

Service Letter

Technical Aspects are FAA Approved

Number: L89-05 D

Replaces L89-05 C

Date: 10/7/2008

Subject: Procedure for grinding of low-compression turbo-charged nitrided cylinder barrels to Plus .010 oversize and installation of Plus .010 oversize pistons and rings.

Application:

Lycoming Engine Models:

TO-360	-C1A6D, -F1A6D
TIO-360	-A1A, -A1B, -A3B6, -C1A6D
IO-540	-AA1A5, -AA1B5
TIO-540	-A1A, -A1B, -A1C, -A2A, -A2B, -A2C, -F2BD, -J2B, -J2BD, -N2BD, -R2AD, -S1AD, -T2AD, -U2A, -V2AD, -W2A, -AE2A, -AH1A, -AJ1A
LTIO-540	-F2BD, -J2B, -J2BD, -N2BD, -R2AD, -U2A, -V2AD, -W2A
TIO-541	-A1A, -E1A4, -E1B4, -E1C4, -E1D4
TIGO-541	-B1A, -C1A, -D1A, -D1B, -E1A, -G1AD

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 SE-7674SW. A copy of this STC is included with this Service Letter (see attached), and a copy should be provided with each installation.

NOTE: *The .010 oversize piston and rings are to be installed in complete engine sets.*

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 finish, crosshatch and choke profile specifications listed on page 3 in figure 1.

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.

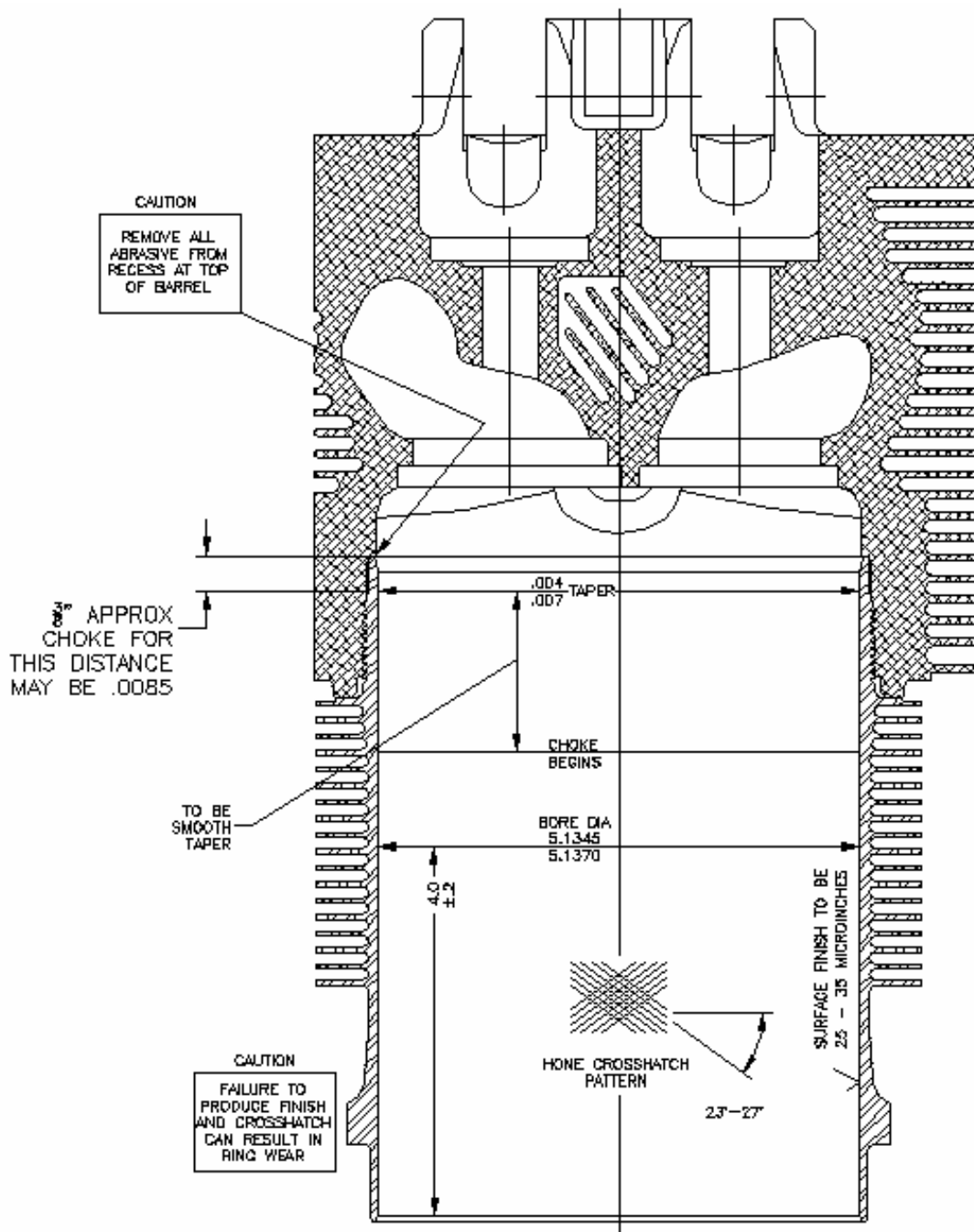
After cleaning, the cylinder should be thoroughly oiled to prevent rusting.

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 Clearance
SL10545 P10	SL74241A P10	Top Compression	.045- .055	.0025 - .0055L
	SL74241A P10	Second Compression	.045 - .055	.000 - .004 L
	SL73857A P10	Oil Control	.015 - .030	.002 - .004 L

- 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 clarity)

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.

United States Of America
Department of Transportation - Federal Aviation Administration
Supplemental Type Certificate

Number SE7674SW

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

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified herein meets the airworthiness requirements of Part 21 of the Regulations.

Original Product Type Certificate Number: * See attached FAA Approved Model
Make: List (AML for list of approved models and
Model: Applicable airworthiness regulations.

Description of Type Design Change:

Grind nitrided cylinder barrels to .010 and install SL10545P10 plus .010 over size pistons, SL74241P10 compression rings and SL73857P10 Oil Control Rings as specified in Superior Air Parts Service letter No.L89-05 D dated June 23, 2008, or later FAA approved data.

Limitations and Conditions:

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. Plus .010 pistons and rings should be installed in complete sets.

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: July 21, 1989

Date issued:

Date of issuance: November 20, 1989

Date amended: 03/02/90, 09/27/90, 09/10/91,
09/02/2008 Revision 4



By direction of the Administrator

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

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

FAA Form 8130-2 (10-68)

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This certificate may be transferred in accordance with FAR 21.97.

FAA APPROVED MODEL LIST (AML)

SE7674SW

Superior Air Parts, Inc.
621 South Royal Lane
Coppell, TX 75019

Date of issuance: July 21, 1989

Date amended: September 2, 2008

Item	Aircraft/Engine Make	Aircraft/Engine Model	Original Type Certificate Number	Regulation /Part
1	TO-360	-C1A6D, -F1A6D	E26EA	FAR 33
2	TIO-360	-A1A, -A1B, -A3B6, -C1A6D	E16EA	FAR 33
3	IO-540	-AA1A5, -AA1B5	1E4	CAR 13
4	TIO-540	-A1A, -A1B, -A1C, -A2A, -A2B, -A2C, -F2BD, -J2B, -J2BD, N2BD, R2AD, -S1AD, -T2AD, -U2A, V2AD, -W2A, -AE2A, -AH1A, -AJ1A	E14EA	CAR 13
	LTIO-540	-F2BD, -J2B, -J2BD, -N2BD, -R2AD, -U2A, -V2AD, -W2A	E14EA	CAR13
5	TIO-541	-A1A, -E1A4, -E1B4, -E1C4, -E1D4	E10EA-7	CAR 13
6	TIGO-541	-B1A, -C1A, -D1A, -D1B, -E1A, -G1AD	E19EA-4	FAR33

FAA Approved:


S. Frances Cox
Manager, Special Certification Office
Southwest Region

Date:

09-17-08