3

Determining Airplane Values

PLACING A CASH VALUE ON A USED AIRPLANE is not as simple as valuing a used automobile. Airplane valuation is not a simple matter of make, model, and year. There are four areas of high-dollar items that must be judged very carefully to place an accurate value on an airplane:

- Airframe, which is subject to fatigue, damage, and corrosion
- Engine (the engine's life expectancy is limited)
- Modifications for better performance or particular use
- Avionics, which become outdated as electronic technology improves

The sum of the values of these areas determines an airplane's overall value.

AIRFRAMES

For most purposes, airplanes have one of two types of airframes: all-metal or tube-and-fabric. Most modern airframes have an all-metal construction. Two notable exceptions to this rule that are currently being manufactured are Aviat and Maule.

The advantages of all-metal construction are easier outdoor storage and a much longer life. The disadvantages are expensive repairs and outrageous painting costs. Painting a typical four-place airplane will cost between $3000 and $6000, with some high-dollar finishings priced above $8000. Repainting airplanes is a labor-intensive job that requires knowledge and experience, hence the high prices (Fig. 3-1).

Fig. 3-1. *A typical all-metal airplane.*

Tube-and-fabric airplanes are very expensive to re-cover and do not weather well outside. Exceptions are airplanes covered with synthetic coverings, which can last for many years, and those covered with fiberglass, which is considered permanent. Regardless of the material, recovering is an expensive art and every tube-and-fabric airplane will at some point require re-covering, even those considered permanent. Currently, a re-covering job costs from $8000 to $12,000 (Fig. 3-2).

The total hours of operation affect the value of all airframes. It stands to reason that anything exposed to the stress and strain that airframes experience during operation will fail sooner or later. Additionally, corrosion of the structure may become a problem, and is usually very expensive to repair.

If an airframe has a history of severe damage, the airplane's value will be reduced. The method used to repair damage is the determining factor of the amount of value reduction. Was the airplane repaired to be like new or was it just a "make-do" job? Proper reconstruction of a severely damaged airplane requires considerable time, skill, and expense. The work must be done in a properly equipped shop using jigs to ensure the alignment of all parts.

Along the lines of damage to the structure comes weather-related damage such as from a flood. Flooding not only soaks the airplane with water, it leaves behind sediment, mud, and other debris that can later cause trouble. This means that an airplane submerged in a flood most likely have not only a damaged engine and engine accessories, but also rust and corrosion of metal parts in the airframe, destruction of wooden airframe parts, and destruction of instruments and avionics. Although

Fig. 3-2. *A tube-and-fabric airplane.*

technically repairable, a flood-ravaged airplane should be at the very bottom of most purchasers' lists.

Consider the airplane's past usage. Was it a trainer, crop duster, patrol, or rental airplane? If so, the hours are likely high and the usage rough. Yet commercial or rental use can also denote very good maintenance. After all, maintaining what you have is cheaper than running it into the ground and replacing it.

Although often overlooked, ascertain if the fuel tanks have recently been repaired or restored. Many older airplanes have problems with fuel tanks or bladders, ranging from leakage to contamination. They can be repaired by several methods or replaced. The cost of fuel tank or bladder work ranges from several hundred dollars to several thousand dollars, depending on the specific airplane.

Recognize that there is no such thing in aviation as "a little fixing up" to remedy small problems. Upgrading a complete interior, repainting the plane's outside, replacing windows, and the like is very expensive. Therefore, a plane that needs "a little fixing up" is worth quite a bit less money than a plane needing no fixing up.

ENGINES

Engines are the most costly single item, maintenance-wise, attached to an airplane. An engine failure involving internal breakage can cost thousands

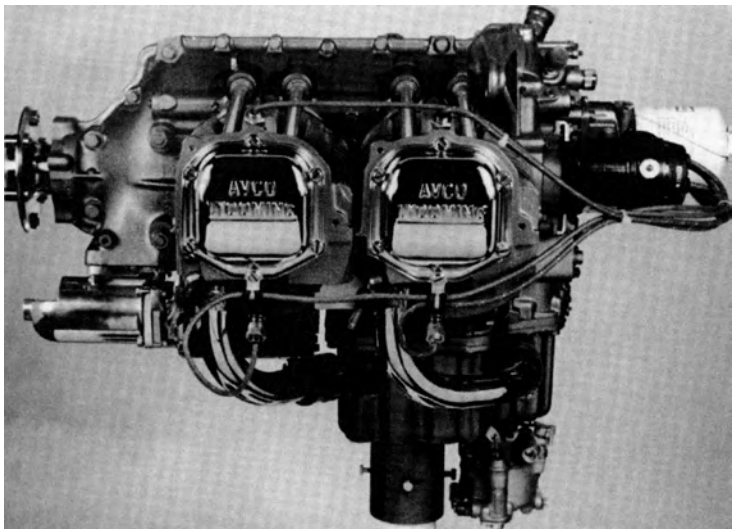

Fig. 3-3. *The very expensive heart of a power airplane.*

of dollars to repair. Therefore, the condition and history of the engine is a very important part of the overall airplane's value (Fig. 3-3).

Rebuilds, overhauls, and confusion

Advisory Circular AC-43-11 explains the differences between engine rebuilding and engine overhauling. The circular is followed by some popular phrases and words that are part of the airplane vocabulary you must learn when searching for, owning, and selling an airplane:

AC-43-11

SUBJECT: Reciprocating Engine Overhaul Terminology and Standards

Date: 4/7/76

Initiated by: AFS-830

1. PURPOSE.
This advisory circular discusses engine overhaul terminology and standards that are being used in the aviation industry:

a. To inform the owner or operator of the variety of terms used to describe types of reciprocating engine overhaul.

b. To clarify the standards used by the industry during reciprocating engine overhaul.

8

Four-Place Easy Fliers

THE FOUR-PLACE "EASY FLIER" AIRPLANE is by far the most airplane for the money. Over the years many have been produced by different companies, but there are only two basic designs: high-wing and low-wing.

This type of airplane can provide adequate transportation for most personal and business needs, although there are few complexities about the type. All have fixed landing gear, all have engines of 200 hp or less, and most come with fixed-pitch propellers (although a few have optional constant-speed props). They are, as a group, easily found, inexpensively maintained, quickly sold, and tolerant of most new equipment necessary to fulfill many specialized flying requirements. The majority of these planes are of all-metal construction, have tricycle landing gear, and are easy to fly.

A few of the easy-flier airplanes are considered classics because of their age, including the Luscombe and Aeronca Sedans, Stinsons, Tri-Pacers, and Pacers.

AERO COMMANDER

The Aero Commander Darter started life as the Volaire, and was made in Aliquippa, Pennsylvania. Only a few were made before Aero Commander, a division of Rockwell International, bought the design.

The airplane appears very similar to the Cessna 172, is all metal, and has similar performance data. The Darter was aimed at the Cessna 172 market, but sales failed and they were produced for only a few years.

The original Volaires were underpowered, having only a 135-hp engine. The model 100 Darters have a 150-hp engine.

The biggest drawback to these planes is the scarcity of parts. Additionally, the braking system uses a single-handle control, which is far less maneuverable than the more familiar toe brakes found in similar airplanes.

Aero Commander built a larger version of the 100, called the Lark, which was powered with a 180-hp engine. It was to compete with the Cessna 182, but like the Darter did not prove to be popular. Although they share a model number, the Lark does not visually resemble the Darter. All production halted in 1971.

Aero Commanders of this group may be listed under Aero Commander, Rockwell, or Volaire in classified advertisements (Figs. 8-1 and 8-2).

Fig. 8-1. *Aero Commander 100 Darter.*

Make: Aero Commander
Model: 100 Darter
Year: 1965-1969
Engine
- Make: Lycoming
- Model: 0-320-A2B (0-290 if Volaire)
- Horsepower: 150 (135 if Volaire)
- TBO: 2000 hours

Speeds
- Maximum: 133 mph
- Cruise: 128 mph
- Stall: 55 mph

Transitions
- Takeoff over 50-foot obstacle: 1550 feet
- Ground run: 870 feet
- Landing over 50-foot obstacle: 1215 feet
- Ground roll: 655 feet

Weights
- Gross: 2250 pounds
- Empty: 1280 pounds

Dimensions
- Length: 22 feet, 6 inches
- Height: 9 feet, 4 inches
- Span: 35 feet

Other
- Fuel capacity: 44 gallons
- Rate of climb: 785 fpm

Seats: Four

Make: Aero Commander
Model: 100 Lark
Year: 1968-1971
Engine
- Make: Lycoming
- Model: 0-360-A2F
- Horsepower: 180
- TBO: 2000 hours

Speeds
- Maximum: 138 mph
- Cruise: 132 mph
- Stall: 60 mph

Transitions
- Takeoff over 50-foot obstacle: 1575 feet
- Ground run: 875 feet
- Landing over 50-foot obstacle: 1280 feet
- Ground roll: 675 feet

Weights
- Gross: 2450 pounds
- Empty: 1450 pounds

Dimensions
- Length: 24 feet, 9 inches

Fig. 8-2. *Aero Commander 100 Lark.*

Height: 10 feet, 1 inch
Span: 35 feet

Other

Fuel capacity: 44 gallons
Rate of climb: 750 fpm

Seats: Four

AERONCA

In the postwar period from 1948 to 1950, Aeronca produced a four-place airplane called the 15AC Aeronca Sedan. Like other Aeronca airplanes of the period, the Sedan was a tube-and-fabric design. It did, however, have all-metal wings.

Although only 550 Sedans were built, nearly 250 remain in service today. Many are registered in Alaska where they see service for bush and float flying, which is a real testimonial to their worth and strength. A small number of Sedans were built specifically for float plane use and are officially called S15ACs; floats, however, can be installed on both versions.

In 1950, an Aeronca Sedan once set an in-the-air endurance record of 42 days. This feat required inflight refueling for both airplane and pilots (Fig. 8-3).

Make: Aeronca
Model: 15AC Sedan

Engine

Make: Continental
Model: C-145
Horsepower: 85
TBO: 1800 hours

Courtesy of James Koepnick, EAA

Fig. 8-3. *Aeronca 15AC Sedan.*

Speeds
- Maximum: 120 mph
- Cruise: 105 mph
- Stall: 53 mph

Transitions
- Takeoff over 50-foot obstacle: 1509 feet
- Ground run: 900 feet
- Landing over 50-foot obstacle: 1826 feet
- Ground roll: 1300 feet

Weights
- Gross: 2050 pounds
- Empty: 1180 pounds

Dimensions
- Length: 25 feet, 3 inches
- Height: 7 feet, 4 inches
- Span: 37 feet, 5 inches

Other
- Fuel capacity: 36 gallons
- Rate of climb: 570 fpm

Seats: Four

BEECHCRAFT/RAYTHEON

All Beech four-place easy-flier airplanes have a low-wing design and all-metal construction. All have large, roomy cabins and give the appearance of more plane than they really are. Although these airplanes are stoutly constructed and usually well equipped with avionics, resale values remain low because of a general lack of popularity.

As with most manufacturers, Beech used an assortment of engines during various production runs:

- 160-hp Lycoming (1963)
- 165-hp fuel-injected Continental (1964)
- 180-hp Lycoming (1968)

To further confuse identification, Model 23s were built under different model names:

- Model 23 Musketeer (1963)
- Model A23 II Musketeer (1964-1965)
- Model A23 IIIA Custom (1966-1967)
- Model B23 Custom (1968-1969)
- Model C23 Custom (1970-1971)
- Model C23 Sundowner (1972-1983)