

FAA-PARTS MANUFACTURER APPROVAL (PMA) SUPPLEMENT

AIRMOTIVE ENGINEERING CORP.
9503 Middlex
San Antonio, Texas 78217

PMA No. PQ3SW
Supplement No. 31
Revision No.
 Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
Retainer, Intake Valve Upper	AEL10077	LW-10077	Test and Computations per 14 CFR § 21.303. Dwg: AEL10077 Rev. E Dated: 2-25-99, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2D, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AIO-320-B1B, C1B, LIO-320-B1A, C1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-340-A,B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6 HO-360-A1A, B1A IO-360-B1A, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, E4A, F1A LO-360-A1G6D, A1H6, E1A6D TO-360-A1G6D VO-360-A1A, A1B, B1A HIO-360-B1A,B1B, LTO-360-A1G6D TIO-360-F1A AEIO-360-B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A O-435-A, A2

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)	
					GO-435-C2, C2A, C2B, C2B1, C2B2, C2B2-6, C2E, VO-435-A1B, A1C, A1D, A1E, A1F TVO-435-A1A, B1A GO-480-B, B1A6, B1B, B1C, B1D, F4A6, C1D6, D1A, F1A6, F2A6, F6, G1A6, G1B6, G1D6, G1E6, G1H6, G1J6, G2D6, G2F6 O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D, J1A5D, J1B5D, J1C5D, J1D5D, J3A5, J3A5D, J3C5D IO-540-A1A5, B1B5, B1C5, C1B5, C1C5, C1D5, C1F5, C2C, C4A5, C4B5, C4B5D, C4D5D, C4C5, D4A5, D4B5, D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1E5, J4A5, K1E5, M1A5, N1A5, N1A5D, P1A5, R1A5, T4A5, T4A5D, T4B5D, T4C5D, V4A5D, W3A5D VO-540-A1A, A2A, B1A, B1B3, B1C, B2A, B2C, B1D, B2D, B1E, B2E, C1A, C1B, C1C3, C2A, C2B TIO-540-G1A, C1A, E1A, H1A AEIO-540-D4A5, D4B5, D4C5 TIVO-540-A1A TIO-541-A1A, E1A4, E1B4, E1C4	
Spring, Valve, Inner	AEL11795	LW-11795	Test and Computations per 14 CFR § 21.303. Dwg: AEL11795 Rev. A, Dated: 12-29-99, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A2B, A2C, A2D, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2D, D2F, D2G, D2H, D2J, D3G, E1A,	

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					E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H, H2AD
					IO-320-B1A, B1B, B1C, C1A, D1A, D1B, D1C, E1A, E1B, E2A, E2B, F1A
					AIO-320-B1B, C1B
					LIO-320-B1A, C1A
					AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B
					O-340-A, B
					O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6
					HO-360-A1A, B1A
					IO-360-B1A, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, E4A, F1A
					LO-360-A1G6D, A1H6, E1A6D
					TO-360-A1G6D
					VO-360-A1A, A1B, B1A
					HIO-360-A1A, B1A, C1A, C1B, D1A, E1AD, E1BD
					IVO-360-A1A
					LTO-360-A1G6D
					AEIO-360-B1B, B1D, B1F, B1G6, B2F, B4A, H1A
					O-435-A, A2
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4D5, B1A5, B1B5, B2B5, B2C5D, B4B5, B4B5D, E1A, E4A5, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1B5D, H2B5D, J1A5D, J1C5D, J2A5D, J3A5, J3A5D, J3C5D, L3C5D
					IO-540-C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, D4A5, D4B5, D4C5, J4A5, N1A5, N1A5D, R1A5, T4A5D, T4C5D, V4A5D,

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					W1A5D, W3A5D TIO-540-AA1AD, AB1AD, AF1A, C1A, G1A, C1AD, E1A, H1A, K1AD AEIO-540-D4A5, D4B5
Spring, Valve Outer	AEL11800	LW-11800	Test and Computations per 14 CFR § 21.303. Dwg: AEL11800 Rev. A, Dated: 12-28-99, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795
Thrust Button, Rocker Shaft	AEL12892	LW-12892	Test and Computations per 14 CFR § 21.303. Dwg: AEL12892 Rev. IR, Dated: 11-18-98, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795
Retainer, Exhaust Valve Lower	AEL13323	LW-13323	Test and Computations per 14 CFR § 21.303. Dwg: AEL13323 Rev. D Dated: 2-25-99, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795
Shaft, Rocker	AEL13790	LW-13790	Test and Computations per 14 CFR § 21.303. Dwg: AEL13790 Rev. B Dated: 12-14-98, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795
Cover, Rocker	AEL61247(-XX)	61247	Test and Computations per 14 CFR § 21.303. Dwg: AEL61247 Rev. A Dated: 12-17-98, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795

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Retainer, Intake Valve Lower	AEL65441	65441	Test and Computations per 14 CFR § 21.303. Dwg: AEL65441 Rev. B Dated: 12-25-99, or later FAA approved revisions.	Lycoming	Installation Eligibility is the same as the Preceding AEL11795
Camshaft	AEL11754	LW-11754	Test and Computations per 14 CFR § 21.303. Dwg: AEL11754 Rev. G Dated: 4-13-99, or later FAA approved revisions.	Lycoming	<p>O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H</p> <p>IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A</p> <p>AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B</p> <p>O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6</p> <p>HO-360-A1A, B1A, B1B</p> <p>IO-360-A1A, B1A, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, D1C6, C1D, C1D6, C1F, E4A, F1A, J1A6D</p> <p>TO-360-A1G6D</p> <p>VO-360-A1A, A1B, B1A</p> <p>HIO-360-A1A, B1A, B1B, C1A, C1B, E1AD, E1BD</p> <p>LTO-360-A1A6D</p> <p>TIO-360-A1B</p> <p>AEIO-360-B1B, B1D, B1F, B1F6, B1G6,</p>

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					B2F, B2F6, B4A, H1A
Camshaft	AEL18840	LW-18840	Test and Computations per 14 CFR § 21.303. Dwg: AEL18840 Rev. IR Dated: 7-26-99, or later FAA approved revisions.	Lycoming	Installation eligibility is the same as the AEL11754 Camshaft above.
Nut, Connecting Rod	AEL12186	LW-12186	Test and Computations per 14 CFR § 21.303 Dwg. AEL12186 Rev.B Dated 1-5-99 or later FAA approved revisions.	Lycoming	<p>O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C</p> <p>O-290-D, D2, D2B, D2C</p> <p>O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, DIAD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H</p> <p>IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A</p> <p>AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B</p> <p>O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6</p> <p>HO-360-A1A, B1A, B1B</p> <p>IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, E1A, F1A, J1A6D, J1AD, K2D</p> <p>LO-360-A1G6D, A1H6, E1A6D</p> <p>TO-360-C1A6D, E1AD, E1A6D, F1A6D</p>

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					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B,
					HIO-360-A1A, B1A, C1A, C1B, D1A, E1AD, E1BD, F1AD
					IVO-360-A1A
					LTO-360-E1AD, E1A6D
					TIO-360-A1B, A3B6, C1A6D, F1A6D
					AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A
					LHIO-360-C1A, C1E6, C1E6D
					O-435-A, A2
					GO-435-C2, C2A, C2A2, C2B, C2B1, C2B2, C2E
					VO-435-A1A, A1B, A1C, A1D, A1E
					TVO-435-B1A, B1B, D1A, D1B, F1A, G1A, G1B
					GO-480-B, B1, B1A6, B1B, B1C, B1D, C1B6, C1D6, C2, D1A, D1B, F1A6, F2A6, F4A6, F6, G1A6, G1B6, G1D6, G1E6, G1F6, G1G6, G1J6, G2D6, G2F6
					GSO-480-A1A, A1A6, A1C6, A2A6, B1A6, B1B3, B1B6, B1C6, B1E6, B1J6, B2D6
					IGO-480-A1B6
					IGSO-480-A1A6, A1B6, A1C6, A1E6, A1F6
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D, J1A5D, J1B5D, J1C5D, J1D5D, J2A5D, J3A5, J3A5D, J3C5D, L3C5D
					IO-540-A1A5, AA1A5, B1A5, B1C5, C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, C4D5D, D4A5, D4B5, D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1A5D, K1B5, K1C5, K1D5, K1E5,

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					K1E5D, K1F5, K1F5D, K1G5, K1G5D, K1H5, K1J5, K1J5D, K1K5, L1A5, L1A5D, L1C5, M1A5D, N1A5, N1A5D, P1A5, R1A5, S1A5, T4A5D, T4B5D, T4C5D, U1A5D, U1B5D, V4A5D, W1A5D, W3A5D VO-540-A1A, B1A, B1B, B1B3, B1C, B1D, B1F, B1G, B2D, C1A, C1B, C1C3, C2A, C2C IGO-540-A1A, A1C, B1A, B1C IVO-540-A1A TIO-540-A1A, A1B, AA1AD, AB1AD, A2A, A2C, C1A, C1AD, E1A, E1A4, E1B4, E1C4, E1D4, F2BD, H1A, J2B, J2BD, N2BD, R2AD, S1AD, T2AD, U2A, V2AD TVO-540-A1A AEIO-540-D4A5, D4B5, L1B5D IGSO-540-A1A, A1C, A1D, A1E, A1H, B1A, B1C LTIO-540-F2BD, J2B, J2BD, N2BD, R2AD, U2A, V2AD TIVO-540-A2A, A2B TIO-541-A1A, E1A4, E1B4, E1C4, E1D4 TIGO-541-A1A IO-720-A1A, A1B, B1BD, C1B, D1B, D1C, D1CD
Stud, ³ / ₈ Dia.	AEL38-13 AEL38-14 AEL38-15 AEL38-16 AEL38D-17	38-13 38-14 38-15 38-16 38D-17	Test and Computations per 14 CFR § 21.303. Dwg: AEL3800 Rev. A, Dated 1-14-99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL12186
Stud, ¹ / ₂ Dia.	AEL50-14 AEL50-15 AEL50-16	50-14 50-15 50-16	Test and Computations per 14 CFR § 21.303. Dwg: AEL5000 Rev. A, Dated 2-15-99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL12186

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
Camshaft	AEL13221	LW-13221	Test and Computations per 14 CFR § 21.303. Dwg: AEL13221 Rev. B, Dated 2-25-99, or later FAA approved revisions	Lycoming	O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6
Gear, Camshaft	AEL68639	68639	Test and Computations per 14 CFR § 21.303. Dwg: AEL68639 Rev. A, Dated 3-1--99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL13221
Retainer, Intake Valve Lower	AEL13321	LW-13321	Test and Computations per 14 CFR § 21.303. Dwg: AEL13321 Rev. B, Dated 2-25-99, or later FAA approved revisions	Lycoming	IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, J1A6D, J1AD, K2A, K2D. A3B6D TO-360-C1A6D, E1AD, E1A6D, F1A6D AIO-360-A1A, A1B, A2A, A2B, B1B HIO-360-A1A, C1A, C1B, D1A, E1AD, E1BD, F1AD LIO-360-C1E, C1E6, C1E6D LTO-360-E1AD, E1A6D TIO-360-A1A, A1B, A3B6, A3B6D, C1A6D, F1A6D

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9503 Middlex
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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					LHIO-360-C1A, C1E6, C1E6D
					AEIO-360-A1A, A1B, A1B6, A1C, A1D, A1E, A2A, A2B, A2C, A2E
					VO-435-A1A(21), A1B, A1C, A1D, A1E, A1F, B1A
					TVO-435-17, A1A, B1A, B1B, C1A, D1A, D1B, E1A, F1A, G1A, G1B,
					GO-480-B, B1, B1A6, B1B, B1C, B1D, C1B6, C1D6, C2, D1A, D1B, F1A6, F2A6, F4A6, F6, G1A6, G1B6, G1D6, G1E6, G1F6, G1G6, G1J6, G2D6, G2F6
					IGO-480-A1B6
					GSO-480-A1A, A1A6, A1C6, A2A6, B1A6, B1B3, B1B6, B1C6, B1E6, B1J6, B2D6
					IGSO-480-A1A6, A1B6, A1C6, A1E6, A1F6
					IO-540-AA1A5, A1A5, B1B5, B1C5, E1A5, E1B5, E1C5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, K1A5, K1A5D, K1B5, K1B5D, K1C5, K1E5, K1E5D, P1A5, S1A5, M1A5D, M1B5, M1B5D, M2A5D, U1A5D, U1B5D,
					VO-540-A1A, B1A, B1B, B1B3, B1C, B1D, B1F, B1G, B2D, C1A, C1B, C1C3, C2A, C2C
					IGO-540-A1A, A1C, B1A, B1C
					IVO-540-A1A
					TIO-540-A1A, A1B, AA1AD, AB1AD, A2A, A2C, C1A, C1AD, E1A, E1A4, E1B4, E1C4, E1D4, F2BD, H1A, J2B, J2BD, N2BD, R2AD, S1AD, T2AD, U2A, V2AD
					TVO-540-A1A
					AEIO-540-D4A5, D4B5, L1B5D
					IGSO-540-A1A, A1C, A1D, A1E, A1H, B1A, B1C
					LTIO-540-F2BD, J2B, J2BD, N2BD, R2AD, U2A, V2AD
					TIVO-540-A2A, A2B
					TIO-541-A1A, E1A4, E1B4, E1C4, E1D4
					TIGO-541-A1A

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					IO-720-A1A, A1B, B1BD, C1B, D1B, D1C, D1CD
Retainer, Exhaust Valve Lower	AEL13322	LW-13322	Test and Computations per 14 CFR § 21.303. Dwg: AEL13222 Rev. D, Dated 2-25-99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL13321
Retainer, Intake Valve Spring Upper	AEL69532	69532	Test and Computations per 14 CFR § 21.303. Dwg: AEL69532 Rev. D, Dated 3-1-99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL13321
Shaft, Idler Gear	AEL13796	LW-13796	Test and Computations per 14 CFR § 21.303. Dwg: AEL13796 Rev. A, Dated 3-1-99, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6 HO-360-A1A, B1A, B1B IO-360-A1A, A1B, A1B6, A1C, A1C6, A1D,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					A1D6, A2A, A2B, A2C, B1A, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, D1A, E4A, F1A, K2A, K2D
					LO-360-A1H6
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B, A2A, A2B, B1B
					HIO-360-A1A, B1A, C1A, C1B, D1A
					LIO-360-C1E, C1E6
					TIO-360-A1A, A1B, A3B6, F1A
					AEIO-360-A1A, A1B, A1B6, A1C, A1D, A1E, A2A, A2B, A2C, A2E, B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A
					LHIO-360-C1A, C1E6
					O-435-A, A2
Starter Ring Gear Support Assembly	AEL16471	69340,68942, 75221, 77579, 75030, 76124, 76628, 78426, LW10504, LW10552, LW11837, LW16064, LW16471, LW18694	Test and Computations per 14 CFR § 21.303. Dwg: AEL16741 Rev. I.R., Dated 4-14-99, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					F1A6, G1A6
					HO-360-A1A, B1A, B1B
					IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, E1A, F1A, J1A6D, J1AD, K2D
					LO-360-A1G6D, A1H6
					TO-360-C1A6D, E1AD, E1A6D, F1A6D
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B,
					HIO-360-A1A, B1A, C1A, C1B, D1A, E1AD, E1BD, F1AD
					LTO-360-E1AD, E1A6D
					IVO-360-A1A
					TIO-360-A1B, A3B6, C1A6D, F1A6D
					AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A
					LHIO-360-C1A, C1E6, C1E6D
					O-435-A, A2
Retainer, Exhaust Valve Upper	AEL16475	LW-16475	Test and Computations per 14 CFR § 21.303. Dwg: AEL16475 Rev. B., Dated 12-17-98, or later FAA approved revisions	Lycoming	O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H
					IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A
					AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B
					O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6
					HO-360-A1A, B1A
					IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, A3B6D, B1A, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, C1F, D1A, E1A, F1A, J1A6D, J1AD, K2D
					LO-360-A1G6D, A1H6
					TO-360-C1A6D, E1A6D
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B
					HIO-360-B1A, B1B
					IVO-360-A1A
					LIO-360-C1E6
					LTO-360-E1A6D
					TIO-360-A1B, A3B6, C1A6D, F1A6D
					AEIO-360-B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A
					GSO-480-A1A, A1A6, A1C6, A2A6, B1A6, B1B3, B1B6, B1C6, B1E6, B1J6, B2D6
					IGSO-480-A1A6, A1B6, A1C6, A1E6, A1F6
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D, J1A5D, J1B5D, J1C5D, J1D5D, J2A5D, J3A5, J3A5D, J3C5D, L3C5D
					IO-540-A1A5, AA1A5, B1A5, B1C5, C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, C4D5D, D4A5, D4B5, D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1A5D, K1B5, K1C5, K1D5, K1E5, K1E5D, K1F5, K1F5D, K1G5, K1G5D,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					K1H5, K1J5, K1J5D, K1K5, L1A5, L1A5D, L1C5, M1A5D, N1A5, N1A5D, P1A5, R1A5, S1A5, T4A5D, T4B5D, T4C5D, U1A5D, U1B5D, V4A5D, W1A5D, W3A5D VO-540-A1A, A2A, B1A, B1B, B1B3, B1C, B1D, B1E, B1F, B1G, B2A, B2C, B2D, B2E, C1A, C1B, C1C3, C2A, C2B, C2C IGO-540-A1A, A1C, B1A, B1C IVO-540-A1A TIO-540-A1A, A1B, A2B, AA1AD, AB1AD, A2A, A2C, C1A, C1AD, E1A, E1A4, E1B4, E1C4, E1D4, F2BD, G1A, H1A, J2B, J2BD, N2BD, R2AD, S1AD, T2AD, U2A, V2AD, V4A5D TVO-540-A1A AEIO-540-B4B5, D4A5, D4B5, L1B5D IGSO-540-A1A, A1C, A1D, A1E, A1H, B1A, B1C LTIO-540-F2BD, J2B, J2BD, N2BD, R2AD, U2A, V2AD TIVO-540-A2A, A2B TIO-541-A1A, E1A4, E1B4, E1C4, E1D4 TIGO-541-A1A IO-720-A1A, A1B, B1BD, C1B, D1B, D1C, D1CD
Impeller, Oil Pump Driving	AEL18109	LW-18109	Test and Computations per 14 CFR § 21.303. Dwg: AEL18109 Rev. I.R., Dated 2-5-99, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2C, L2A, L2C, M1, N2A, N2C, K2B O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A
					AIO-320-B1B, C1B
					AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B
					O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6
					HO-360-A1A, B1A
					IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1D, A1D6, A2A, A2B, A3B6D, B1A, B1B, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1F, E4A, F1A, J1A6D
					LO-360-A1G6D
					TO-360-C1A6D, E1AD, E1A6D, F1A6D
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B, B1B
					HIO-360-A1A, B1A, B1B, C1A, C1B, D1A, E1AD, E1BD, F1AD
					IVO-360-A1A
					LIO-360-C1E6
					LTO-360-E1AD, E1A6D
					TIO-360-A1B, A3B6, C1A6D, F1A6D
					AEIO-360-B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, D1A5, E1A, E4A5, E4B5, E4B5, E4C5, F1A5, F1B5, G1A5, G2A5, H1A5, H1B5, H2A5, J3A5
					IO-540-A1A5, AA1A5, B1A5, B1C5, C1B5, C1C5, C2C, C4B5, C4C5, D4A5, D4B5,

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AIRMOTIVE ENGINEERING CORP.
9503 Middlex
San Antonio, Texas 78217

PMA No. PQ3SW
Supplement No. 31
Revision No.
Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1B5, K1C5, K1D5, K1E5, K1F5, K1G5, K1H5, K1J5, K1K5, L1A5, L1A5D, L1C5, M1A5, N1A5, P1A5, R1A5, S1A5 AEIO-540-D4A5, D4B5
Impeller Assy, Oil Pump-Driven	AEL18110	LW-18110	Test and Computations per 14 CFR § 21.303. Dwg: AEL18110 Rev. I.R., Dated 2-5-99, or later FAA approved revisions	Lycoming	Installation Eligibility is the same as the Preceding AEL18109
Shaft, Oil Pump	AEL61174	61174	Test and Computations per 14 CFR § 21.303. Dwg: AEL61174 Rev. A, Dated 12-14-98, or later FAA approved revisions	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3D, A4A, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6 HO-360-A1A, B1A, B1B IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, D1A, E1A,

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					F1A, K2D LO-360-A1H6 VO-360-A1A, A1B, B1A AIO-360-A1A, A1B HIO-360-A1A, B1A, C1A, C1B, D1A, IVO-360-A1A LTO-360-E1AD, E1A6D TIO-360-A1B, A3B6 AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A LHIO-360-C1A, C1E6
Fuel Pump Plunger	AEL61544	61544	Test and Computations per 14 CFR § 21.303. Dwg: AEL61544 Rev. A, Dated 1-13-98, or later FAA approved revision	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, L2A, L2C, M1, N2A, N2C, P2A O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AIO-320-B1B, C1B LIO-320-B1A O-340-A O-360-A1A, A1AD, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2E, D1A, D2A, E1A6D, F1A6, G1A6

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Supplement No. 31
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Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A3B6D, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, J1A6D, J1AD, K2D
					LO-360-A1G6D
					TO-360-C1A6D
					AIO-360-A1A, A1B, B1B
					HIO-360-A1A, B1A, C1A, C1B, D1A
					LIO-360-C1E6
					AEIO-360-A1A, B1G6, H1A
					LHIO-360-C1A, C1E6, C1E6D
					O-435-A, A2
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, B1A5, B1B5, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1B5, H1B5D, H2B5D, J1A5D, J3A5, J3A5D, J3C5D, L3C5D
					IO-540-B1C5, C1B5, C4B5, C4B5D, C4C5, C4D5D, D4A5, D4B5, D4C5, L1C5, N1A5, N1A5D, P1A5, R1A5, S1A5, T4A5D, T4B5D, T4C5D, U1A5D, U1B5D, V4A5D, W1A5D, W3A5D
					AEIO-540-D4B5
Gear, Magneto	AEL61665	61665	Test and Computations per 14 CFR § 21.303. Dwg: AEL61665 Rev. D, Dated 3-1-99, or later FAA approved revision	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C
					O-290-D, D2, D2B, D2C
					O-320-A1A, A1B, A2A, A2B, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H
					IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-340-A, B O-360-A1A, A1F, A1F6, A1G, A1G6, A1H, A1H6, A1J, A2A, A2F, A2G, A2H, A3A, A3D, A4A, A4D, A4G, A4J, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6 HO-360-A1A, B1A IO-360-C1C, C1C6, C1D6, C1E6, C1F, F1A VO-360-A1A, LIO-360-C1E6 TIO-360-F1A AEIO-360-A1E O-435-A, A2
5/16 Bolt Lockplate	AEL72078	72078	Test and Computations per 14 CFR § 21.303. Dwg: AEL61665 Rev. A, Dated 2-25-99, or later FAA approved revision	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G,

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9503 Middlex
San Antonio, Texas 78217

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6 LO-360-A1G6D, A1H6, E1A6D TO-360-A1G6D VO-360-A1A, A1B, B1A LTO-360-A1G6D
Bolt, 5/16-24	AELSTD1791	STD-1791	Test and Computations per 14 CFR § 21.303. Dwg: AELSTD-1791 Rev. A, Dated 1-20-99, or later FAA approved revision	Lycoming	Installation Eligibility is the same as the Preceding AEL72078
Starter Gear	AEL72566	72566	Test and Computations per 14 CFR § 21.303. Dwg: AEL72566 Rev. I.R., Dated 4-15-99, or later FAA approved revision	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6 HO-360-A1A, B1A, B1B IO-360-A1A, A1B, A1B6, A1B6D, A1C,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
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A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, E1A, F1A, J1A6D, J1AD, K2D

LO-360-A1G6D, A1H6

TO-360-C1A6D, E1AD, E1A6D, F1A6D

VO-360-A1A, A1B, B1A

AIO-360-A1A, A1B

HIO-360-A1A, B1A, C1A, C1B, D1A, E1AD, E1BD, F1AD

IVO-360-A1A

LTO-360-E1AD, E1A6D

TIO-360-A1B, A3B6, C1A6, F1A6D

AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A

LHIO-360-C1A, C1E6, C1E6D

O-435-A, A2

O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, B1A5, B1B5, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1B5, H1B5D, H2B5D, J1A5D, J3A5, J3A5D, J3C5D, L3C5D

IO-540-AA1A5, A1A5, B1B5, B1C5, C1B5, C4B5D, C4C5, C4C5D, D4A5, E1A5, E1B5, E1C5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1A5D, K1B5, K1B5D, K1C5, K1D5, K1E5, K1E5D, K1F5, K1F5D, K1G5, K1G5D, K1J5, K1J5D, K1K5, L1C5, P1A5, S1A5, M1A5, M1A5D, M1B5, M1B5D, M2A5D, N1A5, P1A5, R1A5, S1A5, T4A5D, T4B5D, T4C5D, U1A5D, U1B5D, V4A5D, W1A5D

TIO-540-A1A, A2A, A2B, A2C, C1A, E1A, G1A, H1A, J2B, F2BD, J2BD, N2BD, R2AD, S1AD, V2AD, AA1AD, AB1AD

AEIO-540-D4B5, L1B5D

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					TIO-541-A1A, E1A4, E1C4
Gear, Vacuum Pump Drive	AEL72970	72970	Test and Computations per 14 CFR § 21.303. Dwg: AEL72970 Rev. G, Dated 3-1-99, or later FAA approved revision	Lycoming	O-235-C1, C1B, C2A, C2C, F2A, F2B, J2A, K2A, K2B, L2A, L2C, M1, N2A, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, F1A AIO-320-B1B, C1B, D1B, D2B, LIO-320-B1A, C1A O-360-A1A, A1C, A1D, A1F, A1F6, A1G, A1G6, A1H, A1H6, A1J, A2A, A2D, A2E, A2F, A2H, A3A, A3D, A4A, A4D, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1F, C1G, C2A, C2B, D1A, D2A, F1A6, G1A6 IO-360-A1A, A1B, A1B6, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, E1A, F1A, K2D VO-360-A1A, A1B, B1A AIO-360-A1A, A1B IVO-360-A1A LIO-360-C1E6, A1H6 TIO-360-A1B, A3B6 AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A

FAA-PARTS MANUFACTURER APPROVAL (PMA) SUPPLEMENT

AIRMOTIVE ENGINEERING CORP.
9503 Middlex
San Antonio, Texas 78217

PMA No. PQ3SW
Supplement No. 31
Revision No.
Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
Gear Assembly, Idler	AEL74996	74996	Test and Computations per 14 CFR § 21.303. Dwg: AEL72996 Rev. B, Dated 12-14-98, or later FAA approved revision	Lycoming	O-235-C1, C1B, C2A, C2C, K2C, L2C, N2C O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1B, D1C, E1A, E1B, E2A, E2B, F1A AIO-320-D1B, D2B, E1A, E1B, E2A, E2B LIO-320-B1A, C1A O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1G, A1G6, A1H, A1H6, A1J, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4D, A4G, A4J, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6 HO-360-A1A, B1A IO-360-B1A, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, E4A, F1A VO-360-A1A, A1B, B1A HIO-360-B1A, B1B TIO-360-F1A AEIO-360-B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A
Bolt, Conn. Rod	AEL75061	75061	Test and Computations per 14 CFR § 21.303. Dwg: AEL75061 Rev. A, Dated 12-14-98, or later FAA approved revision	Lycoming	O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6

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Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					HO-360-A1A, B1A, B1B
					IO-360-A1A, A1B, A1B6, A1B6D, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B1A, B1B, B1BD, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, D1A, E1A, F1A, J1A6D, J1AD, K2D
					LO-360-A1G6D, A1H6, E1A6D
					TO-360-C1A6D, E1AD, E1A6D, F1A6D
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B,
					HIO-360-A1A, B1A, C1A, C1B, D1A, E1AD, E1BD, F1AD
					IVO-360-A1A
					LTO-360-E1AD, E1A6D
					TIO-360-A1B, A3B6, C1A6D, F1A6D
					AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A
					LHIO-360-C1A, C1E6, C1E6D
					GO-480-B, B1, B1A6, B1B, B1C, B1D, C1B6, C1D6, C2, D1A, D1B, F1A6, F2A6, F4A6, F6, G1A6, G1B6, G1D6, G1E6, G1F6, G1G6, G1J6, G2D6, G2F6
					IGO-480-A1B6
					GSO-480-A1A, A1A6, A1C6, A2A6, B1A6, B1B3, B1B6, B1C6, B1E6, B1J6, B2D6
					IGSO-480-A1A6, A1B6, A1C6, A1E6, A1F6
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B2C5D, B4A5, B4B5, B4B5D, D1A5, E1A, E4A5, E4B5, E4B5D, E4B5, E4C5, F1A5, F1B5, G1A5, G1A5D, G2A5, H1A5, H1A5D, H1B5, H1B5D, H2A5, H2A5D, H2B5D, J1A5D, J1B5D, J1C5D, J1D5D, J2A5D, J3A5, J3A5D, J3C5D, L3C5D
					IO-540-A1A5, AA1A5, B1A5, B1C5, C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, C4D5D,

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Supplement No. 31
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Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
Gear Assembly, Fuel Pump Idler	AEL75072	75072	Test and Computations per 14 CFR § 21.303. Dwg: AEL75072 Rev. B, Dated 12-14-98, or later FAA approved revision.	Lycoming	D4A5, D4B5, D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1A5D, K1B5, K1C5, K1D5, K1E5, K1E5D, K1F5, K1F5D, K1G5, K1G5D, K1H5, K1J5, K1J5D, K1K5, L1A5, L1A5D, L1C5, M1A5D, N1A5, N1A5D, P1A5, R1A5, S1A5, T4A5D, T4B5D, T4C5D, U1A5D, U1B5D, V4A5D, W1A5D, W3A5D VO-540-A1A, B1A, B1B, B1B3, B1C, B1D, B1F, B1G, B2D, C1A, C1B, C1C3, C2A, C2C IGO-540-A1A, A1C, B1A, B1C IVO-540-A1A TIO-540-A1A, A1B, AA1AD, AB1AD, A2A, A2C, C1A, C1AD, E1A, E1A4, E1B4, E1C4, E1D4, F2BD, H1A, J2B, J2BD, N2BD, R2AD, S1AD, T2AD, U2A, V2AD TVO-540-A1A AEIO-540-D4A5, D4B5, L1B5D IGSO-540-A1A, A1C, A1D, A1E, A1H, B1A, B1C LTIO-540-F2BD, J2B, J2BD, N2BD, R2AD, U2A, V2AD TIVO-540-A2A, A2B TIO-541-A1A, E1A4, E1B4, E1C4, E1D4 TIGO-541-A1A IO-720-A1A, A1B, B1BD, C1B, D1B, D1C, D1CD O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, L2A, L2C, M1, N2A O-290-D, D2, D2B, D2C O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D,

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Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					B1E, B2A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A AIO-320-B1B, C1B LIO-320-B1A O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6 HO-360-A1A, B1A IO-360-A1A, A1B, A1B6, A1C, A1D, A1D6, A2A, A2B, A4N, B1A, B1B, B1C, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1F, C2A, C2C, E4A, F1A LO-360-A1G6D, A1H6, E1A6D TO-360-A1G6D VO-360-A1A, A1B, B1A AIO-360-A1A, A1B, B1B, B1D, B1F, B1G6, B2F, B4A, H1A LIO-360-C1E6 LTO-360-A1G6D TIO-360-F1A AEIO-360-A1E, B1B, B1D, B1F, B1F6, B1G6, B2F, B2F6, B4A, H1A
Stud, 1/2-13 x 10-1/32 Long	AEL75154	75154	Test and Computations per 14 CFR § 21.303. Dwg: AEL75154 Rev. B, Dated 3-1-99, or later FAA approved revision	Lycoming	O-320-A1A, A1B, A2B, A2D, A3A, A3B, B1A, B1B, B1C, B2B, B2C, B3B, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A

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San Antonio, Texas 78217

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Revision No.
Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					AIO-320-B1A, C1A LIO-320-B1A, C1A AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6 HO-360-A1A, B1A IO-360-A1A, A1B, A1B6, A1C, A1D6, A2A, A2B, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, E4A, F1A LO-360-A1G6D, A1H6, E1A6D TO-360-A1G6D VO-360-A1A, A1B, B1A AIO-360-A1A, A1B, B1B HIO-360-B1A, B1B LTO-360-A1G6D TIO-360-A1B, C1A6D, F1A AEIO-360-A1E, B1G6, H1A
Stud, 1/2-13 x 10-11/16 Long	AEL76220	76220	Test and Computations per 14 CFR § 21.303. Dwg: AEL76220 Rev. B, Dated 3-1-99, or later FAA approved revision.	Lycoming	Installation Eligibility is the same as the Preceding AEL75154
Shaft, Tachometer	AEL76121	76121	Test and Computations per 14 CFR § 21.303. Dwg: AEL76121 Rev. A, Dated 12-14-98, or later FAA approved revision.	Lycoming	O-320-A1A, A1B, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B1C, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D,

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AIRMOTIVE ENGINEERING CORP.
9503 Middlex
San Antonio, Texas 78217

PMA No. PQ3SW
Supplement No. 31
Revision No.
Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
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E3H

IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A

AIO-320-B1A, C1A

LIO-320-B1A, C1A

AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B

O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1J, A1LD, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, A5AD, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, E1A6D, F1A6, G1A6

HO-360-B1A, B1B

IO-360-A1A, A1B, A1B6, A1C, A1D6, A2A, A2B, B1B, B1BD, B1C, B1D, B1E, B1F, B1F6, B2E, B2F, B2F6, B4A, C1A, C1B, E4A, F1A

LO-360-A1G6D, A1H6, E1A6D

TO-360-A1G6D

VO-360-A1A, A1B, B1A

AIO-360-A1A, A1B, B1B

HIO-360-B1A, B1B

LTO-360-A1G6D

TIO-360-A1B, C1A6D, F1A

AEIO-360-A1E, B1G6, H1A

Screw, 5/16-24 x AELSTD2213 STD-2213
 1.00 Long

Test and Computations Lycoming
 per 14 CFR § 21.303.
 Dwg: AELSTD2213
 Rev. A, Dated 12-14-98, or later FAA approved revision

O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C

O-290-D, D2, D2B, D2C

O-320-A1A, A1B, A2A, A2B, A2C, A2D, A3A, A3B, A3C, B1A, B1B, B2A, B2B, B2C, B3A, B3B, B3C, C1A, C1B, C2A, C2B, C2C, C3A, C3B, C3C, D1A, D1AD, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H,

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Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					D2J, D3G, E1A, E1B, E1C, E1F, E1J, E2A, E2B, E2C, E2D, E2E, E2F, E2G, E2H, E3D, E3H
					IO-320-A1A, A2A, B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, C1F, D1A, D1AD, D1B, D1C, E1A, E1B, E2A, E2B, F1A
					AEIO-320-D1B, D2B, E1A, E1B, E2A, E2B
					O-360-A1A, A1C, A1D, A1F, A1F6, A1G, A1G6, A1H, A1H6, A1J, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4D, A4G, A4J, A4JD, A4K, A4M, A4N, B1A, B2A, B2B, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, D1A, D2A, D2B, F1A6, G1A6
					HO-360-A1A, B1A, B1B
					IO-360-A1A, A1B, A1B6, A1C, A1C6, A1D, A1D6, A2A, A2B, A2C, B, B1B, B1D, B1E, B1F, B2E, B2F, B2F6, B4A, C1A, C1B, C1C, C1C6, C1D6, C1E6, D1A, E1A, F1A, K2D
					LO-360-A1H6
					VO-360-A1A, A1B, B1A
					AIO-360-A1A, A1B,
					HIO-360-A1A, B1A, C1A, C1B, D1A
					IVO-360-A1A
					TIO-360-A1B, A3B6
					AEIO-360-A1A, A1B, A1B6, A1D, A1E, A2B, B, B1F, B1G6, B2F, B4A, H1A
					LHIO-360-C1A, C1E6
					O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, B1A5, B1B5, B1D5, B2A5, B2B5, B2C5, B4A5, B4B5, D1A5, E1A, E4A5, E4B5, E4B5, E4C5, F1A5, F1B5, G1A5, G2A5, H1A5, H1B5, H2A5, J3A5
					IO-540-A1A5, AA1A5, B1A5, B1C5, C1B5, C1C5, C2C, C4B5, C4C5, D4A5, D4B5, D4C5, E1A5, E1B5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, J4A5, K1A5, K1B5,

FAA-PARTS MANUFACTURER APPROVAL (PMA) SUPPLEMENT

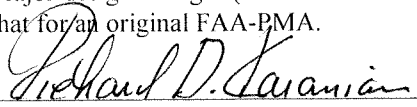
AIRMOTIVE ENGINEERING CORP.
9503 Middlex
San Antonio, Texas 78217

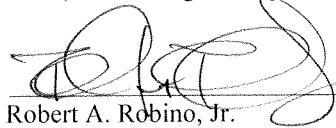
PMA No. PQ3SW
Supplement No. 31
Revision No.
Date: SEP 23 1999

Part Name	Part Number	Approved Replacement For	Approval Basis and Approved Design Data	Installation Eligibility (Make)	Installation Eligibility (Model)
					K1C5, K1D5, K1E5, K1F5, K1G5, K1H5, K1J5, K1K5, L1A5, L1C5, N1A5, P1A5, R1A5, S1A5 VO-540-A1A, B1A, B1B, B1B3, B1C, B1D, B1F, B1G, B2D, C1A, C1B, C1C3, C2A, C2C IVO-540-A1A TIO-540-A1A, A1B, A2A, A2C, C1A, E1A, E1A4, E1B4, E1C4, E1D4, H1A, J2B, U2A TVO-540-A1A AEIO-540-D4A5, D4B5 LTIO-540-J2B, U2A TIVO-540-A2A, A2B TIO-541-A1A, E1A4, E1B4, E1C4, E1D4 IO-720-A1A, A1B, C1B, D1B, D1C
Camshaft	AEL75706	75706	Test and Computations per 14 CFR § 21.303. Dwg: AEL75706 Rev. I.R., Dated 7-1-99, or later FAA approved revision	Lycoming	O-235-C1, C1B, C1C, C2A, C2C, F2A, F2B, H2C, J2A, K2A, K2B, K2C, L2A, L2C, M1, N2A, N2C O-290-D

-----End of Listing-----

NOTE: Minor design changes (reference 14 CFR part 21 §§ 21.93 and 21.95) must be submitted in a manner as determined by the ACO. Major design changes (reference 14 CFR part 21 §§ 21.93 and 21.97) to drawings and specifications are to be handled in the same manner as that for an original FAA-PMA.


 Richard D. Karanian
 Project Engineer, Special Certification Office,
 ASW-190
9-22-99
Date


 Robert A. Robino, Jr.
 Manager, Manufacturing Inspection District Office,
 SW MIDO-43
9-23-99
Date