

Department of Transportation — Federal Aviation Administration  
**Supplemental Type Certificate**

Number SA414NW

This certificate, issued to SALEM AVIATION, INC.

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 3 of the Civil Air Regulations, Dated November 1, 1949, As Amended by 3-1 through 3-12.

Original Product — Type Certificate Number: 3A12  
 Make: Cessna  
 Model: 172 through 172H

Description of Type Design Change: Installation of a Lycoming O-360-A1F6D engine, McCauley B2D34C207/78TCA-0 and/or B2D34C208/82PA-6 propeller and associated systems in accordance with Salem Aviation, Inc., Installation Instructions No. S/A 2000.

NOTE: Associated systems required are as per Mid-America STC SA420CE, such as: engine mount, cowl (mod), carburetor air intake system, engine baffles, electric auxilliary fuel pump, and exhaust system.

Limitations and Conditions: Approval of this change in type design applies basically to the above model aircraft only. This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate and Addendum No. SA414NW shall be maintained as part of the permanent records for the modified aircraft.

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: March 3, 1977

Date received:

Date of issuance: March 15, 1977

Date amended:



By direction of the Administrator  
*Charles E. [Signature]*  
 (Signature)

Chief, Engineering and Manufacturing Branch  
 (Title)

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

This certificate may be transferred in accordance with FAR 21.47.

United States of America  
Department of Transportation—Federal Aviation Administration  
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SUPPLEMENTAL TYPE CERTIFICATE ADDENDUM NO. SA414NW

The conditions and limitations of Type Certificate Data Sheet No. 3A12 apply except as follows:

The Supplemental Type Certificate Addendum, which is part of STC SA414NW prescribes the conditions and limitations under which the product for which the STC was issued meets the airworthiness requirements of the Civil Air Regulations. A copy of this STC Addendum is required to be maintained as part of the permanent records for the modified aircraft.

SUPPLEMENTAL TYPE CERTIFICATE HOLDER: Salem Aviation, Inc.

I. MODELS CESSNA 172 THROUGH 172H, 4PCLM (NORMAL CATEGORY) AS MODIFIED BY STC SA414NW.

- Engine: Lycoming O-360-A1F6D
- Fuel: 100/130 Minimum Grade Aviation Gasoline
- Engine Limits: Takeoff (5 min) 2700 rpm (180 HP) at sea level  
Maximum continuous power - 2600 rpm, full throttle
- Propeller and  
Propeller Limits:
1. McCauley B2D34C207/78TCA-0  
Diameter - 78" maximum; 76.5" minimum  
Pitch Setting @ 30" station:  
Low -  $11.6^{\circ} \pm 0.2$   
High -  $26^{\circ} \pm 0.5$   
Placard - See Note 2(4)  
Governor - McCauley C290D3/T12  
Spinner - McCauley D-2137
  2. McCauley B2D34C208/82PA-6  
Diameter - 76" maximum; 75" minimum  
Pitch Setting @ 30" station:  
Low -  $12.1^{\circ} \pm 0.2$   
High -  $26^{\circ} \pm 0.5$   
Placard - See Note 2(5)  
Governor - McCauley C290D3/T12  
Spinner - McCauley D-2137

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STC SA414NW

Powerplant Instrument  
Markings:

Tachometer:  
2700 rpm (red line)  
1700 - 1900 (red arc)  
Oil Temperature Gauge:  
245<sup>o</sup>F (red line)  
Oil Pressure Gauge:  
Minimum - 25 psi (red line)  
Maximum - 100 psi (red Line)  
Normal - 60 to 90 psi (green arc)  
Fuel Pressure Gauge:  
Minimum - .5 psi (red line)  
Maximum - 8 psi (red line)  
Normal - .3 to 5 psi (green arc)

C.G. Range: See Type Certificate Data Sheet 3A12

Maximum Weight: See Type Certificate Data Sheet 3A12

DATA PERTINENT TO ALL MODELS

Certification Basis: Same as specified by Type Certificate Data Sheet  
No. 3A12

NOTE 1. Current weight and balance report, together with  
a list of equipment included in certificated  
empty weight and loading instructions, when  
necessary, must be provided for each aircraft at  
the time of modification.

NOTE 2. The following placards must be displayed as indicated:

- (1) Adjacent to or in close proximity to the  
aircraft identification plate:

SALEM AVIATION, INC.  
SALEM, OREGON  
LYCOMING O-360-A1FD6 ENGINE INSTALLATION  
STC SA414NW DATE INSTALLED \_\_\_\_\_

- (2) Above the fuel pump switch:

FUEL PUMP - PULL ON

- (3) On the fuse placard:

FUEL BOOST PUMP

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NOTE 2 (continued)

- (4) When using McCauley B2D34C207/78TCA-0 propeller:

WITH LESS THAN 10 INCHES MANIFOLD PRESSURE AVOID CONTINUOUS OPERATION BETWEEN 1400 - 1750 RPM

- (5) When using McCauley B2D34C208/82PA-6 propeller:

WITH LESS THAN 10 INCHES MANIFOLD PRESSURE, AVOID CONTINUOUS OPERATION BETWEEN 1700 - 1900 RPM

- (6) The following placard is to be in front of and in full view of the pilot:

ENGINE LIMITS TAKEOFF (5 MIN) -  
2700 RPM. MAXIMUM CONTINUOUS  
POWER - 2600 RPM - FULL THROTTLE

NOTE 3.

With the described engine and propeller installation, performance will be at least equal to or better than, that given in the original FAA Approved Flight Manuals for the 172 Series Cessna airplanes.

Noise Certification Procedure:

Compliance with FAR 36, Appendix F, was shown with the following procedures: Level flyover at 1000 feet AGL at 2600 engine rpm and full throttle manifold pressure. The certificated noise level is 69.72 dB(A). This noise level reflects correction of as measured data to a standard 70°F, 77% R.H. acoustic day as well as a -5 dB(A) credit resulting from aircraft takeoff and climb characteristics.

- END -

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 5 years, or both.

FAA FORM 8110-2-1 (10-69)

This certificate may be transferred in accordance with FAR 21.47.

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