

Service Letter

Technical Aspects are FAA Approved

Number: L89-04 D

Replaces L89-04 C

Date: 9/24/2008

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

Application:

Lycoming Engine Models:

IO-360	-A1A, A1B, A1B6, A1B6D, A1C, A1D, A1D6, A1D6D, A2A, A2B, A2C, A3B6, A3B6D, A3D6D, C1A, C1B, C1C, C1C6, C1D6, C1E6, C1E6D, C1F, C1G6, D1A, J1AD, J1A6D, K2A
AIO-360	-A1A, A1B, A2A, A2B, B1B
AEIO-360	-A1A, A1B, A1B6, A1C, A1D, A1E, A1E6, A2A, A2B, A2C
LIO-360	-C1E6
HIO-360	-A1A, A1B, C1A, C1B
LHIO-360	-C1A, C1B
GO-480	-C1B6, C1D6, C2C6, C2D6, C2E6, G1A6, G1B6, G1D6, G1H6, G1J6, G2D6, G2F6
IGO-480	-A1A6, A1B6
IO-540	-A1A5, B1A5, B1B5, B1C5, E1A5, E1B5, E1C5, G1A5, G1B5, G1C5, G1D5, G1E5, G1F5, K1A5, K1A5D, K1B5, K1B5D, K1C5, K1D5, K1E5, K1E5D, K1F5, K1F5D, K1G5, K1G5D, K1H5, K1J5, K1J5D, K1K5, K2A5, L1A5, L1A5D, L1B5D, L1C5, M1A5, M1A5D, M1B5D, M1C5, M2A5D, P1A5, S1A5, U1A5D, U1B5D, AC1A5, AE1A5
HIO-540	-A1A
AEIO-540	-L1B5, L1B5D, L1D5
IGO-540	-A1A, A1B, A1C, B1A, B1B, B1C
VO-540	-C1A, C1B, C1C3, C2A, C2B, C2C
IVO-540	-A1A
IO-720	-A1A, A1B, A1BD, B1A, B1B, B1BD, C1B, C1BD, D1B, D1BD, D1C, D1CD

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 SE7582SW. A copy of this 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.

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 push rods.

PISTON AND PISTON RING INFORMATION

Piston	Ring Number	Location	End Gap	Side Clearance
SL10207 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.

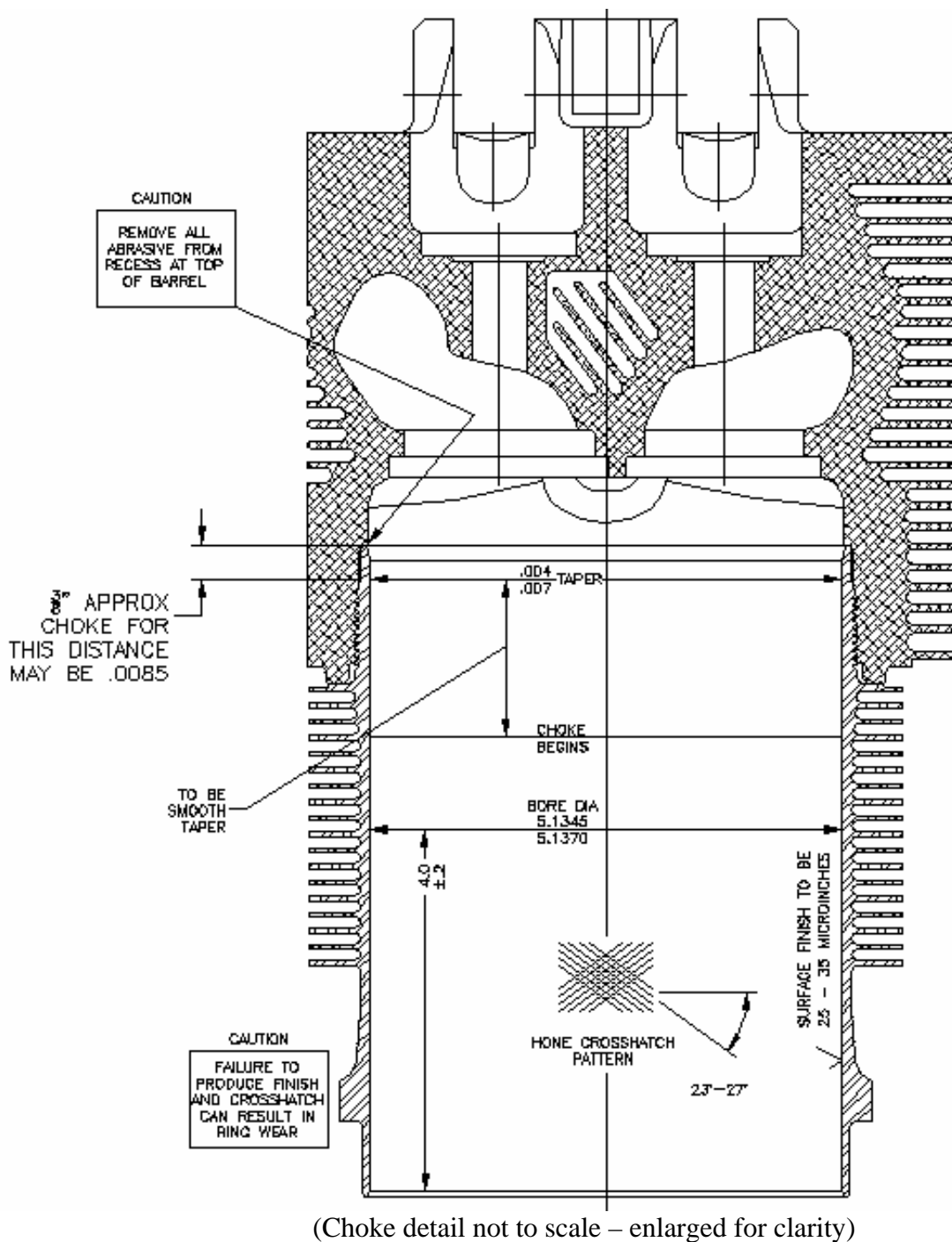


Figure 1

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 SE7582SW

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 herein meets the airworthiness requirements of Part 13 of the Civil Air Regulations.

Original Product Type Certificate Number: See attached FAA Approved
Make: Model List (AML) for list of approved models
Model: And applicable airworthiness regulations.

Description of Type Design Change:
Grinding of high compression NITRIDED Cylinders to .010 oversize, as an alternative to chrome plating or rebarreling, and the installation of SL75089 P10 Piston, SL74241 P10 Top and second compression ring, and SL 73857 P10 oil control ring in accordance with Superior Air Parts, Inc. Service letter No. L89-04 D dated August 20, 2008 or later FAA approved revision.

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.

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: August 15, 1988

Date reissued:

Date of issuance: April 11, 1989

Date amended: September 9, 2008, Revision 1



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.

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This certificate may be transferred in accordance with FAR 21.47.

FAA APPROVED MODEL LIST (AML)				
STC No. SE7582SW				
Superior Air Parts, Inc. 621 South Royal Lane Coppell, TX 75019				
Date of Issuance: April 11, 1989				
Date amended: September 8, 2008 Revision 1				
Item	Engine Make	Engine Models	Original Type Certificate Number	Regulation/Part
1	IO-360	-A1A, -A1B, -A1B6, -A1B6D, -A1C, -A1D, -A1D6, -A1D6D, -A2A, -A2B, -A2C, -A3B6, -A3B6D, - A3D6D, -C1A, -C1B, -C1C, -C1C6, -C1D6, -C1E6, -C1E6D, -C1F, -C1G6, -D1A, -J1AD, -J1A6D, -K2A	1E10	CAR 13
2	AIO-360	-A1A, -A1B, -A2A, -A2B, -B1B	1E10	CAR 13
3	AEIO-360	-C1E6	1E10	CAR 13
4	HIO-360	-A1A, -A1B, -C1A, -C1B	1E10	CAR 13
5	LHIO-360	-C1A, -C1B	1E10	CAR 13
6	GO-480	-C1B6, -C1D6, -C2C6, -C2D6, -C2E6, -G1A6, -G1B6, -G1D6, -G1H6, -G1J6, -G2D6, -G2F6	E275	CAR 13
7	IGO-480	-A1A6, -A1B6	E275	CAR 13
8	IO-540	-A1A5, -B1A5, -B1B5, -B1C5, -E1A5, -E1B5, -E1C5, -G1A5, -G1B5, -G1C5, -G1D5, -G1E5, -G1F5, -K1A5, -K1A5D, -K1B5, -K1B5D, -K1C5, -K1D5, -K1E5, -K1E5D, -K1F5, -K1F5D, -K1G5, -K1G5D, -K1H5, -K1J5, -K1J5D, -K1K5, -K2A5, -L1A5, -L1A5D, -L1B5D, -L1C5, -M1A5, -M1A5D, -M1B5D, -M1C5, -M2A5D, -P1A5, -S1A5, -U1A5D, -U1B5D, -AC1A5, -AE1A5	1E4	CAR 13
9	HIO-540	-A1A	1E4	CAR 13
10	AEIO-540	-L1B5, -L1B5D, -L1D5	1E4	CAR 13
11	IGO-540	-A1A, -A1B, -A1C, -B1A, -B1A, -B1B, -B1C	1E11	CAR 13
12	VO-540	-C1A, -C1B, -C1C3, -C2A, -C2B, -C2C	E-304	CAR 13
13	IVO-540	-A1A	E11EA	CAR 13
14	IO-720	-A1A, -A1B, -A1BD, -B1A, -B1B, -B1BD, -C1B, -C1BD, -D1B, -D1BD, -D1C, -D1CD	1E15	CAR 13

FAA Approved: _____

S. Frances Cox
Manager, Special Certification Office,
Southwest Region

Date: _____