

Continental Motors® PMA Aircraft Engine Products
SERVICE INFORMATION LETTER

CATEGORY 5
SIL004

Contains Useful Information Pertaining to Your Aircraft Engine

- SUBJECT:** Piston Ring Sets Applications, Fitting Instructions and Reference
- PURPOSE:** To identify appropriate valve and piston applicability and service data.
- COMPLIANCE:** Reference material to ensure correct identification and usage for ring sets.
- MODELS**
- AFFECTED:** Engines listed in Table 1 fitted with Continental Motors (CMI) replacement parts manufactured under PMA.

I. GENERAL INFORMATION

The following data provides Continental Motors (CMI) recommendations for replacement ring sets.

II. MODELS AFFECTED

The following tables provides a list of Type Certificated eligible engines in which the Lycoming®¹ replacement service parts may be used.

Table 1. Lycoming® Applications

Engine Models ¹	Piston Part Number	CMI Ring Set Numbers ²		
		NiC3™ Barrel	Steel Barrel (Any Process)	Chrome Barrel (Any Process)
290 & 435	69841, 69958, 70396	CC201	ST201 ³	CC201
235 Straight BBL	73851	CC202	ST202	CC202
320, 340, 360, 480, 540, 541, 720	75089, 75413, 76966, 78762, LW10207, LW10205, LW10545, LW13396, LW14610, LW15357, LW19176	CN203	ST203 ³	CC203
235 Choked BBL	LW11621, LW13623, LW18725, LW18729	CN204	ST204	CC204

1. Verify eligibility with applicable PMA Supplement prior to installation.
2. Never use chromium plated or bimetallic rings in a chromium plated cylinder (Channelchromium®, Cermichrome®).
 Never use chromium plated rings in a NiC3™ cylinder.
 Never lap piston rings.
3. Also available in P010.

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WARNING

Hard bumping of the piston ring during installation can cause the formation of cracks in the piston ring that may not fail immediately; however, piston ring breakage can introduce pieces of the ring expander between the piston and bore. This can result in the formation of grinding type cracks on the bore surface and may cause complete catastrophic engine failure.

A. Fitting Instructions

1. Determine the composition of the cylinder bore BEFORE selecting the ring set. The cylinder bore and the ring materials must be compatible (see Figure 1).
2. Check ring end gap per Table 4 and Table 5. End gap must be measured prior to installation of ring on the piston.
3. Ensure the compression rings do not close at top of ring travel in choked cylinders. A minimum of 0.0075" gap is required at top dead center of piston travel.
4. Fit rings to each piston in appropriate grooves using the correct fitting tool.
5. Oversize rings and ring sets are available and are identified by the suffix **P###**

B. Oil Control Rings

1. Install the ring expander into the appropriate piston groove.
2. Fit the oil control ring into the same ring groove so that the expander engages the internal groove in the ring.
3. Space the gaps of the ring and the expander approximately 180° apart.

C. Follow-up Check

1. Cylinder bore cleanliness can be evaluated by using clean cellophane tape and a white sheet of paper. Wrap a length of tape (sticky side out) around two or three fingers. Pat the tape at many locations on the cylinder bore and after cutting the tape, place it sticky side down on a white sheet of paper.

NOTE: A high particle count indicates a dirty surface and requires that the bore cleaning be repeated.

2. Ensure rings move freely in the groove after assembly.
3. Check side clearance per the applicable engine Maintenance and Overhaul Manual.
4. Orient ring gaps of the top (#1) and third (#3) ring the same. Orient the ring gaps of the second (#2) and fourth (#4) ring, if applicable, 180° from the gaps of rings #1 and #3.
5. Thoroughly lubricate cylinder bore and piston assembly (i.e. piston rings and pin) with clean oil.
6. Insert piston assembly into cylinder bore using piston ring compressor of the appropriate size immediately after lubrication to prevent contamination.

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CAUTION: Never use chromium plated or bimetallic rings in a chromium plated cylinder (Channelchromium® or Cermichrome®).

CAUTION: Never use chromium plated rings in a NiC3™ cylinder.

CAUTION: Never lap piston rings.

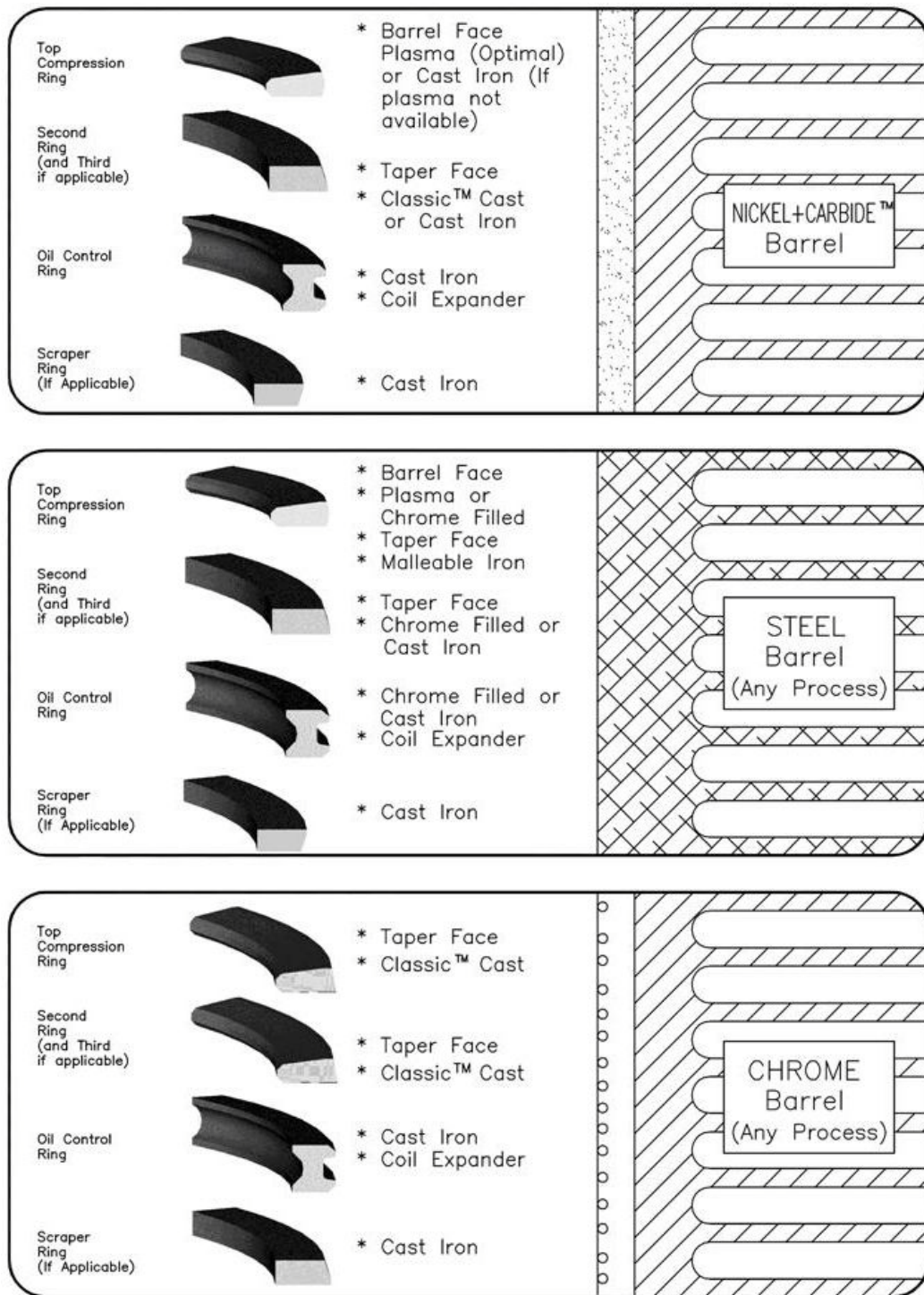


Figure 1. Recommended Piston Ring/ Bore Combinations

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Table 2. Reference Data - Individual Piston Ring Sets¹ for Lycoming® Engines

CMI Ring Set P/N	Barrel Surface	Top Ring	2nd Ring	3rd Ring	Oil Ring	Scraper	Equiv. Ring Set P/N
ST201	Steel	AEL13883ST	AEL13883ST	N/A	AEL69401ST	N/A	N/A
ST201P010	Steel	AEL13883STP010	AEL13883STP010	N/A	AEL69401STP010	N/A	N/A
CC201	Chrome or Nickel+Carbide™	AEL13883CC	AEL13883CC	N/A	AEL69401CC	N/A	N/A
ST202	Steel	AEL68196ST	AEL68196ST	N/A	AEL16867ST	AEL60072	N/A
CC202	Chrome or Nickel+Carbide™	AEL68196CC	AEL68196CC	N/A	AEL16867CC	AEL60072	N/A
ST203	Steel	AEL74241PL	252577CC	N/A	252578ST	N/A	SL3601-SC
ST203P010	Steel	252577STP010	252577STP010	N/A	252578STP010	N/A	SL3601-SCP10
CN203	Nickel+Carbide™	AEL74241PL	252577CC	N/A	252578CC	N/A	N/A
CC203	Chrome	252577CC	252577CC	N/A	252578CC	N/A	SL5401-SC
ST204	Steel	AEL78862PL	252560CC	N/A	252561ST	N/A	SL2351-SC
CN204	Nickel+Carbide™	AEL78862PL	252560CC	N/A	252561CC	N/A	N/A
CC204	Chrome	252560CC	252560CC	N/A	252561CC	N/A	SL2300-SC

1. On occasion, ring sets may contain ring part numbers other than those listed in the reference data. When substitution occurs, CMI has determined that the installation eligibility of the ring set and the warranty have not been affected. The label of the ring set contains the actual part numbers of the rings in the set.

NOTE: When piston ring sets do not consist of all Continental Motors PMA rings, it is necessary to refer to the specific manufacturer for ring end gap data.

Table 3. Piston Rings For Lycoming® Engines

CMI Ring Set P/N	Barrel Surface	Top Ring	2nd Ring	3rd Ring
AEL60072	235 Scraper	Cast Iron	60072	N/A
AEL68196CC	235 Compression	Cast Iron	LW14233	N/A
AEL68196ST	235 Compression	Chrome Faced	68196	N/A
AEL69401CC	290 Oil Control	Cast Iron	68338	N/A
AEL69401ST ¹	290 Oil Control	Chrome Faced	69401	N/A
AEL74241PL	5 1/8" Compression	Bimetallic	N/A	N/A
AEL78862PL	235 Compression	Bimetallic	N/A	N/A
AEL13883CC	290 Compression	Cast Iron	LW13883	N/A
AEL13883ST ¹	290 Compression	Chrome Faced	62916	N/A
AEL16867CC	235 Oil Control	Cast Iron	LW18352	N/A
AEL16867ST	235 Oil Control	Chrome Faced	LW16867	N/A
252560CC	235 Compression	Cast Iron	LW14234	SL14234
252561CC	235 Oil Control	Cast Iron	LW14235	SL14235
252561ST	235 Oil Control	Chrome Faced	78864	SL78864
252577CC	5 1/8" Compression	Cast Iron	74673	SL74673
252577ST ¹	5 1/8" Compression	Chrome Faced	74241	SL74241
252578CC	5 1/8" Oil Control	Cast Iron	73998	SL73998
252578ST ¹	5 1/8" Oil Control	Chrome Faced	73857	SL73857

1. Also available in P010.

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NOTE: End gap tolerances given are to be measured at the flange end of the bore and are for reference only. End gap is reduced at the top of ring travel by the bore times 3.14. It is important that the end gap be checked at top of ring travel where it must not be less than 0.0075" for Lycoming® cylinders

Table 4. Continental Motors Ring Sets, (Top, 2nd and 3rd Rings)

CMI Ring Set P/N	Top Ring			2nd Ring			3rd Ring		
	Top Ring	End Gap	Side Clearance	2nd Ring	End Gap	Side Clearance	3rd Ring	End Gap	Side Clearance
CC102	252511CC	.025/.035	.006L/.008L	252511CC	.020/.035	.005L/.007L	252511CC	.015/.035	.005L/.007L
CC106	250001CC	.035/.050	.0015L/.004L	250001CC	.035/.050	.0015L/.004L	N/A	N/A	N/A
CC108	250001CC	.035/.050	.0015L/.004L	250001CC	.035/.050	.0015L/.004L	N/A	N/A	N/A
CC110	252501CC	.035/.050	.0015L/.004L	252509CC	.035/.050	.0015L/.004L	N/A	N/A	N/A
CC112	252540CC	.035/.050	.001L/.003L	252540CC	.030/.045	.001L/.003L	N/A	N/A	N/A
ST201 ¹	AEL13883ST	.020/.030 ²	.0005L/.005L	AEL13883ST	.020/.030 ²	.0005L/.005L	N/A	N/A	N/A
CC201	AEL13883CC	.020/.030 ²	.0005L/.005L	AEL13883CC	.020/.030 ²	.0005L/.005L	N/A	N/A	N/A
ST202	AEL68196ST	.020/.030 ²	.0005L/.005L	AEL68196ST	.020/.030 ²	.0005L/.005L	N/A	N/A	N/A
CC202	AEL68196CC	.020/.030 ²	.0005L/.005L	AEL68196CC	.020/.030 ²	.0005L/.005L	N/A	N/A	N/A
ST203 ¹	AEL74241PL	.030/.050	.0015L/.005L	252577CC	.030/.050	.0015L/.005L	N/A	N/A	N/A
CN203	AEL74241PL	.030/.050	.0015L/.005L	252577CC	.030/.050	.0015L/.005L	N/A	N/A	N/A
CC203	252577CC	.030/.050	.0015L/.005L	252577CC	.030/.050	.0015L/.005L	N/A	N/A	N/A
ST204	AEL78862PL	.030/.050	.0015L/.005L	252560CC	.030/.050	.0015L/.005L	N/A	N/A	N/A
CN204	AEL78862PL	.030/.050	.0015L/.005L	252560CC	.030/.050	.0015L/.005L	N/A	N/A	N/A
CC204	52560CC	.030/.050	.0015L/.005L	252560CC	.030/.050	.0015L/.005L	N/A	N/A	N/A

1. Oversize rings have the same end gap and clearance requirements as the similar standard ring.
2. End gaps for Straight Bores. For Choked Bores, see NOTE above.

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Table 5. Continental MotorsRing Sets, (Oil and Scraper Rings)

CMI Ring Set P/N	Oil Ring			Scraper Ring		
	Oil Ring	End Gap	Side Clearance	Scraper Ring	End Gap	Side Clearance
CC102	252531CC	.015L/.030	.002L/.004L	N/A	N/A	N/A
CC106	252532WCC	.025/.045	.002L/.005L	252519CC	.030/.050	.006L/.008L
CC108	252532CC	.025/.045	.002L/.005L	252519CC	.030/.050	.006L/.008L
CC110	252545CC	.025/.045	.003L/.005L	252546CC	.030/.050	.006L/.008L
CC112	252542CC	.025/.045	.003L/.005L	252543CC	.025/.045	.003L/.005L
ST201 ¹	AEL69401ST	.015/.035	.002L/.004L	N/A	N/A	N/A
CC201	AEL69401CC	.015/.035	.002L/.004L	N/A	N/A	N/A
ST202	AEL16867ST	.015/.035	.002L/.004	AEL60072	.015/.040	.003L/.0055L
CC202	AEL16867CC	.015/.035	.002L/.004	AEL60072	.015/.040	.003L/.0055L
ST203 ¹	252578ST	.015/.035	.002L/.004L	N/A	N/A	N/A
CN203	252578CC	.015/.035	.002L/.004L	N/A	N/A	N/A
CC203	252578CC	.015/.035	.002L/.004L	N/A	N/A	N/A
ST204	252561ST	.015/.035	.002L/.004L	N/A	N/A	N/A
CN204	252561CC	.015/.035	.002L/.004L	N/A	N/A	N/A
CC204	252561CC	.015/.035	.002L/.004L	N/A	N/A	N/A

1. Oversize rings have the same end gap and clearance requirements as the similar standard ring.