

Northcoast Technologies
Willoughby, OH
NC-04-027, Rev. A

FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR
CESSNA MODEL 182P, Q, R
AIR CONDITIONING SYSTEM

Cessna Model 182 _____
Serial Number: _____
Registration No.: _____

This supplement must be attached to the FAA approved flight manual when the Northcoast electric air conditioning system is installed in accordance with STC SA02006CH. The information contained in this document supplements or supersedes the basic manual only in those areas listed. For limitations, procedures, performance, and loading information not contained in this supplement, consult the basic FAA airplane flight manual.

for *Joseph C. Mess*
FAA-Approved _____
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Administration

FAA Approved Date: 15 JUL 2004

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**SECTION 1
GENERAL**

The Northcoast Technologies Air Conditioning system is an all electric climate control system that will provide cold air for warm weather operations. The system consists primarily of a sealed, self-contained electric compressor, evaporator, evaporator fans, condenser and condenser fans, connective and electrical hardware and system controls.

All of the components are located aft of the baggage compartments, (see figure 1 & 2) in the tail cone. The evaporator and evaporator fans are located just behind fuselage station 110, and under the rear window. The evaporator re-circulates cabin air only and does not use outside air. Cabin air enters the evaporator just above the hat shelf between fuselage stations 110 and 124 and should be kept clear of any obstructions. The refrigerated air exits the evaporator through the cabin fans, at the base of the rear window, at fuselage station 110, and is forced upward and forward towards the windshield.

The condenser and compressor assembly are located on the right side of the aircraft between fuselage stations 140 and 156 in the tail cone. This assembly is conventional riveted aluminum construction and is powder coated white, making it easy to identify. This assembly contains the compressor, compressor controller, condenser, condenser fan, sight glass and fan motor relay. The condenser exhaust is a 4 by 15 inch rectangular hole in the belly between fuselage stations 140 and 156 on the right side of the aircraft. The condenser and compressor assembly plenum is sealed to the fuselage skin to prevent contamination of the passenger compartment with carbon monoxide from the aircraft exhaust. A stainless steel screen over the opening prevents animals and birds from entering the aircraft. The condenser assembly is connected to the condenser inlet plenum via a 3 foot section of SCAT 40 ducting.

The condenser inlet is a 4 by 15 inch rectangular hole on the lower left side of the fuselage, again between stations 140 and 156. The inlet consists of a sealed carbon fiber plenum and stainless steel welded screen over the opening.

NOTE

It is important to periodically check the integrity of the condenser plenums and ducting as this prevents contamination of the cabin with carbon monoxide.

The system is controlled via an "AC" and "FAN" toggle switch, "OFF" is the center position of the switch located on the instrument panel (see figure 3) There is a blue annunciator light located on the instrument panel, that will illuminate any time Air Conditioning is selected. The controls are protected with a 1 amp circuit breaker, labeled "AC Control" and the compressor is a 60amp circuit breaker, labeled "AC Comp", both located on the instrument panel where space is available, and the remainder of the system is protected by circuit breakers located on the AC Bus in the rear of the aircraft. The AC bus is located between fuselage stations 124 and 140. The condenser fan is protected by a 7.5 amp circuit breaker, labeled "Cond. Fan", and evaporator a 5 amp circuit breaker, labeled "Evap. Fans".

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**SECTION 2
LIMITATIONS**

There is no change to the airplane limitations when the air conditioning system is installed.

**SECTION 3
EMERGENCY PROCEDURES**

There is no change to the airplane emergency procedures when the air conditioning system is installed.

**SECTION 4
NORMAL PROCEDURES**

PRE-FLIGHT:

Inspect condenser inlets and outlets for obstructions such as bird nests, insect nests (wasps etc.) or mice. Clear obstructions if any are found.

GROUND OPERATION, ENGINE OFF:

This system may be used on the ground prior to engine start. Plug an approved external power source into the ground service plug receptacle. Once the power is applied, the system can operate normally, the same as in the air. Select the switch to "AC", the blue indicator light will illuminate. Verify cold air is blowing from the evaporator fans. The ground service plug receptacle is located behind a door on the left side of the fuselage near the aft edge of the cowling. Follow the instructions in the Supplement section of this POH for proper usage of the ground service plug receptacle.

GROUND OPERATION, ENGINE RUNNING:

After engine start, the system can be turned on while on the ground as long as there is ample power. If the preceding start, was exceptionally long, the battery could be down so far as to exceed the alternator capacity, hence the air conditioning should not be used until airborne and or the battery has been given sufficient time to recharge. The pilot should monitor the charging system for any signs of excessive charge rate, or low volt indication.

IN FLIGHT:

The pilot may select "AC" or "FAN" at any time while in flight. When the desired cabin temperature has been reached, simply turn the system off.

NOTE

To improve the cooling of the cabin, assure that all fresh air vents and cabin heat controls are in the "OFF" positions. Closing the optional rear window shade will improve cooling dramatically as well by reducing solar heat.

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**SECTION 5
PERFORMANCE**

At full output of the air conditioner, the electrical load is equivalent to 2.8hp at the crankshaft. This system is approved for operations during take off, landing and the following performance information should be allowed for:

The installation of the air-conditioning system will result in a reduction of cruise performance of less than 2% due to the cooling holes in the aircraft belly.

Add 5% to all take off distances with the system operating during take off.

Climb performance will be reduced by up to 50fpm with the system operating during climb.

The fuel consumption and range/endurance information originally presented for this model do not apply to this STC modification: *Increased fuel consumption and reduced range can be expected.*

NOTE

If a maximum performance take off and climb are desired, the air conditioning should be OFF.

**SECTION 6
LOADING INFORMATION**

There is no change in the aircraft loading information when the electric air conditioning system is installed.

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FAA APPROVED MODEL LIST (AML) NO. SA02006CH

NORTHCOAST TECHNOLOGIES, LLC

FOR

INSTALLATION OF AIR CONDITIONING KIT

TEM	AIRCRAFT MAKE	AIRCRAFT MODEL	ORIGINAL TYPE CERTIFICATE NUMBER	CERTIFICATION BASIS FOR ALTERATION	INSTALLATION INSTRUCTIONS		AFM Supplement Number/Date	AML AMENDMENT DATE
					Number	Revision No. & Date		
1	Cessna Aircraft Company	182P, 182Q, 182R	3A13	CAR PART 3	SN-182	Rev.G, 6/23/04	NC-04-027, Rev. A, July 15, 2004	Initial Release

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Amended: _____