

Service Letter

Technical Aspects are FAA Approved

Number: L92-03 D

Replaces L92-03 C

Date: 8/19/2008

Subject: Procedures for grinding of high compression nitrided cylinder barrels to Plus .010 oversize and installation of Plus .010 oversize pistons and rings.

Application:

Textron Lycoming Engines:
O-320-A2C, B1A, B1B, B2A, B2B, B2C, B2D, B2E, B3A, B3B, B3C, D1A, D1B, D1C, D1D, D1F, D2A, D2B, D2C, D2F, D2G, D2H, D2J, D3G
IO-320-B1A, B1B, B1C, B1D, B1E, B2A, C1A, C1B, D1A, D1B, D1C, F1A
LIO-320-B1A, C1A
AIO-320-A1A, A1B, A2A, A2B, B1B, C1B
AEIO-320-D1B, D2B
O-340-A1A, A1B, A2A
O-360-A1A, A1AD, A1C, A1D, A1F, A1F6, A1F6D, A1G, A1G6, A1G6D, A1H, A1H6, A1LD, A1P, A2A, A2D, A2E, A2F, A2G, A2H, A3A, A3AD, A3D, A4A, A4AD, A4D, A4G, A4J, A4K, A4M, A4N, A4P, A5AD, C1A, C1C, C1E, C1F, C1G, C2A, C2B, C2C, C2D, C2E, C4F, C4P, F1A6, G1A6, J2A
HO-360-A1A, B1A, B1B, C1A
IO-360-B1A, B1B, B1C, B1D, B1E, B1F, B1F6, B1G6, B2E, B2F, B2F6, B4A, E1A, F1A, L2A, M1A, M1B
LO-360-A1G6D, A1H6
VO-360-A1A, A1B, B1A
HIO-360-B1A, B1B, G1A
IVO-360-A1A
AEIO-360-B1B, B1D, B1F, B1F6, B1G6, B1H, B2F, B2F6, B4A, H1A, H1B
O-540-A1A, A1A5, A1B5, A1C5, A1D, A1D5, A2B, A3D5, A4A5, A4B5, A4C5, A4D5, D1A5, E4A5, E4B5, E4C5, F1A5, F1B5, G1A5, G2A5, H1A5, H1A5D, H1B5D, H2A5, H2A5D, H2B5D, L3C5D
IO-540-C1B5, C1C5, C2C, C4B5, C4B5D, C4C5, C4D5, C4D5D, D4A5, D4B5, D4C5, J4A5, N1A5, R1A5, T4A5D, T4B5, T4B5D, T4C5D, V4A5, V4A5D
TIO-540-G1A
AEIO-540-D4A5, D4B5, D4C5, D4D5

Compliance: At overhaul of engine.

Superior Air Parts, Inc. is now supplying pistons and piston rings for the above-referenced engines in .010 oversize. These parts will facilitate the regrinding of nitrided cylinder barrels on these engines to the .010 oversize as an alternative to chrome plating or rebarreling. This procedure is approved by the FAA under STC Number SE8193SW. A copy of the STC is included with this Service Letter (see attached), and a copy should be provided with each installation.

Inspection:

Measure the cylinder barrel to determine if the barrel can be cleaned up at the .010 oversize. Measured at the maximum point of barrel wear, .002 per side (a total of .004 on the diameter) must be allowed for cleanup.

Regrinding:

Several manufacturers provide grinding and/or honing equipment for reconditioning aircraft cylinder barrels in the field. Follow the recommendations of the manufacturer of your specific equipment as to holding fixtures, grit, speed and coolant necessary to produce the surface finish, crosshatch, and choke profile specifications listed on page 3 in figure 1

NOTE: Surface finish should be 25-35 micro-inch. The honed crosshatch pattern should be 23-27 degrees. Failure to produce proper finish and crosshatch can result in improper ring seating or excessive ring wear.

Cleaning:

After the grinding and honing process is completed, wipe as much of the abrasive residue from the barrel as possible. Use a hooked tool to loosen any abrasive buildup in the recess formed where the top of the cylinder barrel meets the cylinder head.

NOTE: All abrasive residue must be removed from the recess formed where the top of the cylinder barrel joins the cylinder head.

Next, flush the cylinder barrel using Varsol (or equivalent solvent) under air pressure. Use a soft (not wire) bristle brush to remove all abrasive residue from the barrel and recesses. Repeat as necessary.

After cleaning, the cylinder should be thoroughly oiled to prevent rusting.

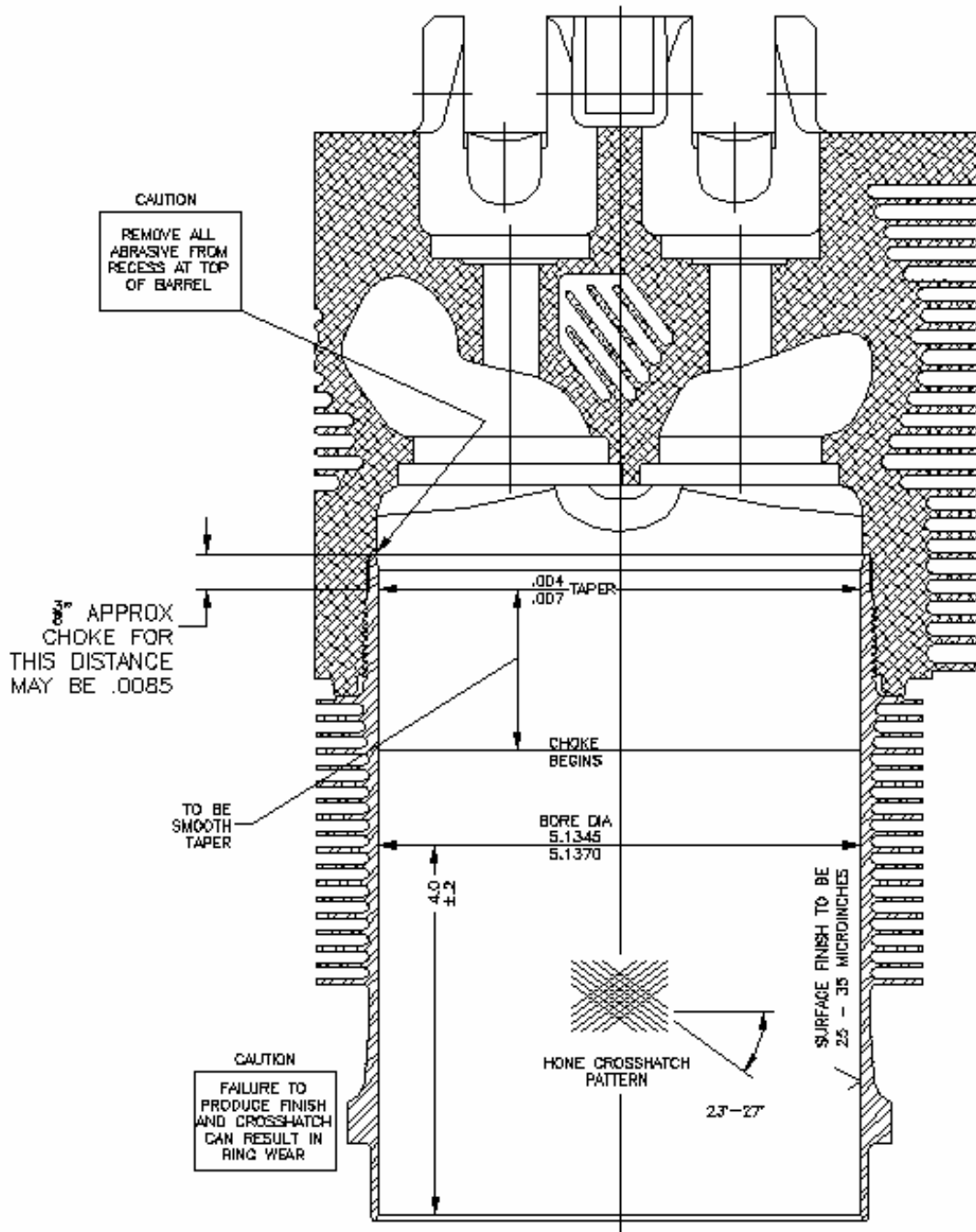
Identification:

Identify cylinders after grinding to .010 oversize with green paint on the cylinder head fins below the spark plug hole and between the push rods.

PISTON AND PISTON RING INFORMATION

PISTON	RING NUMBER	LOCATION	END GAP	SIDE
SL 75089A P10	SL74241A P10	Top Compression	.045-.055	.0025-.0055L
	SL74241A P10	Second Compression	.045-.055	.000-.004L
	SL73857A P10	Oil Control	.015-.030	.002 -.004L

- NOTE:**
1. End gap at top of ring travel must not be less than .0075 inch.
 2. Maximum clearance between piston skirt and cylinder wall: .018L.



CHOKE DETAIL NOT TO SCALE – ENLARGED FOR VISUAL CLARITY

Figure 1

Supplemental Type Certificate

Number SE8193SW

This Certificate issued to Superior Air Parts, Inc.
621 South Royal Lane
Coppell, TX 75019

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 13 of the Civil Air Regulations.

Original Product Type Certificate Number: See page 2

Make: Textron Lycoming

Model: See page 2

Description of Type Design Change: Grind nitrided high compression cylinder barrels to plus .010 oversize and install SL75089 P10 Piston, SL74241 P10 Compression Ring, and SL 73857 P10 Oil Ring in accordance with Superior Air Parts, Inc., Service letter No. L92-03 D dated July 10, 2008 or latter FAA approved revisions.

Limitations and Conditions: Plus 10 piston and piston rings should be installed in complete engine sets (All cylinders). The installer must determine whether this design change is compatible with previously approved modifications. If the holder agrees to permit another person to use this certificate to alter a product, the holder must give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: June 27, 1991

Date reissued:

Date of issuance: April 27, 1992

Date amended: July 31, 2008



By direction of the Administrator

(Signature)
S. Frances Cox, Manager
Special Certification Office
Southwest Region

(Title)

Department of Transportation - Federal Aviation Administration

Supplement Type Certificate

(Continuation Sheet)

Number SF8193SW

Date of Issuance: April 27, 1992

Date of Amendment: July 31, 2008

The following engines and their respective Type Certificate Numbers are eligible for this installation:

Type Certificate Number E-274 -

O-320-A2C, -B1A, -B1B, -B2A, -B2B, -B2C, -B2D, -B2E, -B3A, -B3B, -B3C, -D1A, -D1B, -D1C, -D1D, -D1E, -D2A, -D2B, -D2C, -D2F, -D2G, -D2H, -D2I, -D3G.

Type Certificate Number 1E12 -

IO-320-B1A, -B1B, -B1C, -B1D, -B1E, -B2A, -C1A, -C1B, -D1A, -D1B, -D1C, -F1A
LIO-320-B1A, -C1A
AIO-320-A1A, -A1B, A2A, -A2B, -B1B, -C1B
AEIO-320-D1B, -D2B

Type Certificate Number E-277 -

O-340-A1A, -A1B, -A2A

Type Certificate Number E-286 -

O-360-A1A, -A1AD, -A1C, -A1D, -A1F, -A1F6, -A1F6D, -A1G, -A1G6, -A1G6D, -A1H, -A1H6, -A1H6D, -A1P, -A2A, -A2E, -A2F, -A2G, -A2H, -A3A, -A3AD, -A3D, -A4A, -A4AD, -A4D, -A4G, -A4J, -A4K, -A4M, -A4N, -A4P, A5AD, -C1A, -C1C, -C1E, -C1F, -C1G, -C2A, -C2B, -C2C, -C2D, -C2E, -C4F, -C4P, -F1A6, -G1A6, -J2A
HIO-360-A1A, -B1A, -B1B, -C1A
LO-360-A1G6D, -A1H6

Type Certificate Number 1E10 -

IO-360-B1A, -B1B, -B1C, -B1D, -B1E, -B1F, -B1F6, -B1G6, -B2E, -B2F, -B2F6, -B4A, F1A, F1A, -L2A, -M1A, -M1B
HIO-360-A1A, -B1B, -G1A
AEIO-360-AB1B, -B1D, -B1F, -B1F6, -B1G6, -B1H, -B2F, -B2F6, -B4A, -H1A, -H1B

Type Certificate Number 1E1 -

VO-360-A1A, -A1B, -B1A
IVO-360-A1A

Type Certificate Number E-295 -

O-540-A1A, -A1A5, -A1B5, -A1C5, -A1D, -A1D5, -A2B, -A3D5, -A4A5, -A4B5, -A4C5, -A4D5, -D1A5, -E4A5, -E4B5, -E4C5, -F1A5, -F1B5, -G1A5, -G2A5, -H1A5, -H1A5D, -H1B5D, -H2A5, -H2A5D, -H2B5D, -L3C5D

Type Certificate Number 1E4 -

IO-540-C1B5, -C1C5, -C2C, -C4B5, -C4B5D, -C4C5, -C4D5, -C4D5D, -D4A5, -D4B5, -D4C5, -J4A5, -N1A5, -R1A5, -T4A5D, -T4B5, -T4B5, T4B5D, T4B5D, T4C5D, V4A5, -V4A5D
AEIO-540-D4A5, -D4B5, -D4C5, -D4D5

Type Certificate Number H14BA -

TIO-540-G1A

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

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This certificate may be transferred in accordance with FAR 21.47.