

LYCOMING "150" INSTALLATION IN PIPER PA-20

F.A.A. APPROVED UNDER S.T.C. SA1-167

Approved February 14, 1958

Susquehanna Aero Marine
R. 513 Washington Blvd.,
Williamsport, Penna. 17701

Parts required for installation of Lycoming O-320

Quantity	Part Number	Item
1	11122-00	Spinner
1	11126-00	Plate, spinner, front.
1	11124-00	Plate, spinner, rear.
10	416 955	Machine screws 10/32 x 5/8"
10	85012-47	Washer, fibre
1	1714DH-61	Sensenich metal propeller
1	11129-00	Baffle assy. Left front.
1	11130-00	Baffle assy. Left side rear.
1	11131-00	Baffle assy. Left rear.
1	11132-00	Baffle assy. Right Side front.
1	11137-00	Baffle assy. Right Side rear.
1	11139-00	Baffle assy. Right Front.
1	11140-00	Baffle assy. Left Front.
1	11143-00	Baffle assy. Right Rear.
2 *	71610	Hook, Baffle support.
2 *	71611	Retainer, plate.
2 *	72150	Baffle, engine, inter-cylinder
2	11513-00	Rod, tie, baffle connecting.
1	10175-00	Bracket, rear baffle support.
1	11144-00	Tube, engine breather
2	454 882	Clamp, hose.
1	78311-00	Hose, engine breather.
1	11366-00	Oil line, R.H.
1	11367-00	Oil line, L. H.
1	451 885	Adapter, oil line.
1	455 158	Connector, oil line
1	458 932	Elbow, 45 degree.
2	458 931	Elbow, 90 degree.
2	13726-00	Plate, locking.

NOTE: The above parts are required for the installation of Lycoming O-320 in Piper PA-20 Serial No. 20-877 and up (135 hp models). If the installation is to be made in PA-20 Serial No. 1 through 20-876 (125 hp models), the following additional parts will be required:

1	455 168	Radiator, oil cooler
1	11549-00	Bracket assembly, oil line support.
1	13720-04	Bracket assy. oil cooler support. R.H.
1	13725-07	Bracket assy. oil cooler support L.H.
2	454 933	Clamp, oil line.
1	13717-00	Scoop, oil cooler, air.
1	13718-00	Flange, reinforcing.

NOTE: The above parts marked (*) are Lycoming parts and should be ordered from your Lycoming Dealer.

INSTRUCTIONS FOR THE INSTALLATION OF LYCOMING O-320 IN PIPER PA-20

Remove spinner, propeller and all engine cowling.

Remove and tag the generator and starter wires.

Disconnect throttle, mixture and carburetor heat control cables.

Drain oil, disconnect oil pressure, cooler and temperature lines.

Disconnect the fuel line at the carburetor.

Remove and tag both primary lead wires from the magnetos.

Remove exhaust nuts and drop stacks enough to clear the cylinder studs.

Disconnect the tachometer cable from the accessory housing.

Remove engine from the motor mount.

Remove oil cooler, lines and brackets from firewall (125 hp models only).

Rework front and rear fuel strainer caps as per drawing #203 and instruction sheet #203.

Build up Lycoming O-320 engine with complete set of PA-22 "150" engine baffles.

Install engine in pount with a new set of motor mount rubbers.

Install oil cooler, brackets and lines in accordance with drawing #13774 supplied with oil cooler kit assembly.

Install original exhaust system with new manifold gaskets.

Connect electrical wiring, throttle, mixture, oil pressure and temperature lines.

Connect tachometer cable, fuel line, primer lines, carburetor heat control cables.

Check throttle and mixture controls for proper travel and ease of movement.

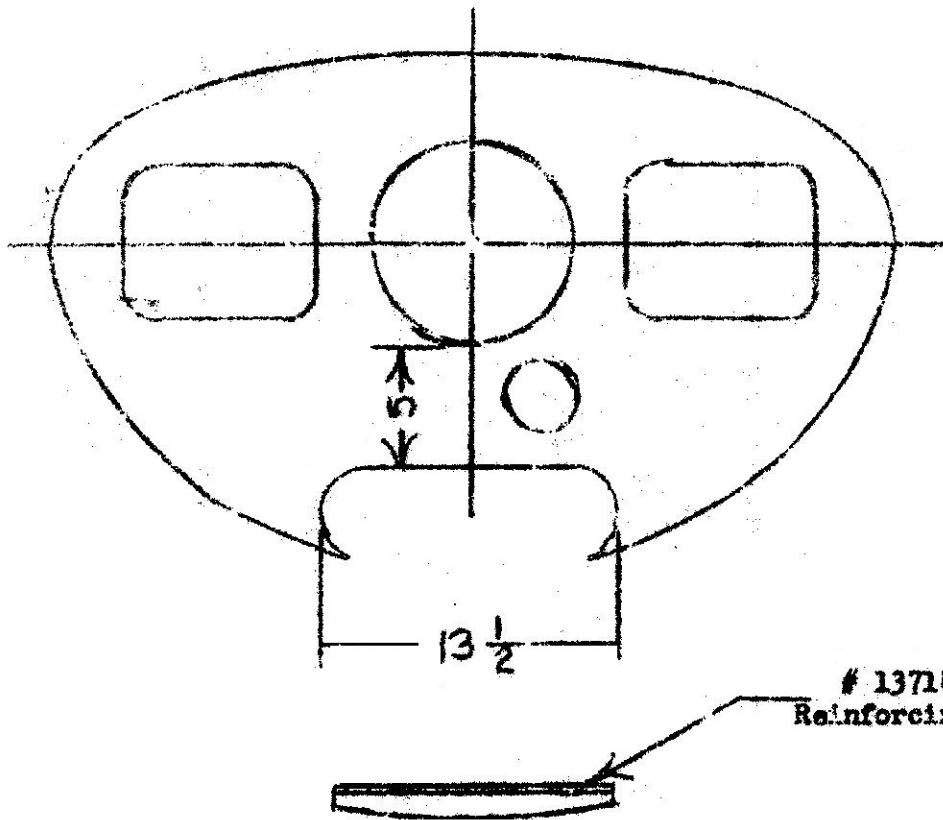
Fill oil sump with recommended grade of Aviation motor oil, safety drains.

Install engine cowling. NOTE: If you are converting a 125 hp model, modify the nose and bottom cowl for oil cooler air scoop. See drawings #201 and 202.

Install Sensenich M-74DM propeller and spinner assembly. NOTE: 71 to 73" pitch is Std.

Compute new weight and balance for the completed installation and enter all work in the Engine log book.

Contact your local FAA Safety Agent or an I.A. for inspection when completed.



13718-00
Reinforcing Flange



13717-00
Oil cooler air scoop

Engine Nose Cowling

DETAILED BY: JEM
Scale: 1/8" = 1"

201

INSTALLATION OF LYCOMING O-320 IN PIPER PA-20

NOTE: The nose and lower engine cowling must be modified to fit oil cooler . Revision required from Serial #20-1 through #20-876 (125 hp series).

Purchase oil cooler air scoop and air scoop reinforcing angle from Piper Aircraft Corp. Part number 13718-00 and 13717-00.

Lay out dimensions carefully as indicated on drawing #201.

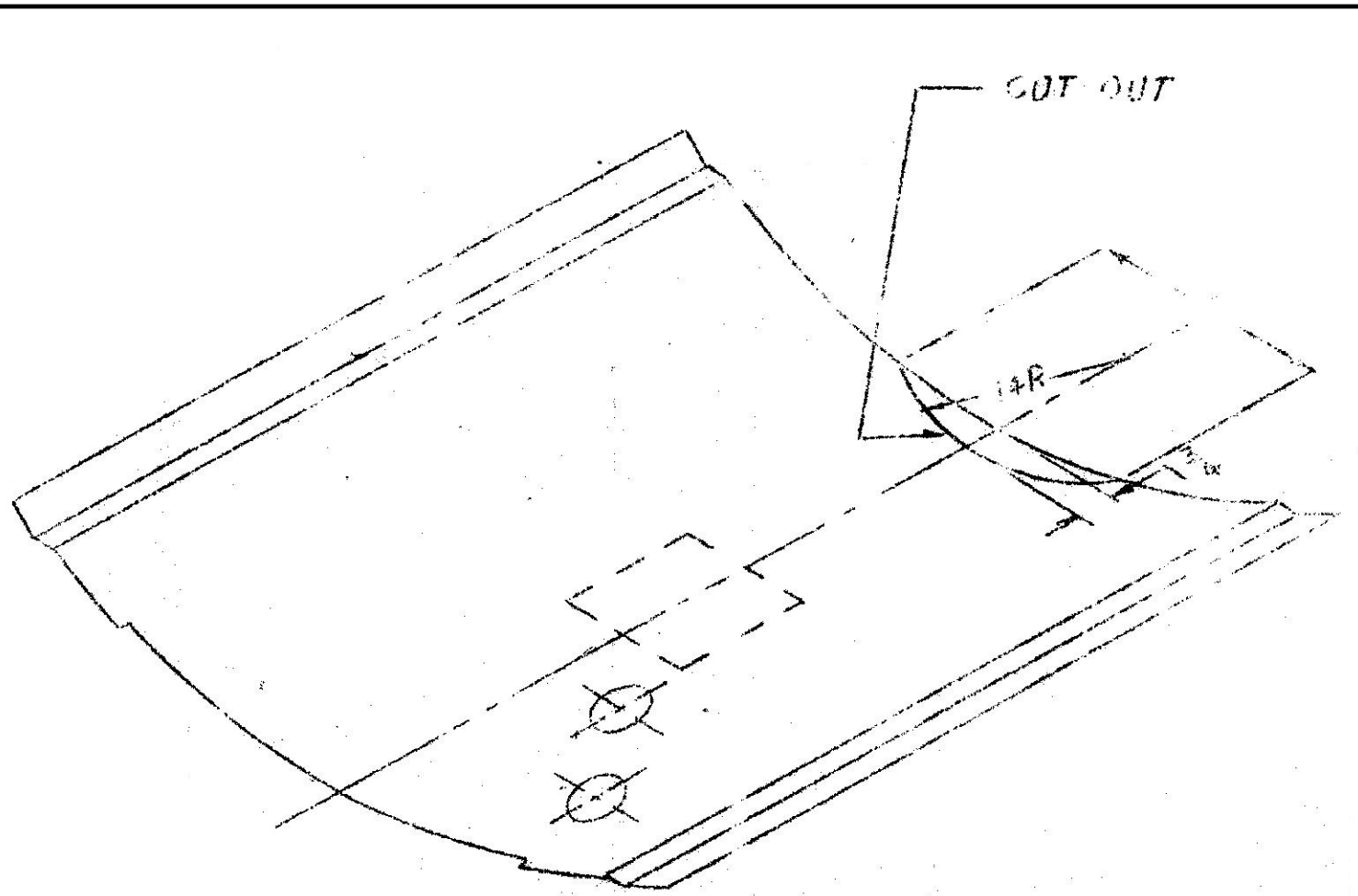
Cut opening in cowl slightly smaller than dimensions.

Fit oil cooler air scoop to inside of cowl, file for accurate fit.

Fit air scoop reinforcing flange to inside of cowl at top of opening.

Drill rivet holes with #41 drill using a 2" spacing.

Rivet with AN470-AD3-3 rivets.



Bottom Cowling

DETAIL BY J.L.S.
Scale: 1/8" = 1"

INSTALLATION OF LYCOMING O-320 IN PIPER PA-20

NOTE: Nose and lower engine cowling must be modified to fit oil cooler.

Revision required from Serial No. 20-1 through 20-876.

Lay out dimensions on inside front edge of bottom cowl. See drawing # 202.

Make cut in cowl slightly smaller than dimensions.

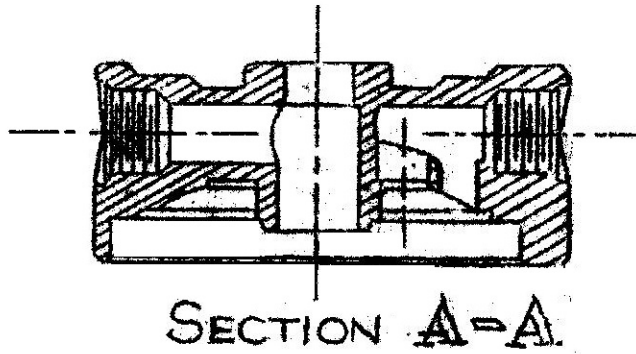
Install nose and bottom cowl on aircraft. Engine must be installed.

Mark center three cowl attaching screws holes through oil cooler air scoop.

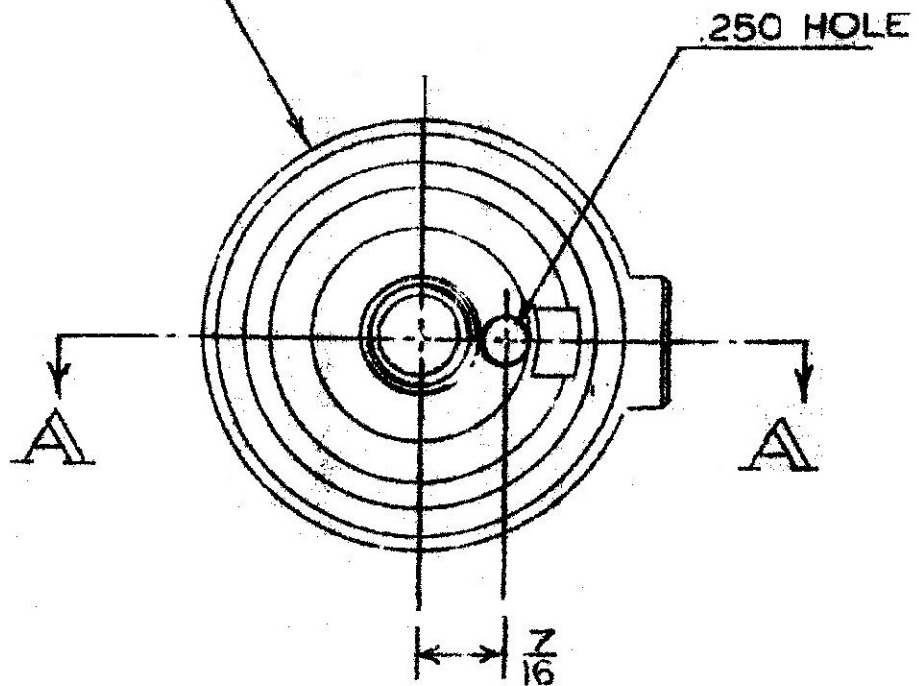
Remove lower cowl, drill with #10 drill and install 10/32" anchor nuts.

File cut-back area to provide accurate fit of lower cowl to air scoop.

Taken from Piper drawing # 11428 dated 7-6-'54



#500 PB COVER, PURCH. KEM MFG. CO
REWORKED AS SHOWN



Installation of Lycoming O-320 in Piper PA-20

With the installation of the 150 hp engine, an increase in the rate of fuel flow is required. This can be obtained by either replacing the present fuel strainer cap with Piper #14428-00 or by re-working them as indicated on drawing #203. The front fuel strainer is located on the lower left side of the firewall. The rear fuel strainer is located under the floor at right front seat area. This one can be removed by following the procedures listed below:

1. Remove right hand belly fairing under right landing gear.
2. Remove right seat assembly.
3. Disconnect the two fuel lines attached to the strainer cap.
4. Remove the four 10/32" hold down bolts and lift out cap.
5. Remove front fuel strainer from firewall.
6. Lay-out and center punch both caps as indicated on drawing #203.
7. Drill first with #10 drill then finish with 1/4" (.250").
8. Clean both caps carefully to remove drill shavings.
9. Re-install on aircraft with new strainer gaskets.

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

Number SAI-167

This certificate issued to

Copper River Airmotive, LLC
HC 60, Box 251B
Copper Center, AK 99573

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 3 of the Civil Air Regulations:

Original Product -- Type Certificate Number: 1A4
Make: Piper
Model: PA-20

Description of Type Design Change:

Installation of a Lycoming O-320, 150 hp engine, Sensenich M-74DM propeller; PA-22 "150" hp engine baffles, Harrison #AP13SJ03-01 oil cooler in accordance with Aero-Marine Drawings 201 and 202, and Instruction Sheets 1, 2, 201A and 202A.

Limitations and Conditions:

1. Maximum Gross Weight 1950 pounds.
2. Susquehanna Aero-Marine Aircraft Flight Manual Supplement, dated 2/14/58, is required with this installation.
3. Compatibility of this design change with previously approved modifications must be determined by the installer.
4. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall 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: September 20, 1961

Date reissued: August 6, 1990, November 3, 1995,
November 24, 2000, February 10, 2006

Date of issuance: November 14, 1961

Date amended:

By direction of the Administrator



(Signature)

Anthony Socias
Manager,
New York Aircraft Certification Office

(Title)

(transferred to Anchorage ACO)

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

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

REMOVED THE ORIGINAL LYCOMING O-290D ENGINE AND INSTALLED A LYCOMING O-320 A2B ENGINE AS PER S.T.C. SA1-167. ALL WORK WAS DONE AS PER THE MANUAL TITLED, "LYCOMING "150" INSTALLATION IN A PIPER PA-20".

NOTHING FOLLOWS

ADDITIONAL SHEETS ARE ATTACHED