

652 Oliver Street Williamsport, PA 17701 U.S.A.

 Telephone
 +1 (800) 258-3279 (U.S. and Canada)

 Telephone
 +1 (570) 323-6181 (International)

 Facsimile
 +1 (570) 327-7101

www.lycoming.com

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MANDATORY

**SERVICE BULLETIN** 

# SUBJECT:Recommended Action for Sudden Engine Stoppage, Propeller/Rotor Strike or<br/>Loss of Propeller/Rotor Blade or Tip

MODELS AFFECTED: All Lycoming reciprocating aircraft engines

TIME OF COMPLIANCE: BEFORE FURTHER FLIGHT

REASON FOR REVISION Applies to all Lycoming aircraft engines (not just direct drive engines); added checklist specific for Lycoming geared engines; updated checklist which applies to all other Lycoming aircraft engines, added check for connecting rod squareness to the checklists.

**NOTICE:** Incomplete review of all the information in this document can cause errors. Read the entire Service Bulletin to make sure you have a complete understanding of the requirements.

This Service Bulletin identifies propeller/rotor damage conditions and gives corrective action recommendations for aircraft engines that have had propeller /rotor damage as well as any of the following:

- Separation of the propeller/rotor blade from the hub
- Loss of a propeller or rotor blade tip
- Sudden stoppage

A propeller strike includes:

- Any incident, whether or not the engine is operating, where repair of the propeller is necessary
- Any incident during engine operation where the propeller has impact on a solid object. This incident includes propeller strikes against the ground. Although the propeller can continue to turn, damage to the engine can occur, possibly with progression to engine failure
- Sudden RPM drop on impact to water, tall grass, or similar yielding medium where propeller damage does not usually occur
- A propeller strike can occur at taxi speeds and during touch-and-go operations with propeller tip ground contact. In addition, propeller strikes also include situations where an aircraft is stationary and a landing gear collapse occurs causing one or more blades to be bent, or where a hangar door (or other object) hits the propeller blade. These instances are cases of sudden engine stoppage because of potentially severe side loading on the crankshaft propeller flange, front bearing, and seal.



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©2016 by Avco Corporation. All Rights Reserved. Lycoming Engines is a division of Avco Corporation BASED UPON THE ACCUMULATED ENGINEERING, TECHNICAL, AND HISTORICAL DATA AVAILABLE, LYCOMING **ENGINES** PROHIBITS STRAIGHTENING OR GRINDING OF BENT CRANKSHAFT PROPELLER FLANGES TO RESTORE MAXIMUM RUN-OUT SPECIFICATION AS NOTED IN THE LATEST REVISION OF THE SERVICE TABLE OF LIMITS - SSP-1776. IF THE CRANKSHAFT PROPELLER FLANGE IS BENT. REPLACE THE CRANKSHAFT. DO NOT TRY TO STRAIGHTEN OR GRIND THE **CRANKSHAFT PROPELLER FLANGE.** 

#### **Recommended Corrective Action for Propeller Strikes**

# **CAUTION:** DAMAGE TO A PROPELLER IS SERIOUS AND CAN CAUSE THE ENGINE TO BE UNAIRWORTHY.

Circumstances of a propeller strike cannot always be used as predictors for the extent of engine damage or its future reliability. There can be varying degrees of damage to an engine and propeller from a propeller strike. The initial damage can be hidden but could become progressively worse with time and wear.

Given these possibilities and the fact that there is no identified clear, quantifiable threshold limit or gradient standard to reliably measure the extent of damage to an engine, Lycoming Engines can only recommend BEFORE FURTHER FLIGHT, that you complete the tasks in the sequential order shown in the applicable "Inspection Checklist After a Propeller Strike" included in this Service Bulletin as the corrective action for a propeller strike. One checklist applies specifically to Lycoming geared engines (GO-435, GO-480, GSO-480, IGO-480, IGO-540, IGSO-540, and TIGO-541) while the other checklist is for all other Lycoming aircraft engines. Make a copy of the checklist that applies to your engine model, complete it and keep it as a service record. Record all results and any corrective action taken in compliance as per the revision of this Service Bulletin in the engine logbook.

**NOTICE:** The agency that returns the aircraft to service is responsible for the decision to operate an engine that had a propeller strike. Lycoming Engines does not take the responsibility for the decision to return the engine to service after a propeller strike.

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	gine Model:		ike for All Lycoming Engines - Except Geared Engines         Engine Serial Number:			
Dat	e Inspection Started:		Date Inspection Completed:			
	Sequential Task		Additional InformationCorrective Action Done/Comments			
1.	Examine the propeller for extent of damage; record condition of propeller.	Condition of Propeller/Corrective Action: <ul> <li>Propeller satisfactory</li> <li>Repair propeller in accordance with propeller manufacturer's instructions</li> <li>Replace propeller in accordance with the airframe manufacturer's instructions.</li> </ul>				
2.	Remove the propeller.		er the airframe and propeller ufacturer's instructions.			
3.	Remove the engine.		cordance with the airframe afacturer's instructions.			
CR	ANKCASE P/N:		MATCH NO:			
4.	Disassemble the engine - remove the crankshaft, camshaft, connecting rods, crankshaft gear, and internal steel parts.		cordance with the applicable oming engine manual.			
5.	Complete blast cleaning of the crankcase with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa); remove all coatings on the crankcase and engine mount bosses.	paint, preve	e sure there is no dirt, debris, sludge, c, or any other substance that could ent reliable Fluorescent Penetrant ection (FPI) or subsequent oil flow.			
6.	Complete blast cleaning of the oil sump and engine mount bosses with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	paint,	e sure there is no dirt, debris, sludge, c, or any other substance that could ent reliable FPI or subsequent oil			
7.	Complete blast cleaning of the engine mount brackets (on six-cylinder engines) and, if used, the lower mount rings (on helicopter engines) with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	paint,	e sure there is no dirt, debris, sludge, r, or any other substance that could ent reliable FPI or subsequent oil			
8.	Complete blast cleaning of the accessory housing with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	Make sure there is no dirt, debris, sludge, paint, or any other substance that could prevent reliable FPI or subsequent oil flow.				

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E	ngine Inspection Checklist After Propell	er Strike for All Lycoming Engines - Exce (Cont.)	pt Geared Engines
	Sequential Task	Additional Information	Corrective Action Done/Comments
9.	Remove and discard the existing crankshaft gear retaining bolt and lockplate.		
10.	Examine the crankshaft.	Refer to the applicable Lycoming engine manual and the latest revision of the Service Table of Limits - SSP-1776 for the crankshaft disassembly and inspection procedures.	
11.	Examine, the crankshaft counter-bored recess, the alignment dowel especially at the base where it goes into the crankshaft, the bolt hole threads, and the crankshaft gear for wear, galling, corrosion, and fretting.	Refer to the latest revision of Service Bulletin No. SB-475. If the bolt hole threads are damaged, they cannot be repaired. Replace the crankshaft.	
12.	Clean the crankshaft, camshaft, crankshaft gear, counterweights, rollers and bushings.	Make sure there is no dirt, debris, sludge, paint, or any other substance that could prevent reliable magnetic particle inspection or subsequent oil flow.	
13.	Clean the following internal parts made of steel: Connecting rods Tappets (not roller tappets) Piston pins Rocker shafts Accessory drive gears Magneto drive gears Idler and oil pump shafts Shaft gears and impellers		
	TO RESTORE MAXIMU REVISION OF THE SER	ACCUMULATED ENGINEERING, T AVAILABLE, LYCOMING ENGI RINDING OF BENT CRANKSHAFT PRO M RUN-OUT SPECIFICATION AS NOTE VICE TABLE OF LIMITS - SSP-1776. IF T	PELLER FLANGES D IN THE LATEST THE CRANKSHAFT

REVISION OF THE SERVICE TABLE OF LIMITS - SSP-1776. IF THE CRANKSHAFT PROPELLER FLANGE IS BENT, REPLACE THE CRANKSHAFT. DO NOT TRY TO STRAIGHTEN OR GRIND THE CRANKSHAFT PROPELLER FLANGE.

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Engine Inspection Checklist After Propeller Strike for All Lycoming Engines - Except Geared Engines (Cont.)

CRA	NKSHAFT P/N:	S/N:				
	Sequential Task	Additional Infor	mation	Corrective Action Done/Comments		
14. Measure the flange run-out on the crankshaft.		Refer to the latest revision Bulletin No. SB-240 and t of Limits - SSP-1776 for c run-out tolerance. Record the crankshaft flan measurement.*	he Service Table crankshaft flange			
15.	Measure the main bearing run-out on the crankshaft.	Refer to the latest revision Table of Limits - SSP-177 bearing run-out tolerance Record the main bearing r measurement.*	6 for the main	☐Use crankshaft ☐Replace crankshaft		
16.	Measure the polished dimensions on the main journals.	Refer to the latest revision Table of Limits - SSP-177 dimensions on the main jo Record the dimensions of journals.*	6 for the ournals	Main journals within acceptable limits - use crankshaft Replace crankshaft		
17.	Measure the polished dimensions on the pin journals.	Refer to the latest revision Table of Limits - SSP-177 dimensions on the pin jour Record the dimensions of	6 for the rnals	<ul> <li>Pin journals</li> <li>within acceptable</li> <li>limits - use</li> <li>crankshaft</li> <li>Replace crankshaft</li> </ul>		
cran	he measurement or dimension is out of tol kshaft. Install the crankshaft per the appli le of Limits - SSP-1776.		-			
18.	Complete a check of connecting rod	Refer to the section	Parallel	ism Measurement		
	parallelism.	"Connecting Rod Parallelism/Squareness	Connecting F	Rod 1		
		Check" in this Service	Connecting F	Rod 2		
		Bulletin. Record the parallelism measurement f	for Connecting F	Rod 3		
		each connecting rod.	Connecting F	Rod 4		
		Replace all connecting roc not in compliance with	ls Connecting F			
			<u>_</u>			

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Connecting Rod 6

Connecting Rod 7

Connecting Rod 8

measurements in the latest

of Limits - SSP-1776 (Reference 503).

revision of the Service Table

En	gine Inspection Checklist After Propell		e for All Lycoming ont.)	g Engines - Except Geared Engines
	Sequential Task	Addi	tional Information	Corrective Action Done/Comments
19.	Complete a check of connecting rod squareness.	"Conne Parallel Check" Bulletin squaren each co Replace not in c measure revision of Limi	the section ecting Rod lism/Squareness in this Service n. Record the ness measurement f onnecting rod. e all connecting roc compliance with ements in the latest n of the Service Tal its - SSP-1776 once 504).	Connecting Rod 4 Connecting Rod 5 Connecting Rod 6
NOT	<b><u>TICE:</u></b> The magnetic particle inspection Service Instruction No. SI-1285.	must be d	lone by a certified t	echnician as per the latest revision of
20.	Complete a magnetic particle inspection crankshaft.	on the	Record test results.	Use crankshaft Replace crankshaft
21.	Complete a magnetic particle inspection crankshaft counterweights. Examine the counterweight bushing bor both the counterweights and the cranksh	es in	Record test results.	Replace all counterweight pins, bushings, end plates and snap rings - regardless of their condition.
22.	Complete a magnetic particle inspection camshaft.	on the	Record test results.	Use camshaft Replace camshaft
23.	Complete a magnetic particle inspection connecting rods.	on the	Record test results.	Replace connecting rod bolts and nuts -regardless of condition. Refer to the latest revision of Service Instruction No. SI-1458 for assembly instructions.
24.	Complete a magnetic particle inspection crankshaft gear; examine the gear end as latest revision of Service Bulletin No. S	s per the	Record test results.	Use crankshaft gear Replace crankshaft gear
25.	<ul> <li>Complete a magnetic particle inspection following internal parts made of steel:</li> <li>Accessory drive gears</li> <li>Magneto drive gears</li> <li>Idler and oil pump shafts</li> <li>Shaft gears and impellers</li> <li>Piston pins</li> <li>Connecting rods</li> </ul>	on the	Record test results.	Use Replace Accessory drive gears Magneto drive gears Idler and oil pump shafts Shaft gears and impellers Piston pins Connecting rods

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En	gine Inspection Checklist After Propeller Strik (C	e for All Lycoming Engines Cont.)	- Except Geared Engines
	Sequential Task	Additional Information	Corrective Action Done/Comments
26.	Complete the visual inspection and Fluorescent Penetrant Inspection (FPI) on the crankcase. Refer to the latest revision of Service Instruction No. SI-1285. Closely examine the forward crankcase bearing support and adjacent structure.	Record test results.	Use crankcase Replace crankcase
27.	Complete the visual inspection and FPI on the oil sump.	Record test results.	Use oil sump Replace oil sump
28.	Complete the visual inspection and FPI on the engine mounts and, if used, the lower mount rings (on helicopter engines).	Record test results.	Use engine mounts Replace engine mounts
29.	Complete the visual inspection and FPI on the accessory housing.	Record test results.	<ul> <li>Use accessory housing</li> <li>Replace accessory housing</li> </ul>
30.	Complete the visual inspection on the oil pump impeller.	Record test results.	Use impeller Replace impeller
NOT	<b><u>TICE:</u></b> Roller tappets, counterweight rollers, an	d bushings must be replaced.	
31.	Complete the visual inspection and FPI on the tappets (not roller tappets) and lifters. Refer to the latest revision of Service Instruction No. SI-1011.	Record test results.	<ul> <li>Tappets/lifters acceptable</li> <li>Replace tappets/lifters</li> </ul>
32.	Examine each magneto in accordance with the magneto manufacturer's instructions.	Record test results.	Replace magneto
33.	Examine the pistons as per instructions in the applicable Lycoming manual and the latest revision of the Service Table of Limits - SSP-1776.	Record test results.	<ul> <li>Pistons acceptable</li> <li>Replace pistons</li> </ul>
34.	Refer to the latest revision of Service Bulletin No. SB-240 to identify any parts that must be replaced during engine assembly.	Record parts that must be replaced.	
35.	Install a new crankshaft gear retaining bolt and lockplate.	Refer to the latest revision of Service Bulletin No. SB-475.	

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Er	ngine Inspection Checklist After Propeller Strik	te for All Lycoming Engines - E Cont.)	Except Geared Engines
	Sequential Task	Additional Information	Corrective Action Done/Comments
36.	Review the documents of all other engine- mounted accessories on the engine, propeller governor (if installed), etc. for instructions on what to do for components exposed to sudden engine stoppage.		
37.	Assemble and install the engine. Install the propeller and test the engine. Complete an operational check of the engine.	In accordance with instructions in the applicable Lycoming engine manuals, the latest revisions of the Service Table of Limits - SSP-1776 and Service Instruction No. SI-1427.	
38.	Record maintenance findings and any corrective action in the engine logbook.		
UNA	AIRWORTHY PARTS:		

## ADDITIONAL WORK/INSPECTIONS NECESSARY:

### **OUTCOME OF INSPECTION- SUMMARY NOTES:**

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	Engine Inspection Checklist Afte	r Prope	eller Strike for All Lycoming Geared Engines
Eng	gine Model:		Engine Serial Number:
Dat	e Inspection Started:		Date Inspection Completed:
	Sequential Task		Additional InformationCorrective Action Done/Comments
1.	Examine the propeller for extent of damage; record condition of propeller.	P R P R R th	ition of Propeller/Corrective Action: Propeller satisfactory Repair propeller in accordance with propeller manufacturer's instructions Replace propeller in accordance with he airframe manufacturer's instructions.
2.	Remove the propeller.		er the airframe and propeller facturer's instructions.
3.	Remove the engine.		cordance with the airframe facturer's instructions.
CR	ANKCASE P/N:		MATCH NO:
4.	Disassemble the engine - remove the crankshaft, camshaft, connecting rods, crankshaft gear, and internal steel parts.		cordance with the applicable ming engine manual.
5.	Complete blast cleaning of the crankcase with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa); remove all coatings on the crankcase and engine mount bosses.	paint, preve	e sure there is no dirt, debris, sludge, or any other substance that could nt reliable Fluorescent Penetrant ction (FPI) or subsequent oil flow.
6.	Complete blast cleaning of the oil sump and engine mount bosses with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	paint,	e sure there is no dirt, debris, sludge, or any other substance that could nt reliable FPI or subsequent oil
7.	Complete blast cleaning of the engine mount brackets (on six-cylinder engines) and, if used, the lower mount rings (on helicopter engines) with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	paint,	e sure there is no dirt, debris, sludge, or any other substance that could nt reliable FPI or subsequent oil
8.	Complete blast cleaning of the accessory housing with 17 grit walnut shells or equivalent at 35 to 45 psi (241 to 310 kPa).	paint,	e sure there is no dirt, debris, sludge, or any other substance that could nt reliable FPI or subsequent oil

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	Sequential Task	Additional Information	Corrective Action Done/Comments
9.	Remove and discard the existing crankshaft gear retaining bolt and lockplate.		
10.	Examine the crankshaft.	Refer to the applicable Lycoming engine manual and the latest revision of the Service Table of Limits - SSP-1776 for the crankshaft disassembly and inspection procedures.	
11.	Examine, the crankshaft counter-bored recess, the alignment dowel especially at the base where it goes into the crankshaft, the bolt hole threads, and the crankshaft gear for wear, galling, corrosion, and fretting.	Refer to the latest revision of Service Bulletin No. SB-475. If the bolt hole threads are damaged, they cannot be repaired. Replace the crankshaft.	
12.	Clean the crankshaft, camshaft, crankshaft gear, counterweights, rollers and bushings.	Make sure there is no dirt, debris, sludge, paint, or any other substance that could prevent reliable magnetic particle inspection or subsequent oil flow.	
13.	<ul> <li>Clean the following internal parts made of steel:</li> <li>Connecting rods</li> <li>Tappets and lifters</li> <li>Piston pins</li> <li>Rocker shafts</li> <li>Accessory drive gears</li> <li>Magneto drive gears</li> <li>Idler and oil pump shafts</li> <li>Shaft gears and impellers</li> </ul>		

#### ▲ CAUTION: BASED UPON THE ACCUMULATED ENGINEERING, TECHNICAL, AND HISTORICAL DATA AVAILABLE, LYCOMING ENGINES PROHIBITS STRAIGHTENING OR GRINDING OF BENT CRANKSHAFT PROPELLER FLANGES TO RESTORE MAXIMUM RUN-OUT SPECIFICATION AS NOTED IN THE LATEST REVISION OF THE SERVICE TABLE OF LIMITS - SSP-1776. IF THE CRANKSHAFT PROPELLER FLANGE IS BENT, REPLACE THE CRANKSHAFT. DO NOT TRY TO STRAIGHTEN OR GRIND THE CRANKSHAFT PROPELLER FLANGE.

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CRA	ANKSHAFT P/N:	S/N:		
	Sequential Task	Additional Inform	nation	Corrective Action Done/Comments
14.	Measure the flange run-out on the crankshaft.	Refer to the latest revisions Service Bulletin No. SB-24 Service Table of Limits - SS crankshaft flange run-out to Record the crankshaft flang measurement.*	0 and the SP-1776 for lerance.	Use crankshaft Replace crankshaft
15.	Measure the main bearing run-out on the crankshaft.	Refer to the latest revision of Table of Limits - SSP-1776 bearing run-out tolerance Record the main bearing run	for the main	Use crankshaft Replace crankshaft
		measurement.*		
16.	Measure the polished dimensions on the main journals.	Refer to the latest revision of Table of Limits - SSP-1776 dimensions on the main jou	for the	Main journals within acceptable limits -
		Record the dimensions of the journals.*	ne main	use crankshaft
17.	Measure the polished dimensions on the pin journals.	Refer to the latest revision of Table of Limits - SSP-1776 dimensions on the pin journ	for the	Pin journals within acceptable limits -
		Record the dimensions of the journals.*	ne pin	use crankshaft
cran	ne measurement or dimension is out of tol kshaft. Install the crankshaft per the appli le of Limits - SSP-1776.			
18.	Complete a check of connecting rod	Refer to the section	Paralle	lism Measurement
	parallelism.	"Connecting Rod Parallelism/Squareness	Connecting	Rod 1
		Check" in this Service Bulletin. Record the	Connecting	Rod 2
		parallelism measurement fo	r Connecting	Rod 3
		<ul><li>each connecting rod.</li><li>Replace all connecting rods</li></ul>	Connecting	Rod 4
		not in compliance with	Connecting	Rod 5
		measurements in the latest revision of the Service Tabl	e Connecting	Rod 6
		of Limits - SSP-1776	Composition	Ded 7
		(Reference 503).	Connecting	KOU /

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Sequential Task         Additional Information         Corrective Actio Done/Comments           19.         Complete a check of connecting rod squareness.         Refer to the section "Connecting Rod Parallelism/Squareness Check" in this Service Bulletin. Record the squareness measurement for each connecting rod.         Squareness Measure Connecting Rod 1           2         Connecting Rod 8         Connecting Rod 8         Connecting Rod 8           20.         Complete a magnetic particle inspection nust be done by a certified technician as per the latest revis Service Instruction No. SI-1285.         We cond test results.         Use crankshaft           21.         Complete a magnetic particle inspection on the crankshaft.         Record test results.         Replace all counterweights in both the counterweights and the crankshaft.         Record test results.         Replace all counterweight pir results.           22.         Complete a magnetic particle inspection on the crankshaft.         Record test results.         Replace cankshaft results.         Replace all counterweight pir results.           23.         Complete a magnetic particle inspection on the connecting rods.         Record test results.         Replace connecting rod bolts results.           24.         Complete a magnetic particle inspection on the connecting rods.         Record test results.         Replace connecting rod bolts results.	.)
rod squareness.       Rod Parallelism/Squareness Check" in this Service Bulletin. Record the squareness measurement for each connecting rod.       Connecting Rod 1         Replace all connecting rods not in compliance with measurements in the latest revision of the Service Table of Limits - SSP-1776 (Reference 504).       Connecting Rod 3         NOTICE:       The magnetic particle inspection must be done by a certified technician as per the latest revis Service Instruction No. SI-1285.       Connecting Rod 8         20.       Complete a magnetic particle inspection on the crankshaft.       Record test results.       Use crankshaft Replace all counterweight pir bushings, end plates and snap regardless of their condition.         21.       Complete a magnetic particle inspection on the crankshaft.       Record test results.       Use crankshaft Replace cankshaft         22.       Complete a magnetic particle inspection on the crankshaft.       Record test results.       Use camshaft Replace canshaft         23.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Replace connecting rod bolts -regardless of condition. Refe latest revision of Service Inst No. SI-1458 for assembly ins         24.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Use crankshaft gear	
Service Instruction No. SI-1285.         20.       Complete a magnetic particle inspection on the crankshaft.       Record test results.       Use crankshaft         21.       Complete a magnetic particle inspection on the crankshaft counterweights.       Record test results.       Replace crankshaft         22.       Complete a magnetic particle inspection on the counterweights and the crankshaft.       Record test results.       Replace all counterweight pir bushings, end plates and snap regardless of their condition.         23.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Replace camshaft         24.       Complete a magnetic particle inspection on the complete a magnetic particle inspection on the connecting rods.       Record test results.       Image: Second test results.         24.       Complete a magnetic particle inspection on the connecting rod test results.       Image: Second test results.       Image: Second test results.         24.       Complete a magnetic particle inspection on the connecting rod test revision of Service Instruction.       Image: Second test revision of Service Instruction.         24.       Complete a magnetic particle inspection on the connecting rod test revision of Service Instruction.       Image: Second test revision of Service Instruction.	ment
crankshaft.       results.       Replace crankshaft         21.       Complete a magnetic particle inspection on the crankshaft counterweights.       Record test results.       Replace all counterweight pir bushings, end plates and snap regardless of their condition.         22.       Complete a magnetic particle inspection on the camshaft.       Record test results.       Use camshaft         23.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Replace connecting rod bolts results.         24.       Complete a magnetic particle inspection on the connecting rod to particle inspection on the connecting rod to particle inspection on the connecting rod to particle inspection on the connecting rods.       Record test results.       Use camshaft         24.       Complete a magnetic particle inspection on the connecting rod to particl	51011 01
crankshaft counterweights. Examine the counterweight bushing bores in both the counterweights and the crankshaft.results.bushings, end plates and snap regardless of their condition.22.Complete a magnetic particle inspection on the camshaft.Record test results.Use camshaft23.Complete a magnetic particle inspection on the connecting rods.Record test results.Replace camshaft24.Complete a magnetic particle inspection on the connecting rods.Record test results.Image: Complete a magnetic particle inspection on the results.Record test results.24.Complete a magnetic particle inspection on the connecting rod particle inspection on the connecting rods.Record test results.Image: Complete a magnetic particle inspection on the results.24.Complete a magnetic particle inspection on the connecting rod particle inspection on the connecting rod particle inspection on the complete a magnetic particle inspection on the connecting rods.Record test results.Image: Use crankshaft gear	
22.       Complete a magnetic particle inspection on the camshaft.       Record test results.       Use camshaft         23.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Replace camshaft         24.       Complete a magnetic particle inspection on the connecting particle inspection on the connecting particle inspection on the connecting rods.       Record test results.       Replace connecting rod bolts results.         24.       Complete a magnetic particle inspection on the connecting particle inspection particle inspection particle inspection particle inspection particle particl	
23.       Complete a magnetic particle inspection on the connecting rods.       Record test results.       Replace connecting rod bolts -regardless of condition. Reference in the connecting rods.         24.       Complete a magnetic particle inspection on the complete a magnetic particle inspection on the connecting rod to the connecting rods.       Record test results.       Item to the connecting rod bolts -regardless of condition. Reference in the connecting rod to the connecting rods.         24.       Complete a magnetic particle inspection on the connecting rod to the connecting rod to the connecting rod to the connecting rod to the connecting rods.       Item to the connecting rod to the connecting rods.         24.       Complete a magnetic particle inspection on the connecting rod to the connecting ro	
24.    Complete a magnetic particle inspection on the    Record test    Use crankshaft gear	er to the ruction
crankshaft gear; examine the gear end as per the results. Replace crankshaft gear latest revision of Service Bulletin No. SB-475.	
25.       Complete a magnetic particle inspection on the following internal parts made of steel:       Record test results.         • Accessory drive gears       Accessory drive gears       Accessory drive gears         • Magneto drive gears       Magneto drive gears       Magneto drive gears         • Idler and oil pump shafts       Idler and oil pump       Magneto drive gears         • Shaft gears and impellers       Shaft gears and im       Piston pins         • Connecting rods       Connecting rods       Connecting rods         • Propeller shaft       Stationary gear       Stationary gear         • Pinion roller       Pinion gear       Pinion gear         • Pinion cage       Stationary gear drive plate       Pinion cage         • Stationary gear shaft gear (if equipped)       Supercharger shaft       Supercharger shaft	o shafts pellers slinger olate
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	Engine Inspection Checklist After Propeller	Strike for All Lycoming Gear	ed Engines (Cont.)
	Sequential Task	Additional Information	Corrective Action Done/Comments
26.	Complete the visual inspection and Fluorescent Penetrant Inspection (FPI) on the crankcase. Refer to the latest revision of Service Instruction No. SI-1285. Closely examine the forward crankcase bearing support and adjacent structure.	Record test results.	Use crankcase Replace crankcase
27.	Complete the visual inspection and FPI on the oil sump.	Record test results.	Use oil sump Replace oil sump
28.	Complete the visual inspection and FPI on the engine mounts and, if used, the lower mount rings (on helicopter engines).	Record test results.	Use engine mounts Replace engine mounts
29.	Complete the visual inspection and FPI on the accessory housing.	Record test results.	<ul> <li>Use accessory housing</li> <li>Replace accessory housing</li> </ul>
30.	Complete the visual inspection and FPI on the aluminum oil pump impeller.	Record test results.	Use impeller Replace impeller
NOT	<b><u>CICE:</u></b> Counterweight rollers and bushings mu	st be replaced.	
31.	Complete the visual inspection and FPI on the tappets (not roller tappets) and lifters. Refer to the latest revision of Service Instruction No. SI-1011.	Record test results.	<ul> <li>Tappets/lifters acceptable</li> <li>Replace tappets/lifters</li> </ul>
32.	Complete the visual inspection and FPI on the reduction gear housing	Record test results.	<ul> <li>Use reduction gear housing</li> <li>Replace reduction gear housing</li> </ul>
33.	Complete the visual inspection and FPI on the supercharger housing (if equipped)	Record test results.	<ul> <li>Use supercharger housing</li> <li>Replace supercharger housing</li> </ul>
34.	Complete the visual inspection and FPI on the supercharger impeller	Record test results.	<ul> <li>Use supercharger impeller</li> <li>Replace supercharger impeller</li> </ul>
35.	Examine each magneto in accordance with the magneto manufacturer's instructions.	Record test results.	Replace magneto
36.	Examine the pistons as per instructions in the applicable Lycoming manual and the latest revision of the Service Table of Limits - SSP-1776.	Record test results.	<ul> <li>Pistons acceptable</li> <li>Replace pistons</li> </ul>

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	Sequential Task	Additional Information	Corrective Action Done/Comments
37.	Refer to the latest revision of Service Bulletin No. SB-240 to identify any parts that must be replaced during engine assembly.	Record parts that must be replaced.	
38.	Install a new crankshaft gear retaining bolt and lockplate.	Refer to the latest revision of Service Bulletin No. SB-475.	
39.	Review the documents of all other engine- mounted accessories on the engine, propeller governor (if installed), etc. for instructions on what to do for components exposed to sudden engine stoppage.		
40.	Assemble and install the engine. Install the propeller and test the engine. Complete an operational check of the engine.	In accordance with instructions in the applicable Lycoming engine manuals, the latest revisions of the Service Table of Limits - SSP-1776 and Service Instruction No. SI-1427.	
11	Record maintenance findings and any		
41. UN₄	corrective action in the engine logbook.		
UNA	corrective action in the engine logbook.	ARY:	

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### Connecting Rod Parallelism/Squareness Check

**NOTICE:** The connecting rod parallelism and squareness gage (Figure 1) is necessary for this check.



Figure 1 Connecting Rod Parallelism and Squareness Gage

- A. Verify that the bearing cap is assembled correctly and is tightened securely.
- B. Insert the tapered sleeves (Figure 2) of the Connecting Rod Parallelism and Squareness Gage in the bearing holes in the connecting rod.
- C. Pull arbors through the sleeves.
- D. Put the gage arm on the arbor.
- E. Turn the adjusting screw on the gage arm until it just contacts the arbor.
- F. Lock the adjusting screw with the wing nut.
- G. Make sure the adjusting screw just contacts the arbor.
- H. Remove the gage arm and place it on the other end of the arbor.
- I. Measure the distance between arbors. For exact parallelism or alignment, the distances measured on both sides are to be the same. Record the measurement.
- J. Remove the gage arm (Figure 2).
- K. Keep the sleeves and arbors in place.



Figure 2 Parallelism Check of Connecting Rods

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- L. Put the parallel blocks (Figure 3) of the Connecting Rod Parallelism and Squareness Gage on the surface plate.
- M. Put the ends of the arbors on the parallel blocks.
- N. For the squareness or twist check, measure clearance at the four check points in Figure 3 where the arbors rest on the parallel blocks using a feeler gage. Record the measurement.
- O. Compare the clearance between each arbor and the parallel blocks against the values in the latest revision of the Service Table of Limits - SSP-1776. If out of tolerance, replace the connecting rods and examine the crankshaft to make sure the crankshaft is not damaged.



**Squareness Check of Connecting Rods** 

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