CHRISTAVIA MK1 & 2 INFO PACK

A CLASSIC DESIGN, STRONG AND SAFE THAT ANYONE CAN BUILD AND FLY.

TWO PLACE WITH DUAL CNTROLS, POWERED BY ENGINES FROM 65 HP.

CHECK THESE PERFORMANCE FIGURES USING THE CONTINENTAL 65 – 75.

Max Gross Weight.....1500 lbs.	*Normal Empty Weight .....750-850 lbs.*
Average Cruise Speed .....105 mph	*Stall Speed at Gross.....40 mph*
Average Rate of Climb .....800 fpm	*Service Ceiline .....15,000 ft. +*
Average Take Off Distance .....400 fpm	*Landing Distance .....4 - 500 ft.*

A plans built package for minimum cost using off-the-shelf materials, normal hand tools and a gas welder. No machining is required and no exotic fittings to purchase. Truly a great first time project. Materials kits are available from most major suppliers in North America. Many pilots around the world, are enjoying flying their own Christavia MK1

AVERAGE TIME TO BUILD .....1500/2000 HRS	
AVERAGE COST TO BUILD $8/10,000	

Designed to FAR 23 standard and flight tested to 500 hours, in all weather conditions. Seating is two in tandem with an inside width of 30 ins. If you are thinking of building a full size aircraft for use on wheels skis or floats, then do consider the time proven **CHRISTAVIA MK1**

A COMPLETE INFORMATION KIT & FULL SET OF DRAWINGS AND INSTRUCTIONS ARE AVAILABLE ADDITIONAL CHARGES WILL APPLY AT TIME OF ORDER

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Aircraft Spruce & Specialty Co. SINCE 1965

THE CHRISTAVIA MK1

The concept for the Christavia line of plans built amateur aircraft started back in 1981, after attending an evaluation week with a well known international missionary organization. It bacame evident after chatting with quite a number of active Christian missionaries from around th eworld, that there was a real need for a light two seat aircraft in the 1500 Lb. weight class.

Such an aircraft would have to be capable of operating from short unimproved strips, often in hostile environments, and carry a relatively large payload. It would have to be designed with as many built-in safety systems as possible, should a forced landing have to be carried out. While a high cruise speed is desirable, the usual compromise has to be made in order to provide for a low stall speed with very safe characteristics. The average cruise speed using engines in the range of 65 to 100 HP is around 100 mph, but may be increased by careful attention to drag reduction.

By adding wheel pants, a spinner and strut fairings, the cruise speed can be increased by 7 to 10 mph. The addition of a single piece aluminum undercarriage along with the mentioned mods have produced cruise speeds with the 0-200 engine (100HP) of 119 mph. The stall speed at full gross weight of 1500 Lbs. is consistently 40 mph, which as far as I am concerned, is the absolute low end. Stall speeds any lower make for an aircraft that becomes unmanageable in strong or gusty wind conditions.

One of the unusual characteristics of the Christavia is its predictable and docile stall, which is never abrupt or uncontrolable. Likewise the aileron design, provides roll control right down through the stall, which enables an average pilot to land the Christavia as if it were a C-172 or 150.

The main reason fo rthis kind of performance from what looks like a typical old time tail dragger, is the airfoil design. Ten years of research an development went into producing this particular airfoil section, which incidentally has been matched to the rest of the airframe.

The basic type of consruction and fabrication is the tried tested an dtrue, wood wing with steel tube airframe. Th average time to build for a first time builder has worked out to be abou t2,000 hours. the average cost to complete the MK1 assuming one uses a time x-ed Continental 65, 85 or 100 HP and re-builds it at home, is proving to work out at around $12,000 to $14,000. This figure can of course be much reduced by a good scrounger.

The size of the Christavia MK1 is just about the same as a Citabria or Scout, and has the same general seating and baggage configuration. A full 30 inches across the cabin and rear seat will allow for two small people in the back.

All materials and components are standard off the shelf and are attainable at any good aircraft supply house. Every part can be fabricated in the home workshop. using ordinary hand tools. Some of the more well known suppliers such as Aircraft Spruce & Specialty of California, can supply material and and componenet kits either on an individual basis, or in a complete package at a reasonable price. Call for a current price and materials listing. The drawings kit consists of 22 large sheets in black print, that show all fitting full size, and may be used as templates, thus saving much time on layout.

WHAT'S INVOLVED IN BUILDING THE CHRISTAVIA MK1 AIRPLANE

The idea that any person of average ability is capable of building and flying an airplane is no longer fallacy. Hundreds of people across the globe have done it. However, these hundreds when compared to the population of the globe, turn out to be a select few. Life is short and work is hard, therefore the average person spends the time left over being entertained. This of course is good for entertainers, who draw fantastic sums of money and are able to purchase their own personal jet. The rest of us tend to sit back in our lazy-boy with a large pizza watching the evil eye. At some point along life's way, some folk get motivated to ask that question "What is the purpose of life?" or something like that. "Why do some seem to be fulfilled, while others accept the norm?" I suppose there are some that do and some that wish they had. Well, enough philosophy for one day. If you are the kind of person that has always had more than a passing interest in aviatin, and you tremble a little inside when you hear an airplane fly overhead, then maybe it's time you got serious about it. The business of building your own aircraft is not beyond reach, but it does rquire you to think it through before rushing out, then wishing you hadn't. The cost of flying today has gone out of sight for most family people and that in part is why the amateur built industry has produced more light aircraft than the big commercial operators in recent years. However, one must set some priorities first, then consider just what is involved.

Any large building project requires careful planning and one should start with ones spouse to get an agreement at least in principle. Some poor souls have found out the hard way that this step is vital . If possible involve the whole famiy in whatever way you can. Choosing an aircraft also requires much thought and preparation. Often talking to other owners and builders will help you make the correct decision. Do join a chapter of EAA or RAAC and seek guidance from members who have completed aircraft. At this point, you have heard about the Christavia line of plans built aircraft, and wish to know a little more about them. Aircraft Spruce sells design package to amateur builders across the world. We have two basic aircraft designs, the Christavia MK1, a two place tandem sport airplane and the Christavia MK4, a four place family cruiser. The Christavia MK1 prototype was built back in 1981 to fill a need as a mission field wowrk horse in third world countries. A number of aircraft were built in my local area so that I could keep track of progress and offer help as was required. As a result, a number of changes were introduced in the drawings and the construction guide. We have tried to cover all the important details and methods of fabrication, and if builders experience problems along the way, a phone call can save a long and time consuming letter.

Plans building is really the best of a1 worlds for the person a little strapped for cash. You can pay as you go and not get yourself in trouble, or you can purchase kits either individual or a complete package from reputable suppliers such as Spruce Specialty of California. All materials are standard aircraft types and are available from many aircraft suppliers in North America. Since no machining is required, expensive lathes or mills are not needed. There are no special parts or components that you must purchase from a supplier. In fact every part of the airframe can he made by hand in your workshop. Items such as wheels, brakes, instruments etc can be purchased new or may be picked up used bur serviceable at the many flymarkets and flyins across the country.

By far the largest investment is the engine and of course is the most important single item. My suggestion is not to be in a hurry, as in every case, the right one will be there when you need it. The question I am asked the most, is which auto conversion do I recommend? My stock nswer is lengthy, but in short, unless you have the necessary skills to convert an auto engine, don't. I do want to make it clear that some conversions are well designed and fabricated. The best insurance is to contact a builder who has used one without any problem for at least 500 hours. In m y experience, I have heard some real horror stories with some auto conversions. There are some great publications and books on this subject which should help one make the correct decision. As you will have guessed, I still recommend a Continental or Lycorning engine over anything I have seen to date. Of course this is only my opinion. The Continental A-65 through 0-200 engines are still available in relatively good numbers and parts for these engines are available from many suppliers at very good prices. This engine can be purchased used, time exed, and rebuilt in your shop for 2,000 hrs plus of trouble free flying for the price of many conversions. The Lycoming engine is also very reliable, but parts are more expensive. The Lycoming 0-320 150hp is recommended for the Mk 4, four seat aircraft.

Other often asked questions are, how long will it take to build it and how much will it cost to complete it? These are difficult questions to answer as you can guess, because it depends on... ?? Taking average times though, it is fair to say that the Mkl will require between 1500 and 2000 hours of work to complete. Now if you have built an aircraft before and have most of the skills required. you can cut this time estimate down.

If you can put in large blocks of time, you will find this will help also. The Mk 4, will require about another 500 hours due to its greater complexity. The cost to build each aimaft again depends on what you purchase new, or what you can find used. A good start is to call Spruce Specialty in California and ask for a current price list of parts, materials and kits. Again the most expensive single item is the engine. Using average completions, the Mk 1, a ball park will be $8,000 to 1 1,000 depending on the avionics package. The Mk 4, will be around $10,000 to 14,000 depending on the engine price and avionics package.

Finally, what tools and facility is required? Both our aircraft have been designed to utilize a standard 12 X 20 foot single car garage. Anything bigger is a bonus. It should have a heat supply for those cold winter nights. As mentioned, no special tools are needed other than a table saw and gas welding equipment. Nornlal hand and small power tools are much used and of course a good workbench and grinder. A band saw and drill press are nice to have, but not essential. The mention of welding will cause some concern to some I'm sure. Trust me when I say that you can learn the skill quickly with the help of a friend who is competent, or take a night course at you local evening school. It is not difficult and is a great skill to acquire. If you don't wish to spend a bundle on new equipment, try putting an ad in the local newspaper, it always works for me.

Many first time builders who contact me have trouble making up their minds which aircraft is best for them. All too often, the idea of a four place aircraft seems paramount and most desired. After some conversation it often works out that the two seat version is what is most realistic and desirable. If 65% of your flying requires four seats, then the four place is practical. If 50% of your flying requires four seats, then you might consider the two seat version. The operating costs of the Mk 4, are about twice that of the Mk 1. Insurance is much much more because you must insure all four seats whether you use them or not. Fuel costs are just about twice the amount of the MK1. Yes you can use auto fuel providing certain engine and fuel system modifications are done. We have covered a good deal of ground work so far and I again want to stress the importance of pre planning, Also if you have questions on your mind, feel free to give me a phone call in the evening, rather than write a letter. I get hundreds of letters a month and frankly while Z answer every one, I just can't kind the time and expense to continue, I am human too. The last section of this information package will deal with each individual aircraft as requested.

I think that building the aircraft in the recommended sequence will go a long way to a successful project. 1 really do suggest that the wings be built first, for many reasons, While the wings are not overly expensive to build, the time and effort required is great. There are many hundreds of small pieces to be made much like mass production and many hours of repeating the same steps to complete the wing ribs. The important thing about this, is that if you find you have bitten off more than you can chew and don't feel you can finish the project, you have very little invested from the money stand point. In fact if you have done a fair job on the ribs, you will be able to sell them with ease to the next builder. Rib making is a great winter project and can be done in a small part of your house without any complaints from the rest of the family. The only jig required on the entire aircraft,is for the ribs. Also you can take an evening course in welding at the same time.

The wing construction is quite standard for this class of aircraft. It consists of two spars of Sitka Spruce with wood truss type ribs spaced every foot apart, Internal bracing is accomplished by making up diagonal wires from 3/6" drill rod material. 4130 steel tube and plate are used to make most of the fittings, with a few parts fabricated from mild steel. The leading edge is covered the full length of the wing with aluminum sheet, which in effect forms a very strong "D" section to the wing. The ailerons are of the frise type, with a high velocity air slot at its leading edge. It is this design that alldws very effective control response at low speeds. A construction guide will take you through each step in the sequence in a logical & workable order.

The fuselage and tail section are fabricated from 4130 steel tube and sheet. 1010 mild steel may be also used for a good part of the lower stressed sections. The drawings are very clear as to what materials may be substituted. The basic fuselage is built just like you used to build a balsa aircraft, you scale from the drawings an outline of the full size fuselage side on your garage floor using chalk. The tubing is then cut with a hacksaw to the sizes shown on the drawings and placed over the outline. The tubes are held in place with house bricks while each joint is spot welded. When one side is completed, it can be placed on saw horses to finish weld each joint. The second side may be built over the first side to ensure that both sides are the same. The two sides are then placed vertical while the cabin crossmembers are welded in place. A little bending with heat shapes the fuselage to complete fitting and welding the remaining crossmembers. The tail section and undercarriage is constructed using a similar technique.

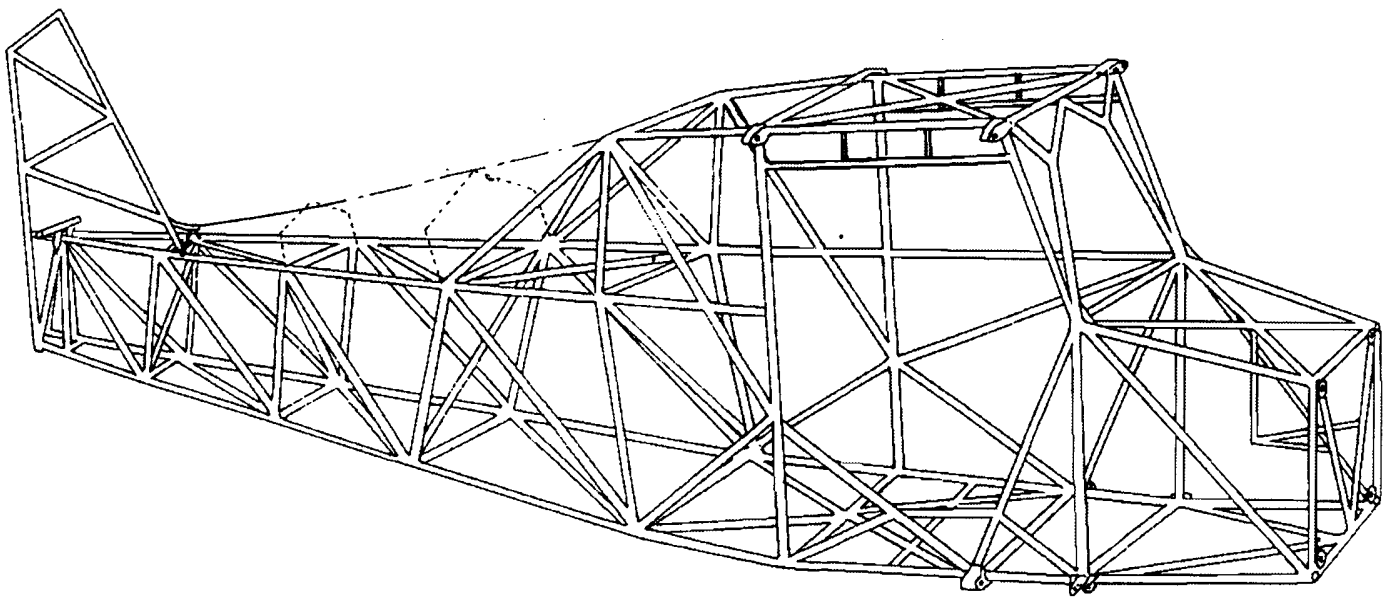
By now you will be a most proficient welder, ready to weld the fuselage fittings in place. A time consuming part of the project will be all the stuff you can see such as the instrument panel, the seats, the upholstery the avionics and wiring etc. Finally the most interesting and straight forward part, the covering and painting. Providjng you build the aircraft as designed without structural or shape changes, the test flight should be a real highlight in your life and be uneventful. The basic aircraft is most conventiqnal and its type has been proven with many n~illions of flight hours. The prototype has past the 1500 hours mark without a single problem of any kind. All our aircraft designs have followed the standards as specified in the old FAAs Cam 18 to FAR 23 general standard. Each aircraft has been subject to a most in depth flight testing schedule of at least' 150 hours. The prototype was brought in for a very close inspection after reaching 1,000 hours. The fabric was removed and all parts, fittings and fastenings were checked for integrity. No problems were encountered during this inspection, and so no changes to the design have been made to date. Christavia Mkl aircraft are now flying in just about every state and province. They are being flown on wheels, floats and skiis, bringing many happy and safe hours of flying to their builders. The Mkl has a very reasonable cost per hour to operate. With a Con't A-65/75, and base insurance, it is not unusual to fly for $8 to 10 per hour. Of course thats with an outside tiedown. Most builder pilots have after the first 500 hours have come to realize that while a full IFR panel looks great, it is not very practical. The recommendation then is that you install onl; essential VFR instruments and purchase a good GPS. Throw all that heavy old fashoned avionics away and go light. A good quality intercom is worth its weight in gold though and should be wired into the aircraft before covering.

We believe we have thought of just about everything for the first time builder, but should we have missed something you think is important, please let us know and we will include it. Again please feel free to call me evenings. if you have any questions.

CHRISTAVIA MK-1

Basic Fuselage Detail

(no scale)



Ron Mason

Aircraft Spruce & Specialty Co. SINCE 1965

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For and in consideration of the sum of $_____ Aircraft Spruce & Specialty Co. of Corona, California, does agree to extend to _____ the right to build one Christavia MK-1, said airplane to bear serial number _____. Aircraft Spruce & Specialty Co. further agrees to supply one set of construction drawings and an illustrated parts catalog.

Your Customer order number is:	*This section to be signed by Aircraft Spruce representative*
_____	By _____
	Title _____
	Date _____

I, _____ Address _____

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do agree to the conditions set forth above and in consideration thereof I further agree that said drawings, instructions, and manuals will remain the property of Aircraft Spruce & Specialty Co., and specifically agree to the following:

A. I will build one airplane only from these drawings and manuals and that said aircraft will conform to the specifications set forth in these drawings and manuals.

B. I will not allow another party the use of these drawings and manuals to build a second airplane or part thereof.

C. I will not transfer these drawings to another party without prior approval of Aircraft Spruce & Specialty Co.

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Work Ph. _____	Signed _____
Home Ph. _____	Date _____
Fax _____	Witness _____
E-Mail _____	Address _____
	_____

Inasmuch as Aircraft Spruce & Specialty Co. has no opportunity to supervise the manufacture, installation or maintenance of the parts supplied by it, nor any opportunity to participate in the design or manufacture of the various certificated and homebuilt aircraft in which its parts are utilized, the purchaser by placing this order and accepting said merchandise from Aircraft Spruce & Specialty Co. agrees that all materials purchased will be solely at purchasers risk and that purchaser will indemnify and hold Aircraft Spruce & Specialty Co. , its owners and employees, free and harmless from all loss, liability or damage resulting from claims bought by reasons of any alleged failure or defect of any part or parts supplied by Aircraft Spruce & Specialty Co.

This form must be mailed back to Aircraft Spruce in order to process an order for plans.

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	Title _____
	Date _____

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B. I will not allow another party the use of these drawings and manuals to build a second airplane or part thereof.

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D. I will not allow these drawings, manuals or instructions to be duplicated.

E. I will not use or permit the use of these drawings in the design, construction or manufacture of another aircraft.

It is further agreed and I understand that Aircraft Spruce & Specialty makes no warranty, expressed or implied, as to the quality or the safety of this airplane. The buyer understands that no warranty, express or implied, is being given by the Seller or the Buyer as to the accuracy, airworthiness, suitability or flyability of the Plans or the aircraft or engine to be built with the Plans or that the airplane or engine once built is able to be licensed by the Federal Aviation Agency. The Buyer of the Plans shall accept full legal responsibility for the construction, licensing, flight or operation of the aircraft or engine and hold totally and completely harmless from any legal liability or damages whatsoever the principals, owners and employees of Aircraft Spruce and Specialty Company and Ron Mason, designer. Further understand that any aircraft constructed with the Plans shall only be built and operated in strict compliance with the Federal Air Regulations promulgated by the Federal Aviation Agency. It is also agreed that while Aircraft Spruce will try to direct any questions regarding the Plans and construction to experienced builders, Aircraft Spruce itself cannot provide any technical builder support on the Christavia MK-2. All subsequent buyers, heirs, successors, or assigns are also bound by all terms of this agreement.

Work Ph. _____	**Signed** _____
Home Ph. _____	**Date** _____
Fax _____	**Witness** _____
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