



## RAM AIRCRAFT, LP

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**ENGINES • PARTS • PROPELLERS • ACCESSORIES • STC'S**

### Cessna 414A and 421C

#### RAM Winglets - *Altitude Enhancing Performance*



#### **Discover Your Airplane Again ...at altitude with winglets!**

- Reduce time to climb up to 10% for the 414A, and 20% for the 421C.
- Discover Improved control authority and response at altitude.

- Cruise 5 kts to 10 kts faster on the same fuel, while operating at, or below, 65% power. Take advantage of additional Useful Load.
  - New GW: 414A...7,087 lbs.
  - New GW: 421C...7,560 lbs.
- Fly for higher altitudes - often above the weather and transition traffic.
- Fly at higher Flight Levels to take Advantage of favorable winds aloft and Increased true airspeeds.
- Select additional FLs to work with ATC. Reduce both your workloads.
- Lower stall speeds due to Increased wing area.
- Feel how well winglets Increase stability during single engine work, much like deployed landing gear.
- Enjoy the aeronautical prowess of jet styled winglets, often impressive and securing to your passengers!

#### **Winglet Performance**

Altitude performance enhancing winglets for these models have been engineered and flight certified to increase high altitude range, fuel savings, speed and stability, just as on a few select corporate and commercial aircraft.

Because winglets adjust the center of lift along the wing, the aircraft maintains original lift capacity with less angle of attack... reducing frontal drag and providing increased speed, using the original amount of power. Or, to accomplish an original specific cruise speed, less power is required which saves fuel consumption.

Each winglet is a high strength laminated composite, designed to replace the original aluminum wing tip. The wing section of the winglet is a much stronger unit than the aluminum tip which is removed. Each winglet is attached at both the main and rear spar by stainless steel fixtures and rivets across the top and bottom of the wing.

Winglets are impregnated with an outer laminate of Thorstrand™ or equivalent metallic fabric of interwoven aluminum. The metallic fabric offers lightning and static electricity protection. In addition, it is a conductor for the static wick which is installed on the trailing edge of the winglet tip.

The winglet cants out at a 10° angle and extends vertically 35 inches, with a 2° toe-out angle. Hangar clearance of a winglet aircraft from tip top to tip top is 45.4 feet.

Performance should vary from airplane to airplane, atmospheric day to atmospheric day, one gross weight and CG to another, and pilot to pilot.

Installed on the Cessna 421C (serial numbers 0001 thru 0799) winglets increase its shorter original 41 foot wing span by an additional 3 feet, bringing the wing span up to 44 feet like that of the Cessna 414A and Cessna 402C.

Original equipment landing lights, navigation lights and strobe lights are relocated to the winglet, plus a combination strobe/white navigation light is installed on the tail stinger. Upon completion of the installation, each winglet is painted and striped to match the aircraft.

Winglets have been flight certified for known icing. When installed on the 421C, adding additional wing length, the longer outer wing de-ice boots of a 414A can be optionally installed, but not required. On a Cessna 421C, time to climb can be reduced by up to 20%.

On the 414A or 421C, winglets improve cruise speed above 20,000 feet as much as five to ten knots.

Zero fuel weight (ZFW) is adjusted down 200 lbs. to 6,533 lbs. on the Cessna 421C at RAM's new 110 lbs. higher gross weight of 7,560 lbs. Such is typically no factor with balanced use of fuel and payload. There is no zero fuel weight change on the Cessna 414A when the RAM ZFW kit is installed during current installations, or retrofit in the field on installations prior to 1994. Cessna 414A and RAM 414AW zero fuel weight is 6,515 lbs. at RAM's higher gross weight of 7,087 lbs.

### **RAM Winglets - \$39,041**

- **Installed and Painted**
- **Cessna 414A ( All SNs )**
- **Cessna 421C ( SNs 0001- 0799 )**

Performance is based on a mid CG with mid cabin and fuel weight on an average day. Performance should always be calculated per flight environment while referring to the Manufacturer's Pilots Operating Handbook and applicable Flight Manual Supplements for the particular airplane. Aircraft Manufacturer's Pilot Operating Handbooks and Aircraft Owner's Manuals should always be available and adhered to by the aircraft Pilot in Command, including attention to applicable FAA approved Flight Manual Supplements and emergency procedures for each individual aircraft. Performance should vary from airplane to airplane, atmospheric day to atmospheric day, one gross weight and CG to another, and pilot to pilot.

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