



REMOVAL AND INSTALLATION LABOR ALLOWANCE GUIDEBOOK

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REMOVAL AND INSTALLATION LABOR ALLOWANCE GUIDEBOOK

FOR
RECIPROCATING AIRCRAFT ENGINES

-INTRODUCTION-

The labor hours shown in this booklet will be the maximum allowed to the Distributor and/or Dealer for warranty work.

Warranty labor will not be considered for troubleshooting, adjustment, or replacement of any of the following:

1. Spark Plugs, Magneto to Engine timing.
2. Oil Filter or Oil Changes.
3. Oil Pressure Screens removal and inspection.
4. Oil and Fuel Pressure adjustments.
5. Fuel Nozzle removal and cleaning.
6. Propellers, Governors, Vacuum systems and/or Hydraulic systems, Vibration, Engine Instrumentation and synchronization problems in case of twin engine aircraft.
7. Testing or adjustment of Electrical, Fuel, or Turbocharging Systems.
8. Travel expenses.

NOTE

The following listed labor hours are for normal engine installations, in cases where engine removal is required to remove and replace a component or part due to Airframe installation, labor hours, for part or component change only will be allowed.

HOW TO USE LABOR HOUR GUIDELINES

1. The left-hand column of numbers are repair codes used for reference.
2. Second column indicates engine area and parts name to be used.
3. Third column, combine with code. When a number is enclosed in the box in this column this denotes that you refer to the repair code number line and add the time on this line pertaining to your engine type, with the time of the part being repair or replaced.
4. The vertical columns indicate type of engine being worked on and amount of hours allowed by Lycoming Engines in accomplishing the specified job.
5. When engine removal is necessary for component part change, both engine removal time and part change time will be added together for allowed labor time. (Such as crankcase replacement.)

Repair Code	REMOVE AND REPLACE OR REPAIR	COMBINE WITH CODE	NORMALLY ASPIRATED			TURBO-CHARGED		TIO and TIGO 541	HELICOPTER NORMALLY ASPIRATED			HELICOPTER TURBO-CHARGED	HELICOPTER SUPER-CHARGED	IO-360	IO-390	IO-540		TIO-540					TEO-540
			4 Cylinder	6 Cylinder	8 Cylinder	4 Cylinder	6 Cylinder		4 Cylinder R22	6 Cylinder R44	4 Cylinder Cabri			L2A		AB1A5	AC1A5	AF1B	AH1A	AJ1A	AE2A	C1A (IE2)	
5	ENGINE ASSEMBLY – REMOVAL AND INSTALLATION *		20	24	24	32	32	36	30-40	45-50	12 or 40*	24	36	20	20	24	24	80	38	40	60	60	
6	PROPELLER / Drive system (heli)		1.5	1.5	1.5	1.5	2	1.5	8.5	8.5	3 (15)			1.5	1.5	1.5	1.5	2	2	2	2	2	
7	COWLING (WHEN REQUIRED) COMPLETE		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4	0.5	0.5	1.25	2	1	1	0.5	0.5	1	1	2	
9	REDUCTION GEAR ASSEMBLY												6										
9	REDUCTION GEAR ASSEMBLY VIA NEW PARTS												10										
9	TIGO REDUCTION GEAR REPAIR	5						32															
19	GEARS, BEARINGS, OR SHAFTS	5	12	14	16	15	32	32	12	14	12 (28)			12	12	14	14	32	32	32	32	32	
20	CRANKCASE	5	12	14	16	15	32	32	12	14	12 (28)		18	12	12	14	14	32	32	32	32	32	
21	SUMP		6	10	8	8	10	5	6	10	6 (22)	6	12	4	4	8	10.5	10	20	10	30	10	
21	INDUCTION HOUSING				4			5		4		5											
27	INT. PIPES OR INT. CONNECTION (PER CYL.)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
28	PISTON COOLING NOZZLE	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
29	OIL LEVEL GAUGE – TUBE		0.5	0.25	0.25	0.5			0.5		0.25			0.5	0.5	0.25	0.25	0.25	0.25	0.25	0.25		
30	CRANKSHAFT ASSEMBLY	5	13	15	17	16	33	33	13	15	13 (29)	17	19	13	13	15	15	33	33	33	33		
31	CRANKSHAFT NOSE SEAL	6	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	4 (20)			0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75		
32	CAMSHAFT	5	12	14	16	15	32	32	12	14	12 (28)	16	18	12	12	14	14	32	32	32	32		
33	CONNECTING ROD BEARING (PER CYL.)	41	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75		
34	PISTON (PER CYL.)	41	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
35	PISTON RINGS (PER CYL.)	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
36	CONNECTING RODS AND BOLTS (PER CYL.)	41	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75		
38	PISTON PINS, PISTON PIN PLUGS	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
39	STARTER RING GEAR SUPPORT ASSEMBLY	6	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5 (15.5)			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
40	ROCKER BOX COVERS, GASKETS, (PER CYL.)		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
41	CYLINDER ASSEMBLY (FIRST) **		6	6	6	6	6	6	10	10	2 (6)	6	6	6	6	6	6	10	8	11	11		
41	CYLINDER ASSEMBLY (EACH ADDITIONAL)		2	2	2	2	2	2	3- same side	3- same side	2	2	2	2	2	2	2	2	6	2	2		
43	CYLINDER ASSEMBLY “O” RING		2	2	2	2	2	2.5	2.5	2.5	6.25	2.5	2	2	2	2	2	2	2	2	2		
44	HELI-COIL (STUD, NOZZLE, SPARK PLUG)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
45	VALVE GUIDES REMOVE & REPLACE, & REAMING	41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
46	VALVE SEAT REFACING (PER CYL.)	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
46	VALVE SEAT, REMOVING, REPLACE AND REFACING	41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
47	INTERCYLINDER BAFFLES		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
50	EXHAUST VALVE	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
51	INTAKE VALVE	41	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
52	VALVE SPRINGS, SEATS, KEYS, CAPS		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25		
53	PUSH ROD SEAL (PER CYL.)		0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5	0.5	1	2	2	2	2	2	2		
53	PUSH ROD SEAL (PER CYL.) O-235 SERIES		1																				
54	ROCKER ARMS (PER CYL.)		0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5	0.5	1	2	2	2	2	2	2		
56	HYDRAULIC LIFTERS, SOCKETS (PER CYL.)		0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5	0.5	1	2	2	2	2	2	2		

Repair Code	REMOVE AND REPLACE OR REPAIR	COMBINE WITH CODE	NORMALLY ASPIRATED			TURBO-CHARGED		TIO and TIGO 541	HELICOPTER NORMALLY ASPIRATED			HELICOPTER TURBO-CHARGED	HELICOPTER SUPER-CHARGED	IO-360 L2A	IO-390	IO-540		TIO-540				TEO-540
			4 Cylinder	6 Cylinder	8 Cylinder	4 Cylinder	6 Cylinder		4 Cylinder R22	6 Cylinder R44	4 Cylinder Cabri					4 Cylinder	6 Cylinder	4 Cylinder	AB1A5	AC1A5	AF1B	
57	PUSH RODS OR SHROUD TUBES (PER CYL.)		0.5	0.5	0.5	0.5	0.5	0.5	2	2	2	0.5	0.5	0.5	1	2	2	2	2	2	2	2
57	PUSH RODS OR SHROUD TUBES (PER CYL.) O-235 SERIES		1																			
60	ACCESSORY HOUSING		5	6	7	12	12		5	6	5 (21)	8	14	6	6	9	10.5	8	10	10.5	12	12
62	SEAL, GASKETS, "O" RINGS		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64	GEAR, GEARSHAFTS, DRIVE SHAFTS (INTERNAL)	60	1	1	1	1	1	32	1	1	1 (22)	1	1	1	1	1	1	1	1	1	1	1
64	GEARS, GEAR & DRIVE SHAFTS (CROSSWISE ONLY)									4		4	4									
64	COMPRESSOR SHAFT							16														
66	MAGNETO, COUPLING ASSEMBLY CUSHINGS		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2	1.5	2	2	2	2	2
67	OIL COOLER BYPASS VALVE		1	1							1											
67	OIL RELIEF VALVE (VERNETHERM)		0.5	0.5	0.5	0.5	0.5	1	0.5		0.5			0.5	0.5	0.5	0.5	1	1	8	1	1
68	OIL PUMP DIRECT DRIVE	60	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
68	OIL PUMP DIRECT DRIVE (76 SERIES)		1																			
68	OIL PUMP CROSS WISE									0.5		0.5	0.5									
68	OIL PUMP INTEGRAL	21						1.5														
69	OIL RELIEF VALVE ASSEMBLY		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
70	INLET HOUSING						2.5	2					1.5					2.5	2.5	2.5	2.5	2.5
71	TURBOCHARGER BRACKET					4	12	12				6						2	2	2	2	4
72	SUPERCHARGER SEAL GASKETS,"O" RINGS												6									
75	IMPELLER, DIFFUSER												8									
76	TURBOCHARGER CONTROLLERS					1.5	1.5	1.5				1.5						1	0.5	2	3	
77	TURBOCHARGER ASSEMBLY					2	4	4				2						1.5	3	2.5	3	3
78	EXHAUST BYPASS VALVE OR TRANSITION					1	1	1				1						1	1	4	1.5	1.5
79	OIL DRAIN TANK						0.5											0.5	0.5	0.5	0.5	0.5
81	CARBURETOR ***		2	2					2	2.5	2	2.5	2									
82	INJECTOR/THROTTLE BODY		2.5	2.5	1.5	2.5	2.5	2	2.5	2.5		2.5	2.5	2	2	2	2	2.5	3	3	8	5
82	INJECTOR NOZZLES (PER CYL.)		0.25	0.25	0.25	0.5	0.5	0.75	0.25			0.25	0.5	0.25	0.25	0.25	0.25	0.25	0.5	0.5	0.5	
82	FUEL RAIL (PER SIDE)																					2
82	FLOW DIVIDER/MANIFOLD		1	1	1	1	1	1	1					1	1	1	1	1	1	1	1	1
83	MAGNETO / EIS		1	1	1	1	1.25	1	1	1	1	1	1	1.5	2	2	1.5	1.25	1.5	1.5	2, 4 for LH Mag	
84	FUEL PUMP ****		1	1	1	1.5	2	1.5	1	2	1			1.5	1.5	1.5	1.5	1	5	2.5	8	4
86	STARTER		1	1	1	1	1	1.5	1	1	2 (14)			1.5	1.5	2	1.5	3	2	1.5	5	1
87	GENERATOR		0.75	0.75																		
87	BELT	6	0.25	0.25																		
88	ALTERNATOR		0.75	0.75	0.75	0.75	0.75	1	1	0.75	4			0.75	0.75	0.75	0.75	0.75	1.5	1.5	1.5	1.5
88	BELT	6	0.25	0.25	0.25	0.25	0.25	0.25			1 (16)			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
88	BENDIX OR DRIVE COUPINGS							1		1		1										
90	IGNITION HARNESS (DUAL MAGNETO)		3	3	4	2	3	3	3													
90	IGNITION HARNESS		1	1.5	2	1	1.5	2.75	1	2	1	1.5	2	1	1	1.5	1.5	1.5	1.5	1.5	2	
90	IGNITION HARNESS LEAD (PER CYL. IE2)	100																				1
90	IGNITION HARNESS LEAD (DUAL MAGNETO)		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5									

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			4 Cylinder	6 Cylinder	8 Cylinder	4 Cylinder	6 Cylinder		4 Cylinder R22	6 Cylinder R44	4 Cylinder Cabri					4 Cylinder R22	6 Cylinder R44	4 Cylinder Cabri	AB1A5	AC1A5	AF1B	AH1A
90	IGNITION HARNESS LEAD (DUAL MAGNETO)		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5		1.5	1.5									
94	EXH. MANIFOLD TURBOCHARGER COMP. (PER SIDE)					1	1.5	2.5									1	1.5	5	1.5	1.5	
97	LYCOMING SUPPLIED OIL COOLER							2.5														
97	INTERCOOLER																1			1		
98	EXHAUST STACK ASSY.					0.5	0.5	2				0.5					0.5	0.5	5	0.5	0.5	
99	PMA																				1.5	
100	COIL BOX ACCESS (OPEN AND CLOSE)																				0.5	
101	IGNITION COIL	100																			0.5	
102	COIL BOX																				4	
103	ECU AND POWERBOX																				3	
104	FULL DATA DOWNLOAD																				1	
105	ADL																				0.5	
106	COMPLETE ENGINE WIRE HARNESS																				20	
107	SENSOR REPLACEMENT (EACH)																				0.75	
108	WASTEGATE SOLENOID																				1	
109	FUEL PRESSURE REGULATOR																				0.75	
	NOTES / COMMENTS:																					
	* CODE 05 - IO-540-S1A5 60 HRS * CODE 05 - O-360-J2A Helicoptere Guimbal 12 Hrs with all engine equipment left installed 40Hrs if all engine equipment (baffling, alternator, etc...) must be swapped to another engine																					
	** CODE 41 - O-540-J3C5D 8 HRS (FIRST)																					
	***CODE 81 - O-540-J3C5D 8 HRS																					
	****CODE 84 - IO-360-M1A 3.5 HRS																					