



A Textron Company

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

Tel. 570-323-6181  
Fax. 570-327-7101  
www.lycoming.textron.com

# SERVICE INSTRUCTION

DATE: January 27, 2006

Service Instruction No. 1154L  
(Supersedes Service Instruction No. 1154K  
and Supplement No. 1 to Service Instruction No. 1154K)

SUBJECT: FAA Approved Starters, Generators, Alternators, Regulators and Relays

MODELS AFFECTED: Lycoming engines as herein specified.

TIME OF COMPLIANCE: As required for replacement.

The following is a list of FAA approved starters, generators, alternators, regulators and relays for Lycoming engines. Current and interchangeable part numbers are listed as an aid in ordering replacement items.

## NOTE

Delco-Remy starters, generators, alternators, and related regulators and relays are no longer available from Lycoming. Lycoming will, however, continue to supply mounting brackets and attaching parts for the life of units now in use.

## STARTERS■

PART NUMBER			DESCRIPTION				ENGINE SERIES
Lycoming	Vendor	Vendor No.	Type	Voltage	Pinion Pitch	Weight (Lbs.)	
69953	Delco-Remy	1109669	Direct Drive	24V.	10/12	18.0	235, 290, 320
72279	Delco-Remy	1113471	Geared	12V.	10/12	18.0	720
75699	Kelly Aerospace Power Systems Inc.*	MZ-4207	Geared	12V.	12/14	18.0	TIO-541-A
LW-14211		MZ-4219	Geared	12V.	12/14		
LW-15575		MZ-4223	Geared	12V.	12/14		
75700		MHB-4002	Geared	24V.	12/14	18.0	TIO-541-E
LW-14212		MHB-4011	Geared	24V.	12/14		
LW-15576		MHB-4017	Geared	24V.	12/14		
75787		MZ-4208	Geared	12V.	16 Pitch	18.0	VO-435-B1A
76210		MZ-4204	Direct Drive	12V.	10/12	18.0	235, 290, 320
76211		MZ-4206	Geared	12V.	12/14	18.0	235,290,320,340,360,540
LW-14207		MZ-4218	Geared	12V.	12/14		
LW-15571		MZ-4222	Geared	12V.	12/14		
76212		MHB-4001	Geared	24V.	12/14	18.0	320, 340, 360, 540
LW-14208		MHB-4010	Geared	24V.	12/14		
LW-15572		MHB-4016	Geared	24V.	12/14		
76213	MZ-4205	Geared	12V.	12/14	18.0	360	
LW-14209	MZ-4217	Geared	12V.	12/14			
LW-15573	MZ-4221	Geared	12V.	12/14			

■ Starters to be ordered by using Lycoming part numbers.  
\* Formerly Electrosystems, Inc.

**STARTERS (Cont.)**

PART NUMBER			DESCRIPTION				ENGINE SERIES	
Lycoming	Vendor	Vendor No.	Type	Voltage	Pinion Pitch	Weight (Lbs.)		
76214 LW-14210 LW-15574	Kelly Aerospace Power Systems Inc.**	MHB-4003	Geared	24V.	12/14	18.0	360	
		MHB-4012	Geared	24V.	12/14			
		MHB-4019	Geared	24V.	12/14			
77879 31B22462			MHJ-4004	Geared	24V.	10/12	18.0	(Sup. by 31B22462)
		MHB-4016A	Geared	24V.	10/12	720		
78791			MHB-4005	Geared	24V.	12/14	18.0	TIGO-541
LW-10556* LW-14215*			MZ-4216	Geared	12V.	12/14	18.0	LIO-320,LO-360,LIO-360
		MZ-4220	Geared	12V.	12/14			
LW-11936 LW-14213 LW-15577			MHB-4007	Geared	24V.	12/14	18.0	540
		MHB-4013	Geared	24V.	12/14			
		MHB-4018	Geared	24V.	12/14			
LW-12023			MHB-4008	Geared	24V.	12/14	18.0	TVO-435, VO-435
LW-12159* LW-14214*			MHB-4009	Geared	24V.	12/14	18.0	LTIO-540
		MHB-4014	Geared	24V.	12/14			
LW-12787			MHJ-4005	Geared	24V.	10/12	18.0	720
LW-15483			MHB-4015	Direct Drive	24V.	10/12	18.0	235
LW-14447			MHB-EO-26102	Geared	24V.	12/14	18.0	360
LW-16207			MMU-4001	Direct Drive	24V.	10/12	18.0	235
LW-16460			MZ-4224	Geared	12V.	12/14	18.0	320
LW-18047			MZ-4225	Geared	12V.	12/14	18.0	360
LW-18989		MZ-4226	Geared	12V.	12/14	18.0	360	
LW-18990		MHB-4020	Geared	24V.	12/14	18.0	360	
31A21210 31A21198	Lycoming		Geared	12V.	10/12	12.0	235, 320, 360, 540	
			Geared	12V.	12/14	12.0	235, 320, 360, 540	
31A22102 31A22106	Sky-Tec	122-12PM	Geared	12V.	10/12	8.0	235, 320, 360, 540	
		122-12LS	Geared	12V.	10/12	8.0		
31A22112		122-12HT	Geared	12V.	10/12	10.5		
31B23590		122NL	Geared	12V./24V.	10/12	9.4		
31A22100 31A22104			149-12PM	Geared	12V.	12/14	8.0	235, 320, 360, 540
			149-12LS	Geared	12V.	12/14	8.0	
31A22110		149-12HT	Geared	12V.	12/14	10.5		
31B23592		149NL	Geared	12V./24V.	12/14	7.4		
31A22206	Lamar	PM1201	Geared	12V.	12/14	11.5	320, 360, 540	
31A22361		PM1203	Geared	12V.	10/12	11.5	235, 320	
31A22470	Kelly Aerospace Power Systems Inc.**	MZ-6222	Geared	12V.	12/14	8.0	235,290,320,340,360,540	
31A22471		MZ-6224	Geared	12V.	12/14	8.0	320	
31A22472*		MZ-6220	Geared	12V.	12/14	8.0	LIO-320,LO-360,LIO-360	
31A22473		MZ-6204	Direct Drive	12V.	10/12	8.0	235, 290, 320	
31B21064 31B21211	Lycoming		Geared	24V.	12/14	12.0	235, 320, 360, 540	
			Geared	24V.	10/12	12.0		
31B22207	Lamar	PM2401	Geared	24V.	12/14	11.5	320, 360, 540	
31B22103 31B22107	Sky-Tec	122-24PM	Geared	24V.	10/12	8.0	235, 320, 360, 540	
		122-24LS	Geared	24V.	10/12	8.0		
31B22113		122-24HT	Geared	24V.	10/12	10.5		
31B22101 31B22105			149-24PM	Geared	24V.	12/14	8.0	235, 320, 360, 540
			149-24LS	Geared	24V.	12/14	8.0	
31B22111		149-24HT	Geared	24V.	12/14	10.5		

■ Starters to be ordered by using Lycoming part numbers.

\* Reverse rotation.

\*\*Formerly Electrosystems, Inc.



**STARTERS (Cont.)■**

PART NUMBER			DESCRIPTION				ENGINE SERIES
Lycoming	Vendor	Vendor No.	Type	Voltage	Pinion Pitch	Weight (Lbs.)	
31B23593*	Sky-Tec	149NLR	Geared	12V./24V.	12/14	9.4	LIO-320,360,LHIO-360, LO-360, LTIO-540
31B22362	Lamar	PM2403	Geared	24V.	10/12	11.5	235,320
31B22462	Kelly Aerospace Power Systems Inc.**	MHB-4016A	Geared	24V.	10/12	18.0	720
31B22474		MHB-6016	Geared	24V.	12/14	8.0	720
31B22475		MMU-6001	Direct Drive	24V.	10/12	8.0	320, 340, 360, 540
31B22476		MHB-6018	Geared	24V.	12/14	8.0	235
31B22477*		MHB-6014	Geared	24V.	12/14	8.0	540
31B22553*			PM2404	Geared	24V.	12/14	11.5
31A22552*	Lamar	PM1204	Geared	12V.	12/14	11.5	320, 360, 540

■ Starters to be ordered by using Lycoming part numbers.  
 \* Reverse rotation.  
 \*\*Formerly Electrosystems, Inc.

**GENERATORS■**

PART NUMBER			DESCRIPTION	ENGINE SERIES	
Lycoming	Vendor	Vendor No.			
68764	Delco-Remy	1101899	12V.-20A.	235, 290, 320, 340, 360, 540	
68767		1101900	12V.-35A.	235, 290, 320, 340, 360	
71744		1101915	12V.-50A.	235, 290, 320, 540	
71980		1105052	24V.-40A.	320, 360, 540	
72695		1105055	24V.-50A.	320, 360, 540, 720	
LW-11429*			1101923	12V.-50A.	LIO-320

■ Generators no longer available from Lycoming.  
 \* Reverse rotation.

**ALTERNATORS■**

Lycoming Basic Alternator P/N	Vendor P/N*	Lycoming Alternator Assy. P/N	Vendor Alternator Assy. P/N	Description	ENGINE SERIES
74319	1100717	74880	-----	12V.-70A.	320, 360, 540, 720
74319	1100717	76165	-----	12V.-70A.	360
74884	1100749	75273	-----	12V.-70A.	TIO-541
73808	ALE-8406	-----	-----	12V.-40A.	235, 320, 360, 540
LW-14300	ALE-8420	-----	-----	12V.-40A.	235, 320, 360, 540
LW-14308	ALY-8520	-----	-----	12V.-60A.	235, 320, 360, 540
LW-14313	ALY-8520LS	LW-14371◆	-----	12V.-60A.	235, 320, 360, 540
73810	ALX-8403	-----	-----	12V.-70A.	320, 360, 540, 720
LW-14316	ALX-8421	LW-12840**	ALX-8421 "G"	12V.-70A.	320, 360, 540, 720
LW-14316	ALX-8421	-----	-----	12V.-70A.	235, 320, 360, 540, 720
LW-14318	ALX-8521LS	32B19549◆	-----	12V.-70A.	235, 320, 360, 540, 720
78312	ALT-8404	-----	-----	24V.-50A.	235, 320, 360, 540, 720
LW-14319	ALT-8421	-----	-----	24V.-50A.	235, 320, 360, 540, 720
LW-14321	ALT-8421LS	32C19551◆	-----	24V.-50A.	235, 320, 360, 540, 720

■ Alternators to be ordered by using Lycoming part numbers.  
 \* Seven digit numbers are Delco-Remy. Letter prefix numbers are Kelly Aerospace Power Systems Inc.  
 \*\*Assembly includes ground strap  
 ◆ Assembly includes Lycoming supplied pulley.  
 ● Less blast tube.

## ALTERNATORS (Cont.)■

Lycoming Basic Alternator P/N	Vendor P/N*	Lycoming Alternator Assy. P/N	Vendor Alternator Assy. P/N	Description	ENGINE SERIES
78314	ALU-8403	-----	-----	24V.-70A.	320, 360, 540, 720
LW-14324	ALU-8421	LW-12845**	ALU-8521 "G"	24V.-70A.	235, 320, 360, 540, 720
LW-14326	ALU-8521LS	32C29553♦		24V.-70A.	235, 320, 360, 540-, 720
78401●	ALE-6406	-----	-----	12V.-40A.	235, 320, 360, 540
LW-14302●	ALE-6420	-----	-----	12V.-40A.	235, 320, 360, 540
78403	ALZ-8401	-----	-----	12V.-50A.	320, 360, 540
LW-14304	ALZ-8423	-----	-----	12V.-50A.	320, 360, 540
78405●	EO-20041-LB	-----	-----	12V.-50A.	320, 360, 540
LW-14306●	-----	-----	-----	12V.-50A.	320, 360, 540
78407	ALY-8403	-----	-----	12V.-60A.	235, 320, 360, 540
LW-14308	ALY-8420	LW-12832**	ALY-8520 "G"	12V.-60A.	235, 320, 360, 540
78409●	ALY-6403	-----	-----	12V.-60A.	235, 320, 360, 540
LW-14310●	ALY-6420	LW-12834**	ALY-6520 "G"	12V.-60A.	235, 320, 360, 540
LW-14310●	ALY-6420	LW-15404		12V.-60A.	360
LW-14310●	ALY-6420LS	LW-14373♦		12V.-60A.	235, 360, 540
78411‡	ALX-9404L	LW-12819**	ALX-9404L"G"	12V.-70A.	GO-480, VO-435
LW-14220‡	ALX-9422L	LW-12843**	ALX-9422L"G"	12V.-70A.	GO-480, VO-435
78412	ALX-8403LS	-----	-----	12V.-70A.	360
LW-14318	ALX-8521LS	LW-12842**	ALX-8521 "G"	12V.-70A.	360
LW-14318	ALX-8521LS	LW-14353♦	ALX-8521	12V.-70A.	360
78414	ALT-8404LS	LW-13352♦	-----	24V.-50A.	720
LW-14321	ALT-8421LS	LW-14361♦	-----	24V.-50A.	720 Grooved Pulley
LW-14321	ALT-8421LS	LW-14358♦	-----	24V.-50A.	360 Steel Pulley
79036	ALU-8403LS	-----	-----	24V.-70A.	360, 540
LW-14326	ALU-8521LS	LW-12847**♦	ALU-8521 "G"	24V.-70A.	540
		LW-12849**♦	ALU-8521 "G"	24V.-70A.	360
		LW-12850**♦	ALU-8521 "G"	24V.-70A.	360
		LW-14354♦	-----	24V.-70A.	540
		LW-14356♦	ALU-8521	24V.-70A.	540, 720 Grooved Pulley
		LW-14357♦	ALU-8521	24V.-70A.	360
	ALU-8521LS	LW-14363♦	-----	24V.-70A.	540
		32C19553♦	-----	24V.-70A.	235, 320, 360, 540, 720
LW-10009●	ALY-6406	-----	-----	12V.-60A.	540
LW-14315●	ALY-6527	LW-12836**	ALY-6527 "G"	12V.-60A.	540
LW-10256	ALV-9401LS	-----	-----	24V.-100A.	TIGO-541
LW-18873	ALV-9510L	-----	-----	24V.-100A.	TIGO-541
LW-12882	ALV-9405L	-----	-----	24V.-100A.	VO-435
LW-18874	ALV-9511L	-----	-----	24V.-100A.	VO-435
LW-10372	ALY-8405	-----	-----	12V.-60A.	320
LW-14312	ALY-8526	LW-12839**	ALY-8426 "G"	12V.-60A.	320
LW-14335	ALY-8526LS	LW-14375♦	ALY-8526 "G"	12V.-60A.	320
LW-10511	ALY-8403LS	LW-10513♦	-----	12V.-60A.	360 Steel Pulley
LW-14313	ALY-8520LS	LW-12837**♦	ALY-8520 "G"	12V.-60A.	360 Steel Pulley
		LW-14351♦	ALY-8520	12V.-60A.	360 Steel Pulley
LW-10544●	ALV-6403LS	LW-10979●♦	-----	24V.-100A.	360, 540, 720
LW-18888●	ALV-8512	LW-18904●♦	-----	24V.-100A.	360, 540, 720

■ Alternators to be ordered by using Lycoming part numbers.

\* Seven digit numbers are Delco-Remy. Letter prefix numbers are Kelly Aerospace Power Systems Inc.

\*\* Assembly includes ground strap.

♦ Assembly includes Lycoming supplied pulley.

● Less blast tube.

‡ Flanged.



**ALTERNATORS (Cont.)■**

Lycoming Basic Alternator P/N	Vendor P/N*	Lycoming Alternator Assy. P/N	Vendor Alternator Assy. P/N	Description	ENGINE SERIES
LW-10966	ALV-8402L	----- LW-14817 LW-10967	----- ----- -----	24V.-100A. 24V.-100A. 24V.-100A.	360 (Kit, LW-13479) 540 540,720
LW-18885	ALV-8511	LW-18905* LW-18906* LW-18900*	----- ----- -----	24V.-100A. 24V.-100A. 24V.-100A.	360 (Kit, LW-13479) 540 540, 720
LW-11648‡ LW-14222‡	ALU-9404L ALU-9422L	----- LW-12851**	----- ALU-9422L"G"	24V.-70A. 24V.-70A.	VO-435, TVO-435, GO-480 VO-435, TVO-435, GO-480
LW-11884 LW-18871	ALV-9406L ALV-9412L	----- -----	----- -----	24V.-100A. 24V.-100A.	IGO-540 IGO-540
LW-12277 LW-14322	ALT-8404 ALT-8421	----- -----	----- -----	24V.-50A. 24V.-50A.	540 540
LW-14329●	ALU-6521LS	LW-14365◆ LW-14367◆ LW-14369◆	----- ----- -----	24V.-70A. 24V.-70A. 24V.-70A.	TIO, LTIO-540-U2A 360, 540 540 (Pack, 05J19403)
LW-14336	ALU-8521LS♣	32B19550◆	-----	12V.-70A.	235, 320, 360, 540
LW-14327	ALU-8521LS♣	32C19554◆	-----	24V.-70A.	235, 320, 360, 540, 720
LW-14333	ALY-6420LS	31B19555◆	-----	12V.-60A.	360
LW-14336 LW-14318	ALX-8521LS♣ ALX-8521LS	32B19560◆ 32B19561◆	----- -----	12V.-70A. 12V.-70A.	360 360
LW-14326	ALU-8521LS	32C19556◆ 32C19558◆ 32C19559◆	----- ----- -----	24V.-70A. 24V.-70A. 24V.-70A.	540 540 540
LW-14327	ALU-8521LS♣	32C19562◆ 32C19565◆	----- -----	24V.-70A. 24V.-70A.	540 540
32C21355	ES-4018LS	32C19563◆ 32C19564◆ 32C21356◆ 32C21673◆	----- ----- ----- -----	24V.-70A. 24V.-70A. 24V.-70A. 24V.-70A.	540 540 540 540
32C20114	ES-4011LS	32C22786◆	-----	24V.-90A.	540
32C21447 32C20114	ES-4011LS♣ ES-4011LS	32C21448◆ 32C21681◆ 32C22375◆	----- ----- -----	28V.-90A. 28V.-90A. 28V.-90A.	320, 360, 540, 720 320, 360 (Kit, 05K21701), 540, 720 540
32C21420	ES-4019LS	32C21703◆	-----	28V.-130A.	320, 360, 540
32C21997	ALU-8532LS	----- -----	----- -----	24V.-75A. 24V.-75A.	360 360
32C22029	ES-4019LS♣	32C22030◆	-----	28V.-130A.	360, 540
32C22491	ES-4011-1LS	32C22492◆ 32C22951◆	----- -----	24V.-90A. 24V.-90A.	540 (Pack, 05J22487) 540 (Kit, 05K22787)
32C22515	ALU-8539LS	32C22527◆ 32C22528◆	----- -----	24V.-75A. 24V.-75A.	540 Lt. 540 Rt.
32C22737	ES-4019LS	-----	-----	24V.-130A.	360 (Kit, 05K22739) HIO-360-D1A

- Alternators to be ordered by using Lycoming part numbers.
- \* Seven digit numbers are Delco-Remy. Letter prefix numbers are Kelly Aerospace Power Systems Inc.
- \*\*Assembly includes ground strap.
- ◆ Assembly includes Lycoming supplied pulley.
- Less blast tube.
- ‡ Flanged.
- ♣ Thermocoupled.

**VOLTAGE REGULATORS■**

PART NUMBER			DESCRIPTION	ENGINE SERIES
Lycoming	Vendor	Vendor No.		
71745	Delco-Remy	1119224	24V.-50A.*	235, 290, 320, 340, 360, 540
72205	Delco-Remy	1119226	12V.-20A.*	235, 290, 320, 340, 360, 540
62833	Delco-Remy	1118704	12V.-35A.*	235, 290, 320, 340, 360, 540
68263	Bendix	1589-1-E	24V.-50A.	GO-435, GO-480
68872	Delco-Remy	1118799	24V.-25A.*	235, 290, 320, 340, 360, 540
68626	Delco-Remy	1119145	12V.-35A.**	320, 340, 360, 540
68810	Delco-Remy	1119139	12V.-20A.**	320, 360, 540
71350	Delco-Remy	1118976	24V.-25A.**	320, 360, 540
71979	Delco-Remy	1119237	24V.-40A.**	320, 360, 540
72077	Delco-Remy	1119246	12V.-50A.**	320, 340, 360, 540
72311	Delco-Remy	1119273	24V.-40A.*	320, 360, 540
73340	Delco-Remy	-----	24V.-50A.*	320, 360, 540
74291	Delco-Remy	9000590	12V.♦	320, 360, VO-435, 540, TIO-541, 720
77347	Prestolite	VSF-7402	24V.♦	235, 320, 360, VO-435, TVO-435, 540,
LW-10179	Prestolite	VSF-7403	24V.♦	IGO-540, TIGO-541, 720
74292	Delco-Remy	9000951	24V.♦	320, 360, 540, 720
LW-11140	Prestolite	EO-20713	24V.**♦	Optional twin engine installations.
72696	Delco-Remy	1119656	24V.♦	360, 540, 720
LW-10185	Prestolite	VSF-7203	12V.♦	235, 320, 360, GO-480, 540, 720
LW-11139	Prestolite	EO-20803	12V.**♦	Optional twin engine installations.
LW-12749	Prestolite	FVR-4002‡	12V.**♦	235, 320, 360, 540, 720
LW-11357	Wico	X-17990●	12V.♦	235, 320, 360, 540, VO-435, 720
LW-12747	Prestolite	FVR-4004	12V.♦	235, 320, 360, 540, VO-435, 720
LW-15895	Prestolite	FVR-4224	12V.♦●	235, 320, 360, 540, VO-435, 720
LW-12748	Prestolite	FVR-4005●	24V.♦	235, 320, 360, 540, VO-435
LW-12750	Prestolite	FVR-4003‡	24V.**♦	320, 360, 540
LW-12364	Lear-Siegler	51565	24V.	360

■ Voltage Regulators no longer available from Lycoming.  
\* Non-paralleling.  
\*\*Paralleling.  
♦ Transistor.  
● Single engine, internally grounded field alternator installations only.  
‡ Twin engine, internally grounded field alternator installations only.

**RELAYS■**

PART NUMBER			DESCRIPTION	ENGINE SERIES
Lycoming	Vendor	Vendor No.		
68628	Delco-Remy	1116887	12 Volt	290, 320, 340, 360, 540
71349	Delco-Remy	1116902	24 Volt	320, 360, 540, 720
74461	Delco-Remy	1115831	12 Volt	320, 360, VO-435, 540, 720
74804	Delco-Remy	1115832	24 Volt	320, 360, 540, 720
78059	Prestolite	FOC-4002A	12 Volt	235, 320, 360, VO-435, GO-480, 540
78060	Prestolite	FOC-4003A	24 Volt	320, 360, TVO-435, 540, IGO-540, TIGO-541, 720

■ Relays no longer available from Lycoming.

NOTE: Revision "L" adds new Sky-Tec starters and Kelly Aerospace Power Systems Inc. starter from Supplement No. 1 to Service Instruction No. 1154K.