

PROFILE: North American P-51 “Mustang”

AIRCRAFT DESCRIPTION

The Mustang is probably the most recognized fighter of World War II and has proven to be a popular and widely used civilian Warbird. Most of the Mustangs in use today have been in civilian hands for many years. The U.S. Military and the Royal Canadian Air Force made the largest surplus release of these aircraft in the late 50's and early 60's. A number of aircraft previously served with the forces of over seas countries. The aircraft sold as surplus in 1958 for prices ranging from \$800-1500. While there have been various models of the P-51 produced, the majority of aircraft today are the P-51D version.

BASIC SPECIFICATIONS

Engine:	Packard built V-1650-7 Rolls-Royce Merlin Engine, 1490 HP
Propeller:	Hamilton Standard 4-Blade 24D50 Propeller
Wing Span:	37'
Length:	32' 3"
Height:	8' 8"
Normal Gross Weight:	9450 lbs.
G Loading:	+8.0, -4.0
Controls:	Single control- some aircraft have been converted to dual controls via a TF-51 conversion or add-on dual controls produced by several companies.

No. in Civilian Registry: 155 (USA)

Avg. No Sold Per Year: 7

PERFORMANCE

The maximum speed is 437 MPH at 25,000'. Normal cruise is 240 Knots at 65 GPH at 8000'. The aircraft is stressed for aerobatics and is capable of most all maneuvers with the exception of sustained inverted flight, snap rolls, outside loops, and inverted spins.

MODEL DIFFERENCES

Since the P-51D is the most popular model, the following comments will highlight systems and features of the "D" model. Many people refer to the "Cavalier" Mustang as the ultimate conversion for civilian use. This conversion was performed by Trans Florida Aviation of Sarasota in the mid 60's to the early 70's. While this conversion was very nice at that time, most restorations done in the last 10-15 years are of superior quality. There are very few original "Cavaliers" left today. Unless they have been rebuilt recently, they are becoming fairly worn. The TF-51D was originally built by TEMCO aircraft and incorporated a full rear cockpit

with Dual Controls. In the last several years this conversion has been produced by a California company and is very popular. It adds about \$250,000 to the price of a Mustang.

SYSTEMS OVERVIEW

Fuel Capacity- The P-51D holds 184 gallons. The military used drop tanks of a maximum capacity of 110 gallons each and had a 85 gallon rear fuselage tank . Most civil operators do not use drop tanks and have a rear jump seat in place of the fuselage tank. With a normal cruise fuel burn of 65 GPH, this gives a 2 2 hour endurance with a small reserve.

Tail wheel steering/locking systems- A steerable type system uses an interconnect from the rudder pedals to the tailwheel steering system. This allows the pilot to steer the aircraft by use of the rudder pedals. Full forward stick movement unlocks this system. When unlocked the tailwheel becomes full swivel and steering is accomplished by differential braking.

Hydraulic system- The aircraft uses a low-pressure 1000 psi system. The pressure is controlled and maintained by a regulator. The pilot simply operates the flaps or the gear and it works automatically. The wheel brakes are non-boosted, hydraulically actuated from individual master cylinders. The aircraft use standard MIL-5060 (red) fluid.

Electrical system- The aircraft has a 24 Volt D.C. system with a 100-amp generator. Some aircraft have an alternator installed. Normal aircraft have no AC electrical devices installed. A standard battery is used to provide starting and back up power. The aircraft does not require a ground power cart for normal use.

ENGINE

There are a number of variables regarding engines. The basic engine is the Packard built V-1650-7. The V-1650-9 was also used and is interchangeable. This V-12 engine is designed with 2 removable Cylinder bank assemblies of 6 cylinders each. These are referred to as head and banks. There are a number of engines that have been fitted with the " Transport Heads." "Transport Heads" refer to British built assemblies that were used on a commercial aircraft engine and were designed for long life .

The basic V-1650-7 engine lower end will have a TBO in civil use of about 600 hours. The V-1650-7 heads and banks will probably require some rework at about 300 hours. The transport heads will normally last to TBO and beyond.

WHAT TO LOOK FOR IN A P-51 MUSTANG

Most of these aircraft have been in civilian ownership for a number years so they have been well taken care of. A pre-purchase inspection by a qualified shop is always a good idea. General condition and lack of major corrosion are important. As long as damage has been repaired or parts replaced, it should not pose a problem. The level of restoration is a big variable and has great effect on the price of the aircraft.

COST OF OPERATION & MAINTENANCE

Fuel:	65 GPH @ \$3.50 per gallon = \$227.50/hour	Oil:	Oil 1-2 quarts per 5-10 hours
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Since these aircraft have simple electric and hydraulic systems they can be maintained very easily by most well trained mechanics. There is no special test equipment required that is different from normal civilian aircraft. Parts are generally available from several sources. Some major airframe parts can be expensive. There are a number of sources manufacturing parts today and this is expected to continue. As a private owned Part 91 Aircraft, an annual inspection is required. Most aircraft in good condition can be inspected for \$4000 or less.

AD'S AND OTHER SERVICE INFORMATION- The only AD on the P-51 is 81-13-06. The AD calls for inspection of the Hamilton Standard prop for corrosion. This AD starts out with an 18 month inspection interval and the interval lengthens to 60 months as the prop builds a history. Cost of the inspection is \$1500-2000.

CERTIFICATION BASIS

The Mustang is normally certified in the "limited" category. The only limitation is that the aircraft must not be used for compensation or hire. If properly equipped the aircraft can be flown IFR and at night. Due to the lack of de-icing equipment (other than pitot heat), most P-51's fly very limited IFR.

REFERENCE MATERIAL

There have been a number of books written about the P-51 that will give prospective purchasers detailed information on the aircraft. Some recommended sources are:

"P-51 Mustang in Action", Squadron/Signal Publications #45

"P-51 Mustang", Robert Grenhagen (out of print but probably the best single source)

"P-51 Mustang", Len Morgan, Arco Famous Aircraft series.

P-51D Pilots Handbook