible to a cracking condition related to improper heat treatment. These gears may have been installed in the O-300, IO-360, TSIO-360 and LTSIO-360 engines listed above or these model engines having the gear replaced in the field within the dates listed above.

Current information is that none of the affected gears have experienced crack propagation or mechanical failure as a result of this condition. TCM has also conducted tests which indicate that the condition will not prevent the gears from performing to overhaul.

TCM requires that the subject gears be removed and replaced on all affected engines. The new oil pump drive gear part numbers are 654210 for right hand rotating engines and 654210-1 for left hand rotating engines. The new gear is identified by a groove across the threaded end of the shaft and two slots located in the gear face. See Figure 1 and NOTE 2. The part number 653236 and 653237 gears will only have the groove across the threaded end of the shaft.

Oil pump drive gears P/N 634010, 640926 and 632550 are not affected by this bulletin and may remain in service. These usable gears can be identified by a woodruff key slot on the gear shaft if the part number is not legible.

The subject gears P/N 649506 and 649681 must be removed from service and replaced with the current part number gears as shown in Table 1.


Reference the appropriate TCM Engine Overhaul Manual for the proper disassembly and assembly procedures necessary to comply with this service bulletin.

NOTE...Reference appropriate parts catalog for proper accessory case and oil pump drive gear combination.

**Table 1**

ENGINE MODEL	GEAR TO BE REPLACED	REPLACEMENT GEARS
O-300'S IO-360'S and TSIO-360'S	649506	654210, 653813 (See Note2), 653236, 634010 or 632550 (See Note 1).
LTSIO-360'S	649681	654210-1, 653813-1 (See Note 2), 653237 or 640926.

NOTE 1: Oil pump drive gear P/N 632550 has an overall length 1.90" (0.60" shorter than the other gears listed in this table). It may be used as a replacement for P/N 649506 only if after positioning into the pump assembly, there exists .24" minimum length of threaded protruding from the oil pump drive gear to which the nut can be attached.

ISSUED			REVISED			 <b>TELEDYNE CONTINENTAL MOTORS</b> P.O. Box 90 • MOBILE ALABAMA 36601 334-438-3411	PAGE NO	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		<b>4 of 5</b>	
04	11	96					CSB96-5	

**NOTE 2:** Installation of oil pump drive gear part numbers 654210, 654210-1, 653813 and 653813-1 will require the replacement of the oil pump gear. Current production engines incorporate oil pump drive gear part number 654210 or 654210-1. TCM recommends that the current production part number gears be used. See TCM Service Bulletin SB96-4.

Make appropriate log book entry of compliance with this Service Bulletin.

**AFFECTED PUBLICATIONS:**

Insert a copy of this service bulletin into the appropriate section of the following TCM manuals:

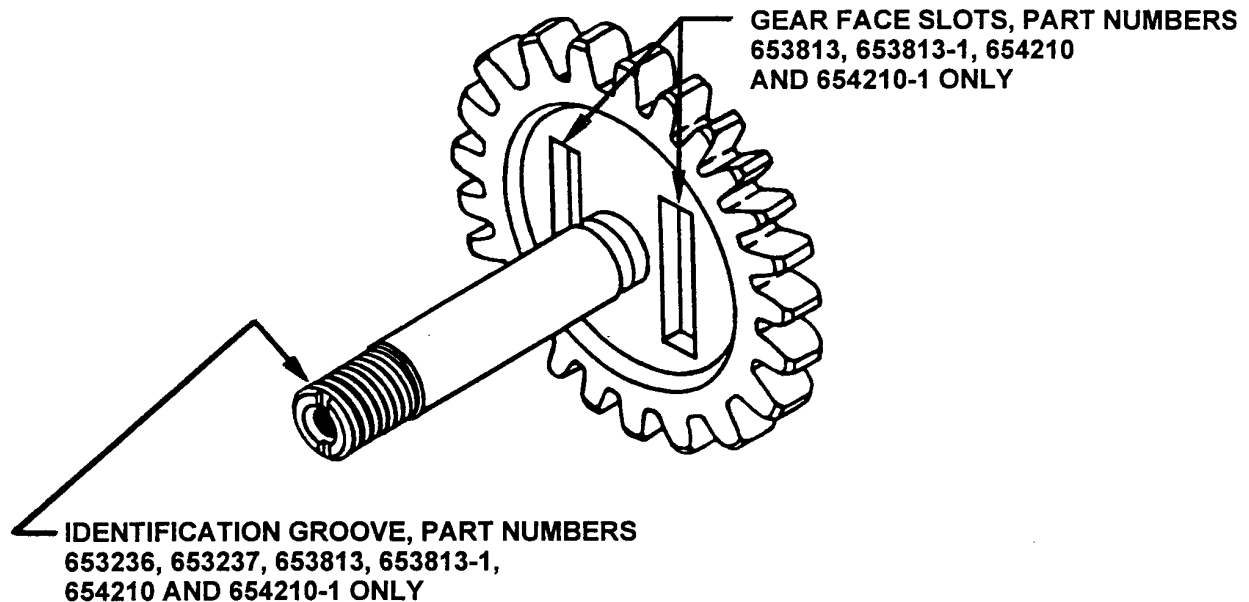
Form # X30013, O-300 Overhaul Manual.

Form # X30594A, IO-360 Overhaul Manual.


Form # X30596A, L/TSIO-360 Overhaul Manual.

**WARRANTY:**

Teledyne Continental Motors will allow labor allowance per the TCM Approved Labor Allowance Schedule. The parts and labor will be prorated on actual engine hours rather than the standard Gold Medallion prorata warranty of forty (40) hours per month since the date in service. Warranty claims may be filed through any TCM distributor.



**FIGURE 1. OIL PUMP DRIVE GEAR**

ISSUED			REVISED			 <b>TELEDYNE CONTINENTAL MOTORS</b> P.O. Box 90 • MOBILE ALABAMA 36601 334-438-3411	PAGE NO	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		<b>5 of 5</b>	
04	11	96					CSB96-5	