

MURPHY YUKON

MURPHY AIRCRAFT MANUFACTURING LIMITED

Murphy Aircraft's Yukon was designed with versatility foremost in mind allowing for seating up to four, an economical engine option with the Lycoming O-360, and a separate cargo compartment and door big enough for your bulkiest items. Perhaps you need more versatility? How about a choice of tricycle or conventional landing gear or even the option for floats - straight or amphibian! More? Well how about jig-less construction and fast build kits to get you to the flightline faster than ever!

Lifestyles are fast moving these days with frequent changes and demands. The Yukon is capable of adapting to these situations with its larger than life passenger cabin and flexible seating arrangements. With four seats in place, there is sufficient room for two tents, coolers, chairs and camping gear for four. Removing the rear seat opens an expanse where you can load items from stretchers to bicycles, or even use as sleeping accommodations!

The Yukon provides excellent cruise performance, docile stall characteristics, forgiving low speed handling and simplicity of construction.

Family Legacy

The Yukon follows in the success of the SR2500 Super Rebel and the Moose, using many common parts and design. Based largely on the original SR2500 platform, the concept of the Yukon was to offer a more affordable platform for builders to purchase, operate and maintain. Where the Moose



covers the heavy end of the spectrum with its fire breathing radial engine and up to six seats, the Yukon's approach is simplicity and functionality. Staying with four seats and a smaller, lighter powerplant, the Yukon can perform big tasks on a small budget.

Using the same proven and beloved airfoil as the Rebel, Elite and Moose, the Yukon performance will be stellar with additional wing area to lower the wing loading and allow quicker takeoffs and slower landings.

Bushplane Heritage

The two large main doors and the standard extra large cargo door make the Yukon a real utility airplane. The huge cabin interior (two inches wider than a Cessna 180) easily accommodates bulky or long loads such as bikes, skis, furniture, lumber or camping supplies for four! The Yukon can even be used as a photographic platform with

the rear baggage door removed.

Hard points for floats are standard and the wheels are adaptable to oversize tires for short, rough bush strips. You can fly almost anywhere carrying just about anything you want. This is a kit aircraft with great performance and airframe strength, the ability to carry a load and room to stow it.

If a semi-monocoque all-metal 4 seat kit airplane seems intimidating, fear not!

The Yukon expands

on the Murphy tradition of engineering excellence and simplicity. The Yukon is designed for the first time builder with no jigs required, using pre-punched match hole technology and a well laid out manual that leads you through the construction sequence step by step with CAD illustrations. As you gain confidence, you move from easy, introductory builds into more complex areas of the kit. As with all our kits, the principle of pre-punched holes matching substructures to skins ensures all assemblies are self-aligning. The kit builder is spared the task of critical measurements as all the attach points incorporate our unique alignment system. In most cases, ribs, spars and skins have no 'lefts' or 'rights' until they are assembled, (you ultimately assign and assemble a part to its specific duty on the aircraft).

Probably the best feature of sheet metal construction, from a builder's standpoint, is that when you finish a component, i.e. flap, elevator or rudder, the part is ready to go flying... no fabric covering or dope is required.

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The majority of the Yukon structure employs the Avex rivet for final assembly. This is a blind rivet used by many certified aircraft on flight and control surfaces. Quite often mistaken for a 'Pop' rivet, the Avex rivet was developed during World War II by the Allies to facilitate field repairs on fighter planes. It's extremely 'user friendly' due to the rivets ability to draw material together and expand into elongated holes. The builder is assured a finished product built as it was designed, even if every hole is not drilled to perfection. Since these are pulled rivets, you do not need a second person for bucking and therefore the work progresses more quickly and much more quietly than with solid rivets and without fear of damaging skins. Obviously the major advantage of using a blind rivet is simplified final assembly. No great planning is required to finish a part. Just close it up.



Designed for safety and serviceability, many design features incorporated in the Murphy Yukon make this kit easy to assemble, inspect and service. Every critical nut and bolt in the aircraft is accessible through pre-punched inspection panels. Major load bearing members have been designed with fail safe redundancy. They are all constructed of 2, 3, or 4 separate parts... should one part fail the other parts continue to maintain structural integrity. The Yukon's assembly manual outlines standard practices and techniques adopted by the aviation

industry to ensure your aircraft will live a long and healthy life. Clear and concise CAD drawings are used throughout to make certain you understand the task at hand. With our recommended corrosion proofing and the use of 6061-T6 aluminum, a highly corrosive resistant alloy, you can build an airframe that is virtually maintenance free for many years to come.

A Detailed Look at the Yukon Design:

Fuselage

The fuselage utilizes semi-monocoque construction. Bulkheads are stamped 6061-T6 aluminum and are self-aligning with the side skins. A sub floor is installed over the lower bulkheads providing a solid base and a flat floor for storing cargo. The cabin area is built over two immensely strong longitudinal spars providing a clean floor from the firewall to the back of the cargo area (120 inches). This cantilevered floor makes it possible for the Yukon to have large cabin doors giving easy entry and exit. Two high back adjustable bucket seats are provided up front and a wide based bench seat in the rear can be replaced with optional bucket seats for total control over your seating arrangements. The back seat gives ample leg and shoulder room, and together with the optional large side windows and cabin skylights, rear seat visibility is excellent.

The centre of the floor has an access tunnel that runs from the forward cabin to aft of the cargo area. All wiring, fuel lines, brake lines and controls are concealed beneath the floor in this tunnel. Loads can be tied down with no fear of jamming controls or interfering in anyway with the normal operation of the Yukon. The cargo area is cavernous and with the back seat removed, the cargo area substantially increases.

Wings

The wings are a very straightforward design. The modified NACA 4415 airfoil is a time proven profile providing a large centre of gravity range. The wing has a constant chord with no washout which yields reliable stall characteristics and simple assembly. The wing structure consists of three spars (front, main, rear), 12 stringers and 16 ribs. The stringers help the wing skins transfer torsional loads to the rest of the structure. The leading edge is .032 thick allowing for countersunk rivets if desired.

The first three bays at the root of each wing constitute the Yukon's fuel tank holding 30 US gallons per wing. The builder has the option to expand the fuel capacity to 40 gallons per side for increased range. Wingtips are pre-molded fibreglass with light aluminum sub structures. The wing is supported by a single custom extruded strut. All attach points on the wing are fail-safe (as are all major load bearing members). They are constructed of multiple parts... should one part fail the other parts continue to maintain structural integrity.

Control Surfaces

Ailerons and flaps are simple, strong, and easy to assemble. They consist of a main spar, pre-formed ribs and a one-piece formed skin. As with the rest of the kit, no jigs are required and the assembly can be completed in less than 10 hours. This procedure is similar for the elevator and the rudder.

Control surfaces on the Yukon are mass and aerodynamically balanced. This is for two reasons: a mass balanced surface is very resistant to flutter and aerodynamic balancing allows us to perfectly harmonize the control response.

The Yukon will make you feel at home on your first flight.

Horizontal Stabilizer and Fin

Both horizontal and vertical stabilizers are cantilevered and employ stringers to transfer torsional loads. The horizontal stabilizer has a constant chord with asymmetrical airfoil. Like the wing, the stab is a three-spar design with the fuselage picking up fittings on the main and rear spars.

Fast Build Option

A four seat metal bushplane is a substantial undertaking for anybody, in spite of the lengths that Murphy Aircraft goes to in making the assembly procedure an enjoyable and easy process, time, space or simply, "I'm not into this building thing" put a lot of potential Yukon owners off. So the Yukon Fast Build kit was born:

Wings - These are complete except for the fiberglass wing tip. Fuel tanks are sealed and pressure tested. Lower main wing skins are temporarily installed and require final riveting.

Tail Feathers - These are complete except for the aerodynamic balances. Bottom skins are temporarily installed.



Engine Options

The Yukon continues its versatility theme with a range of available engine options. The Yukon is at home with the economical Lycoming 360, 180 hp. engine providing affordable acquisition costs and reliable service. Want a little more power? Try the new Lycoming IO-390X engine with 210 HP!

All Fast Build Yukon kits come riveted together and corrosion protected. And are delivered to you with the following structures partially completed. Certain skins which must be removed to allow for inspection, are finished, but held in place with temporary soft aluminum rivets.

Ailerons and Flaps - Partially assembled, and in the case of the ailerons, again the aerodynamic balances must be completed. These control surfaces are ready to mount on the wings for final adjustment. Bottom skins are temporarily installed.

Fuselage - Perhaps the most impressive assembly since it's ready to go on its gear, and the wings, including the lift struts, can be bolted in place. The builder can climb right inside and start working in the cabin to complete the installation of the controls, doors, inner floor, seats, windows, and instrument panel.

Fully approved to meet the 51% rule, meticulously assembled by skilled technicians and quality controlled, the

Fast Build Yukon kit brings a new dimension to the design philosophy of Murphy Aircraft. Your family bushplane, perhaps something that would have remained only a dream to many, is now an achievable goal, even to the most reluctant builder.

Purchase Plans

The Yukon is available either as a complete kit, a fast build kit or in three component sub-kits:

Tail Kit - Horizontal Stab,

Elevator and Rudder

Wing Kit - Wings,

Wet Tanks, Ailerons, Flaps

Fuselage Kit - Fuselage and Vertical Fin

Each kit comes with everything required to complete the assemblies (parts, rivets, nuts & bolts, etc.) and a comprehensive CAD illustrated manual. The build time for the standard Yukon kit is estimated at around

2,000 hours, while the fast build kit reduces this to 1,000 or less. A two-car garage is more than ample room to build your Yukon and a single car garage could be used but completed assemblies would have to be stored elsewhere.

The Yukon offers the builder an all metal 4 place kit aircraft with great performance, unequalled carrying capacity and

YUKON SPECIFICATIONS

Lycoming Engine	O-360	IO-390
Horsepower	180 h.p.	210 h.p.
Power Loading	14.1 h.p.	12.1 h.p.
Gross Weight	2550 lbs.	2550 lbs.
Empty Weight	1400-1450 lbs.	1400-1450 lbs.
Useful Load	1100 - 1150 lbs.	1100 - 1150 lbs.
Wing Area	190 sq. ft.	190 sq. ft.
Wing Loading	13.4 lbs. sq. ft.	13.4 lbs. sq. ft.
Take Off Run	400 ft.	350 ft.
Landing Roll	500 ft.	500 ft.
Cruise 75% Power	120-125 m.p.h.	130-135 m.p.h.
Never Exceed V.N.E.	177 m.p.h.	177 m.p.h.
Top Speed	135 m.p.h.	145 m.p.h.
Fuel Burn	10.0 g.p.h.	11.5 g.p.h.
Fuel Capacity	60 U.S. gal.	60 U.S. gal.
Range (Hours)	5.5 hours	4.7 hours
G Limit Ultimate	+5.7 ... -3.8	+5.7 ... -3.8

Note: The stated performance figures are estimates only, based on text book analysis and design criteria. Empty weights may vary due to avionics, instruments, type and amount of paint and upholstery chosen by builder.

versatility. There are no special skills required to build the Yukon and its system of pre-punched matching holes assures a perfectly aligned finished product.

The Yukon is a joy to fly and will provide you with many years of pleasurable, safe flying.



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