



Service Instruction

S.I. No.: **03-1**

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Title: Continuing Airworthiness Data and Installation Eligibility for ECi Accessory Cases Installed on Lycoming Engines

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Technical Portions are FAA DER Approved.

- 1.0 **SUBJECT:** ECi Accessory Cases for Lycoming 4-Cylinder engines with single magneto configurations and TITAN 361 Engines
- 2.0 **BACKGROUND:** ECi has completed design documentation and endurance testing according to FAR Part 33.49 for a range of engine parts including replacement accessory cases for Lycoming 320/360 series engines. This Service Instruction details some features of the ECi accessory case and documents the installation eligibility.
- 3.0 **FEATURES AND OVERHAUL REQUIREMENTS:** ECi accessory cases are cast using 356 aluminum alloy in permanent molds. ECi recommends that accessory cases be inspected and repaired (overhauled) by an Approved FAA Repair Station at engine overhaul. These cases may be weld repaired, but only FAA Repair Stations that have specific FAA Approval must accomplish major repairs.
- 4.0 **ACCESSORY CASE ASSEMBLY DESIGNATION:** For Lycoming 320/360 Series Engines, there are two major accessory case configurations: the AC-Type Fuel Pump (two-bolt fuel pump pad) and the AN-Type Fuel Pump (four-bolt fuel pump pad). ECi accessory cases are designated by two basic numbers: AEL65142 for AC fuel pump configurations and AEL65144 for AN fuel pump configurations.

Beyond these, there are many options depending upon the style of magnetos, vacuum pump, prop governor drive, and oil filter adapter that are used on the engine. Typically, changes in accessories require simply changing the length of studs used. ECi further designates these options by a dash number that is affixed to the basic number.

For example, the typical accessory case configuration used on Lycoming O-360-A1A and ECi O-360-A1A1N engines will mount an AC fuel pump, 1 impulse-coupled magneto, 1 plain magneto, a prop governor drive adapter (such as AEL75545), a vacuum pump with adapter AEL61098, and a typical oil filter adapter (such as AEL77852 or AEL22772). This configuration is designated as: AEL65142-04. However, if one uses 2 impulse-coupled magnetos instead, the studs must be longer on one magneto pad and would be designated AEL65142-05.

A close inspection of the Lycoming parts manuals will show that, in many cases, multiple options are available for each engine designation. Often this duplicity spawns from the fact that the same engine may be installed in multiple aircraft. Customers should pay careful attention to the accessories that are used in their particular application and/or the original Lycoming assembly number when determining which assembly number to order. Also, ECi customer service is eager to assist as necessary.

The following tables are provided to assist the customer in determining the appropriate assembly that should be used for each engine model designation. Since ECi accessory cases have all pads machined for ease in the conversion from one assembly to another, covers AEL65109 (prop governor pad cover), AEL65098 or AEL65087 (AC fuel pump covers), AEL60430 (vacuum pump cover), or AEL60431 (AN fuel pump cover) may be required to complete the original configuration.

Accessory Case Assemblies Utilizing AC Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65142-01	21A21533-01 74515 76112 LW-10649	IO-320-B1A, B2A; IO-360-B1E, B2E, F1A, AEIO-360-B1E	Magnetos: 2 impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange.
AEL65142-02	21A21533-02 72466 76113 76484 77412 77422	O-320-B2D, D1D; IO-320-B1A, B1C, B1D, B2A; O-360-A1G, A1G6, A1H, A1H6, A2G, A2H, A4G, A4J, A4K, C1F, C2B, C4F; IO-360-B1E, B1G6, B2E, E1A, F1A, M1A; AEIO-360-B1E	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange.
AEL65142-03	21A21533-03 75381 76145	O-360-A1A, A2A, B1A, C1A, C2A, D2A, J2A; HIO-360-C1A, C1B	Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: 1 ³ / ₁₆ inch studs for use with cover.
AEL65142-04	21A21533-04 71581 72506 76110 76927 LW-10482 LW-12408 LW-14416	O-320-A2A, A2B, D1A, D1B, D1C, D1F, D2A, D2B, D2C, D2F, D2G, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2F, E2H, E3D, E3H; IO-320-A1A, A2A, B1E, D1A, D1B, D1C; AIO-320-A1A, A1B, A2A, A2B, B1B, C1B; AEIO-320-D1B, D2B; O-360-A1A, A1F, A1F6, A1P, A2A, A2F, A3A, A4A, A4M, A4P, B1A, B2A, B2C, C1A, C1E, C1G, C2A, C2E, C4P, D1A, D2A; IO-360-A1B, A1B6, A1D, A1D6, A2B, A3B6, B4A, C1C, C1C6, C1D6, C1E6, K2A; AIO-360-A1B, A2B, B1B; AEIO-360-A1B, A1B6, A1D, A1D6, A1E, A1E6, A2B, B4A, H1A, H1B	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65142-05	21A21533-05 77997 LW-16437	O-320-D2J; O-360-A1A, A2A, A4N, C1E, C2A, C2E, F1A6, G1A6; IO-360-B1F, B1F6, B2F, B2F6, L2A; AIO-360-A1B, A2B; AEIO-360-B1F, B1F6, B1G6, B2F, B2F6, H1A, H1B	Magnetos: 2 impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.

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Accessory Case Assemblies Utilizing AC Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65142-06	21A21533-06 72510 73972 76111	O-320-D1B, D2B, E1B, E2B; IO-320-A1A, A2A; O-360-A1D, A2D, A3D, A4D, B1B, B2B, C1C, C2C, D2B; HO-360-A1A; IO-360-A1A, A1C, A2A, A2C, B1B, C1B, D1A; AIO-360-A1A, A2A; AEIO-360-A1A, A1C, A2A, A2C, B1B	Magnetos: 2 plain or retard, Prop Governor: two $\frac{1}{8}$ inch longer studs on right for special bracket, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65142-07	21A21533-07 74840 76143	HIO-360-B1A	Magnetos: 2 plain or retard, Prop Governor: 1 $\frac{5}{8}$ studs, Vacuum Pump: 1 $\frac{3}{16}$ inch studs for use with cover, Studs on sump flange, Studs on oil filter pad.
AEL65142-08	21A21533-08 75031 76144	IO-360-C1A; HIO-360-A1A, A1B, C1A, D1A	Magnetos: 2 plain or retard, Prop Governor: 1 $\frac{5}{8}$ studs, Vacuum Pump: 1 $\frac{3}{16}$ inch studs for use with cover, Studs on oil filter pad.
AEL65142-09	21A21533-09 76826 77510	O-360-A1A	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: dual accessory drive.
AEL65142-10	21A21533-10 77620	IO-360-B1B; AEIO-360-B1B	Magnetos: 2 plain or retard, Prop Governor: two $\frac{1}{8}$ inch longer studs on right for special bracket, Vacuum Pump: one 1 $\frac{3}{8}$ inch stud and three 2 $\frac{3}{4}$ inch studs.
AEL65142-12	21A21533-12 LW-13238	IO-360-A1B6; AEIO-360-A1B6	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: 2 $\frac{1}{2}$ inch studs.
AEL65142-13	21A21533-13 LW-14706	HIO-360-D1A	Magnetos: 2 inch studs for use with impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: 1 $\frac{3}{16}$ inch studs for use with cover.
AEL65142-14	21A21533-14 LW-15420	O-360-A4A; IO-360-B4A; AEIO-360-B4A	Magnetos: 2 impulse with 2 inch studs on left magneto, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.

Accessory Case Assemblies Utilizing AC Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65142-15	21A21533-15 LW-15421	O-360-A4J	Magnetos: 2 impulse with 2 inch studs on left magneto, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on oil sump flange.
AEL65142-16	21A21533-16	O-320-A2A, A2B, D1A, D1B, D1C, D1F, D2A, D2B, D2C, D2F, D2G, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2F, E2H, E3D, E3H; IO-320-A1A, A2A, B1E, D1A, D1B, D1C; AIO-320-A1A, A1B, A2A, A2B, B1B, C1B; AEIO-320-D1B, D2B; O-360-A1A, A1F, A1F6, A1P, A2A, A2F, A3A, A4A, A4M, A4P, B1A, B2A, B2C, C1A, C1E, C1G, C2A, C2E, C4P, D1A, D2A; IO-360-A1B, A1B6, A1D, A1D6, A2B, A3B6, B4A, C1C, C1C6, C1D6, C1E6, K2A; AIO-360-A1B, A2B, B1B; AEIO-360-A1B, A1B6, A1D, A1D6, A1E, A1E6, A2B, B4A, H1A, H1B	Magnetos: 2 plain or retard. Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65142-18	21A21533-18 LW-18347	IO-360-A1D; AEIO-360-A1D	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: 1 1/4 inch studs for use with cover only.
AEL65142-22	21A21533-22 78039	O-360-A1D	Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: dual accessory drive.
AEL65142-23	73234 76140	O-360-A1D	Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: dual accessory drive.

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Accessory Case Assemblies Utilizing AC Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65142-24	21A21533-24	HO-360-C1A	Magnetos: 1 impulse with 2 inch studs & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: 1 1/2 long studs for use with cover, Studs on sump flange with two 1/8 inch longer studs for use with 56A22204 sump.
AEL65142-25	No Equivalent	Uncertificated Engines Only!	Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: No studs.
AEL65142-26	No Equivalent	Uncertificated Engines Only!	Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: No studs.
AEL65142-27	No Equivalent	Uncertificated Engines Only!	Magnetos: No studs. Prop Governor: No studs. Vacuum Pump: No studs. Oil pump studs only.

4.1 Accessory Case Assemblies Utilizing AN-Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65144-01	21A21534-01 75128 76114	IO-320-B1B, C1A, C1B, F1A	Fuel Pump: 2 3/8 inch studs, Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65144-02	21A21534-02 75919 76116	IO-320-B1B, C1A, C1B, F1A	Fuel Pump: 4 3/4 inch studs, Magnetos: 2 impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange.

4.1 Accessory Case Assemblies Utilizing AN-Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65144-03	21A21534-03 LW-10105	IO-320-B1B, C1A, C1B, F1A	Fuel Pump: 5 inch studs, Magnetos: 2 impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange.
AEL65144-04	21A21534-04 71630 72508 76136	O-360-A1C, A2E, C2D; HO-360-B1A, B1B; IO-360-B1A, B1C, B1D; HIO-360-B1B; AEIO-360-B1D	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 1 impulse & 1 plain, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65144-05	21A21534-05 73018 76137	O-360-A1C; IO-360-B1C	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange.
AEL65144-06	21A21534-06 73604 76139	O-360-C2D; HO-360-B1A, B1B; HIO-360-B1B	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, Studs on sump flange, Studs on oil filter pad.
AEL65144-07	21A21534-07 72511 73198 76141	O-360-A2E; IO-360-B1D; AEIO-360-B1D	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65144-09	21A21534-09 77516 LW-14252	IO-360-B1D; TIO-360-A1A, A1B, A3B6; AEIO-360-B1D	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, No plug at prop governor pad.

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4.1 Accessory Case Assemblies Utilizing AN-Type Fuel Pumps:

ECi Part No.	Lycoming Part No.	Lycoming Engine Eligibility	Features
AEL65144-10	21A21534-10	O-360-A1C, A2E, C2D; HO-360-B1A, B1B; IO-360-B1A, B1C, B1D; HIO-360-B1B; AEIO-360-B1D	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 impulse, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65144-11	21A21534-11 LW-12968	IO-360-C1F	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump, No plug at prop governor pad.
AEL65144-12	73159 76138	O-360-A1C; IO-360-B1A, B1C	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: AEL61098 adapter with or without pump.
AEL65144-13	74138 76142	IO-360-B1A	Fuel Pump: 2 ³ / ₈ inch studs, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: dual accessory drive.
AEL65144-14	No Equivalent	Uncertificated engines only!	Fuel Pump: 1 1/2 inch studs for use with AEL60431 cover or equivalent, Magnetos: 1 plain and 1 impulse, Prop Governor : cover, AEL75545 adapter, or equivalent, Vacuum Pump: No studs.
AEL65144-15	No Equivalent	Uncertificated engines only!	Fuel Pump: 1 1/2 inch studs for use with AEL60431 cover or equivalent, Magnetos: 2 plain or retard, Prop Governor: cover, AEL75545 adapter, or equivalent, Vacuum Pump: No studs.