WESSEX LIGHT AEROPLANE Co.

MODIFICATIONS BOOKLET
For compliance to
BCAR Section ‘S’

This booklet should be consulted during all stages of construction, as various modifications must be made.

IMPORTANT NOTICE Please read this before you start

In order for this aircraft to conform to Section S. Cap 482 Small Light Aircraft - Airworthiness Requirements, certain changes and additions will need to be made, as building progresses. Failure to make these changes will result in the aircraft not being compliant at its first, and subsequent inspections. The changes are minor in nature, and may be carried out without the need of specialised tools, or equipment. Where component changes are needed, these are provided for in the kit supplied.

Advice is given in italics when each modification may be undertaken during the building. Duralac sealant may be used for all assembly mods involving drilling and riveting etc. 04.08.01 (revised 08/03)

Modification List and advice notes.

SAFETY - when you have trimmed the split pins, make sure the cut ends are formed tightly around the bolt.

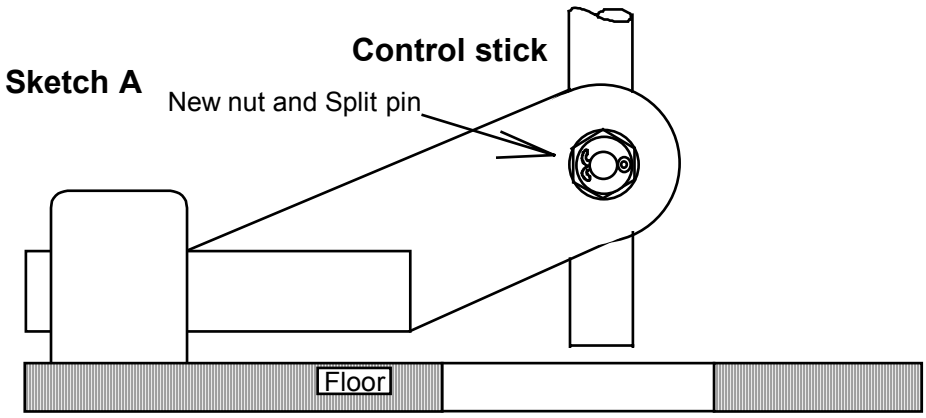
All bolts and nuts that are subject to rotation or act as a pivot must be positively prevented from the nut coming off.

Mod numbers 2 / 7 / 10 / 11 / 15 and 21 are now incorporated by the manufacturer

Number 1

1a Control stick pivots. See sketch *A* *Anytime, but leave the split pins until last.*

Sketch A



Drill and split pin both pilot and passenger control stick pivot bolts. Replace the nuts supplied with the 6 mm stainless steel nyloc nuts in the mod kit. This will give extra length of thread for drilling the split pin holes. Castlated nuts may be used if you wish. Split pins in mod kit.

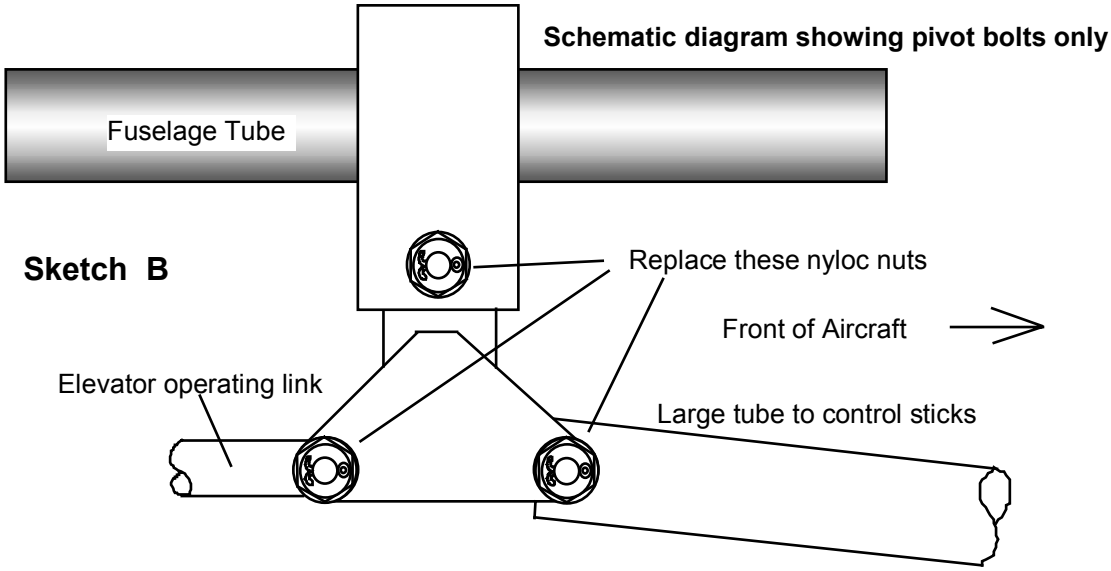
1b Trim lever pivot bolt *Anytime*

Use a 6 mm stainless nyloc nut to give extra thread length See sketch E Page 4

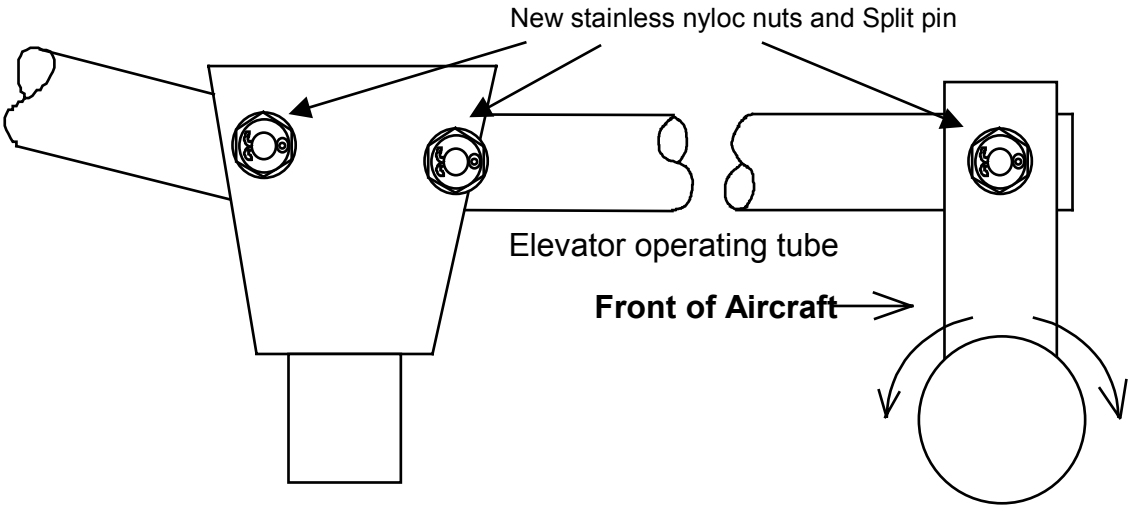
1c Elevator operating tube and connections.

Do this when assembling elevator control

Replace the nuts on the elevator tube pivoting bolts with the 6mm stainless nyloc nuts to provide extra length for drilling split pin holes. See sketch B and C. Split pins in mod kit.



Sketch C



Modification to the above must take the following form.

Replace the standard nuts with the 6mm stainless nuts provided in the kit in order to provide additional thread protrusion. Drill a 1.6 mm (0.0625 inches) hole, on assembly through the 6mm bolts near the nyloc nut using a HSS twist drill, for the split pin. This is easily done by screwing on a plain nut and drilling through, (this nut can then be used as a drill jig for the others) Unscrew the plain nut, leave the nyloc nut where it is, and fit the split pin. Apply a little sealant to the drilled area, before assembling the split pin.

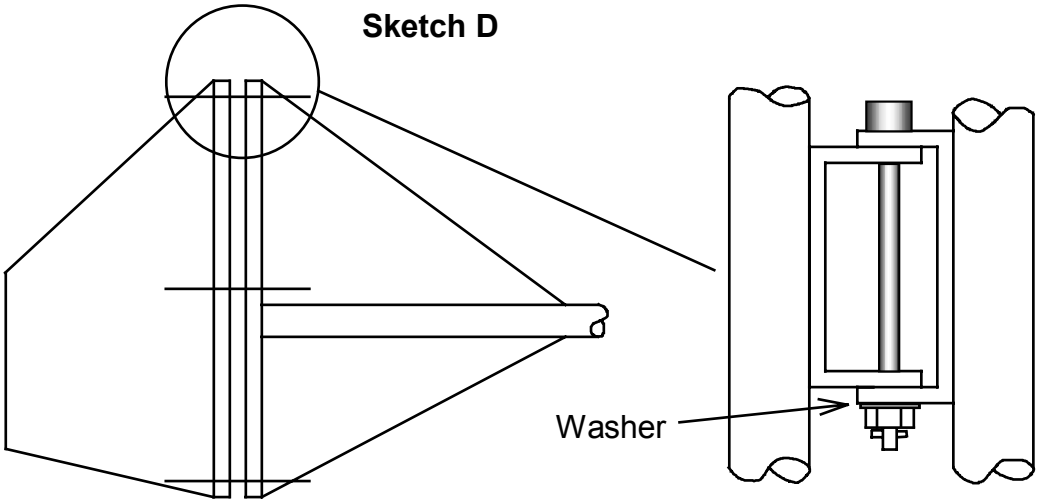
Number 2 **Hinges drilled and bolts supplied by manufacturer.** Split pins need assembling ***Any time after assembly***

Elevator and rudder hinge pivots. Split pin the 5 mm bolts on the tailplane and rudder hinges.

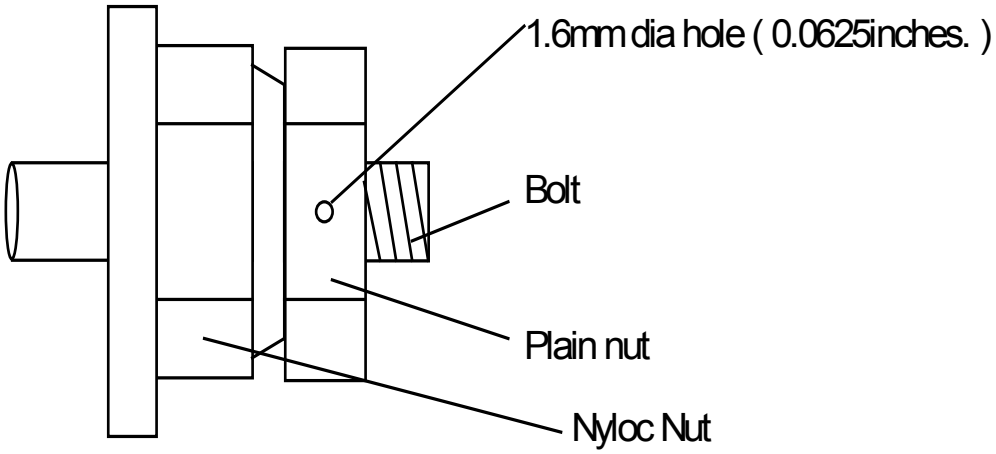
Split pins in the mod kit**. Hinges may overlap and not inside**.

See sketch D

Sketch D



There are 7 of this hinges to be split pinned for the rudder and tail



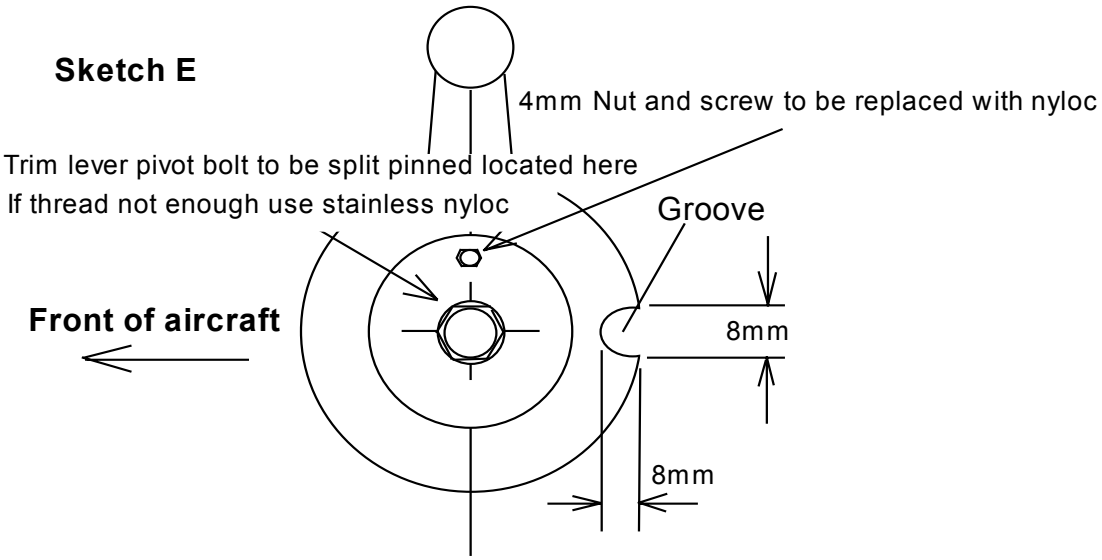
Number 3 ***The same time as number four***

The small 4 mm screw locking the pulley to the trim lever arm is at present fixed with a none locking nut. This needs to be changed to a 4mm bolt and nyloc nut. Be careful to replace the washers. Nut and bolt in the kit. See sketch E Page 4

Number 4 ***Before fitting trim assembly and after tailplane is finished***

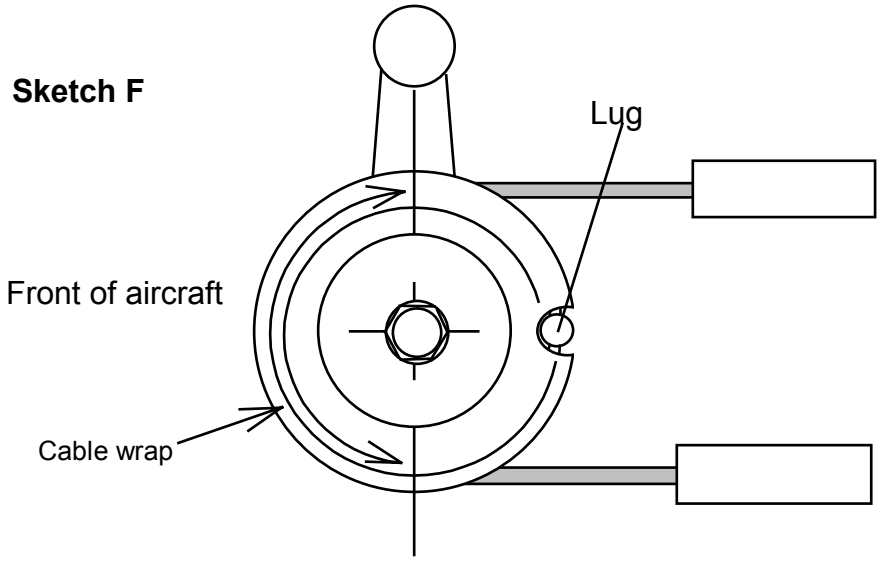
In the existing kit the drive to the trim cable is by friction provided by wrapping the cable around the pulley, this is not a reliable method, so a modification is needed to give a positive drive. File a groove in the flanges of the pulley to the sizes indicated in order to provide a key in which a brass lug can engage. Make sure the groove is at the rear of the pulley. See sketch E Page 4

Sketch E



Take out the trim cable and find the centre, clean this area and solder on the lug provided. Do not use acid type fluxes. The lug needs to be cleaned, and tinned thoroughly. In order to establish that a sound joint has been made, apply a load of 10kg to the lug by supporting the wire, and loading the lug. Grip the wire between two pieces of soft wood in a vice and dangle a 10kg weight on the lug. With the trim wheel control fitted to the airframe, locate the lug and wrap the cable in order to give a three-quarter turn on the wheel for each cable run. See sketch F

Sketch F



Be sure the exposed areas of cable are well greased.

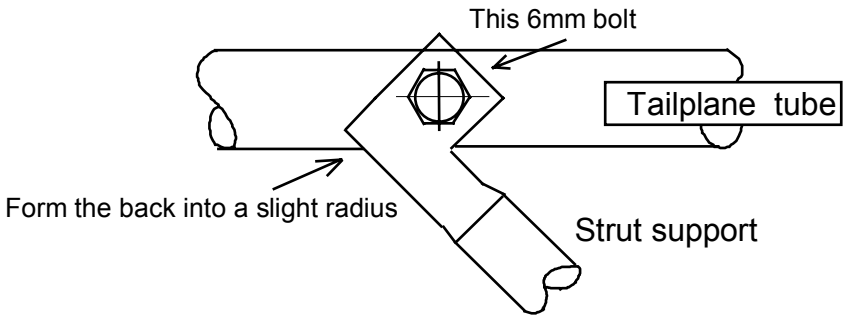
Number 5 *During trim control fitting and after tailplane assembly*

The trim control cable is exposed along the elevator control tube. The kit says to support this every so often with small pieces of tube. These could easily come loose, so for the modification use nylon guide tube (4mm dia) for the whole length retained by zip ties in appropriate places. Allow about 60mm exposed at the end stops.

Lubricate the cable thoroughly before assembly with a silicon based lubricant. Guide tube and zip ties in kit.

Number 6 *After tailplane is fitted.*

Drill the heads of the 6mm bolts retaining the struts of the tailplane 1.6mm (0.0625 inches) dia. across the flats, in order to provide positive locking by wiring the bolt heads around the support. These are after all pivoting bolts, and allow for the folding of the tailplane for transportation. This will prevent the bolts inadvertently working loose. See sketch



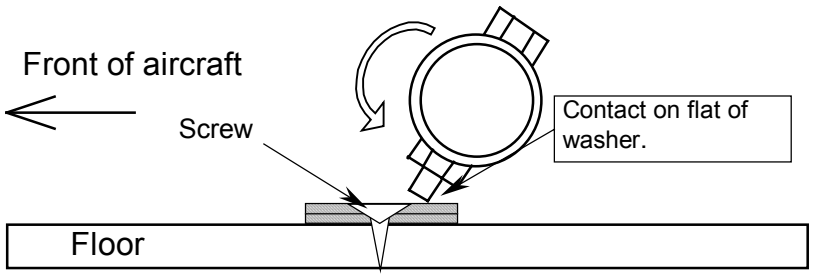
Number 7 **Stick limit stops** This modification is now part of the stick hinge support.

Number 8 *Anytime after the throttle control tube is fitted.*

The throttle stop forward position (throttle fully open) is controlled by bolts contacting the floor at both ends of the throttle control tube. Large plated washers supplied in the kit will need to be fixed onto the floor to using a countersunk self tapping screw to prevent wear of the flooring material. Two are usually sufficient

See sketch I

Sketch I



When finally adjusting the throttle control cables be sure to have a little slack at the carbs (1mm) when the throttle control is pushed hard fully open against the stops. This will prevent damage to the cable ends inside the carbs. The idle stops are against the seats. Take care to tune the cables exactly right.

Number 9 *After seats are bolted to the floor*

The standard kit seat back fixing is not adequate to sustain a 9g forward load imposed by the fuel tank in the event of a mishap, say colliding with a barn wall at 30 knots. Take off the seat covering, and open up the holes in the backs of the seats using either a “Rat Tail” file or better still a rotary tapered file that can be fitted to a power drill, to approx. 12mm dia. Using the long zip ties supplied in the kit, and keeping the buckle on the outside (behind the tube) of the seat go around the aluminium tube, back through the seat andaround the tube at least three times. Locate the tie in the buckle and tighten. Trim any excess tie.

This may seem a bit Heath Robinson, but it is light weight, non corrosive, easy to fix, cheap, **immensely strong,** flexible, does not suffer from fatigue, and can be easily replaced if the seats need removing at any time.

Number 10 Stainless plates on wing struts. Now fitted by manufacturer

Number 11 Links. Now supplied by manufacturer

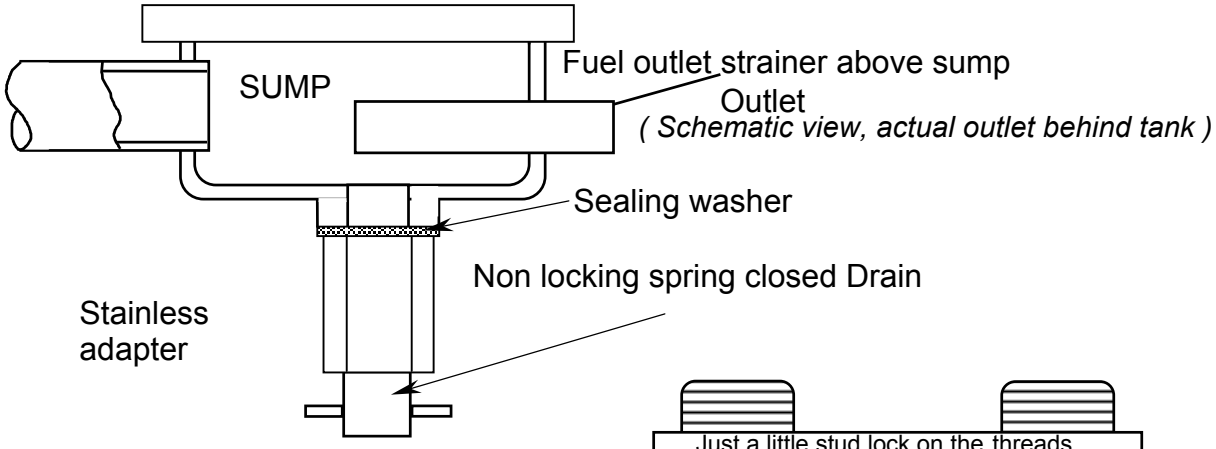
Number 12 Pod Nuts *Anytime*

The Pod to Instrument Panel, and Wind Screen fitting uses 4mm non- locking nuts, they are bound to vibrate loose at some time. Replace these for 4mm Nyloc nuts that are in the kit. The original kit does have some, but it's not enough. Do not over tighten - just nip them up so the bolt just spins with a spanner**.** Real tight causes cracks in the windscreen due to compressive stress.

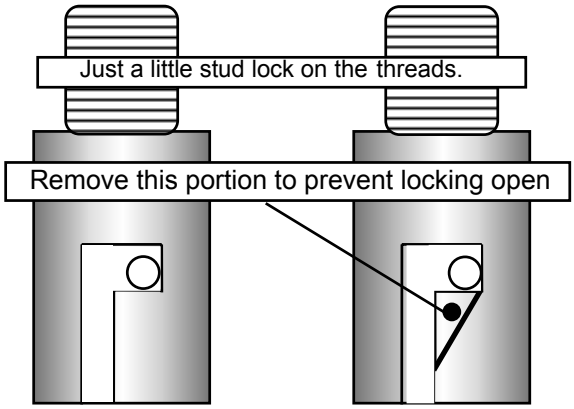
Number 13 Drain cocks *Anytime but before the tanks are finally fitted*

The two drain sump plugs already existing on the tanks are too difficult to operate, and need to be changed. The threads in the tanks are 8mm. Remove the Hex head screws**,** **recover** the sealing washers.

Using a preparatory petrol proof sealing compound such as "Hylomar" on the sealing face and washer together with a stud locking compound on the thread, screw the stainless adapters into the tanks. The Curtis drain cocks now need modifying as in the sketch below.



Two drain Cocks are provided in the kit, but they need modifying, as in the diagram inorder to prevent them being locked open.



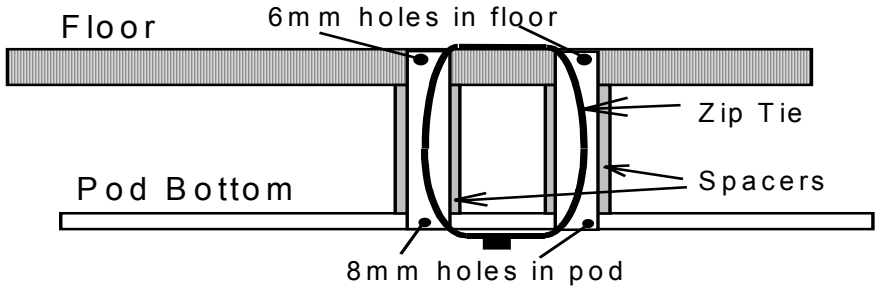
These threads are tapered, so when tightening, be careful to tighten just enough to seal using an AF spanner. Assemble the threads with a little stud lock. Tighten the whole assembly firmly. Over tightening may cause movement of the inserts moulded into the tank. Access will be needed below these cocks through the fabric to allow petrol and water

to drain clear of the aircraft. This may easily be achieved by using a soldering iron to make a hole directly under the outlets about 40mm dia. The Soldering Iron seals the fabric nicely. The drain cocks, after modifying, are easily operated from inside the cockpit.

Number 14 *Do this after pod is fixed*

It is possible for the bottom of the Pod to flex upward, and interfere with the operation of the control sticks. Although not a serious matter, damage in the form of wear could take place. Four pieces of plastic tubing to act as spacers are provided, together with a pair of long Zip Ties to retain them. It will mean drilling the pod and the floor near the large holes, inserting the plastic tubes, and retaining them with the zip tie, to keep the floor and pod apart. **Do this behind each of the large holes, between the holes and the seat fronts.** see sketch N

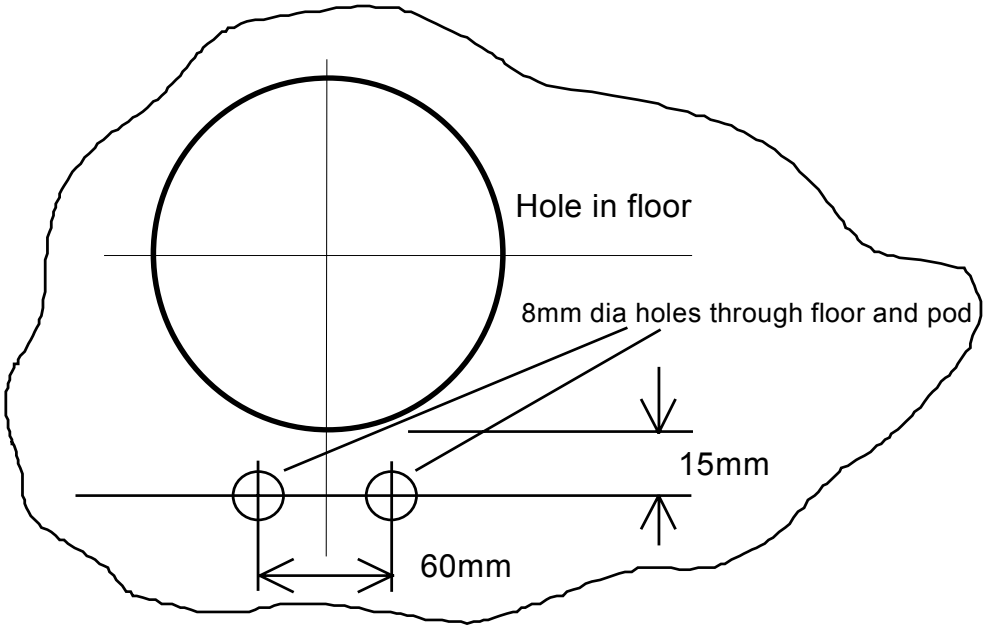
Sketch N



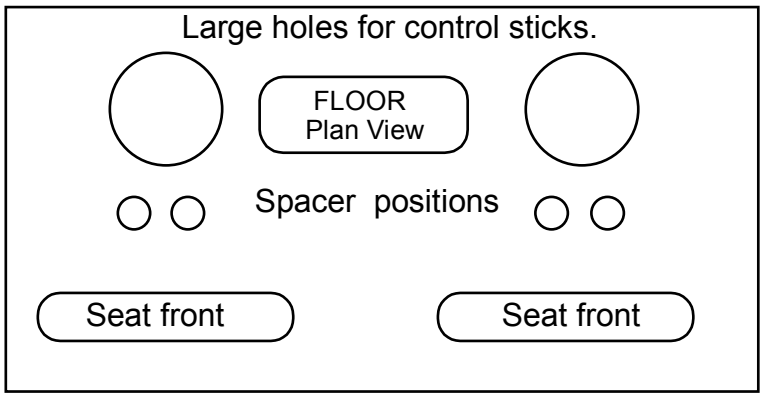
Floor plan for drilling. Go through floor and pod with a long 6mm dia.drill, deburr, insert spacers, locate zip tie and tighten. The tube spacers do not need to be accurately positioned, but get as near to the dimensions as you can, but not too near the edge so as to interfere with the operation of the sticks in the most forward position.

See sketch O and P

Sketch O



Sketch P



Number 15 *Now done by Manufacturer*

Number 16 **Fuel link tube and vent pipes** *Do this when fitting tanks*

The large plastic tube linking the fuel tanks is thought not to be compatible with the fuel, so needs to be replaced. The synthetic tube for replacement is in the kit. Use the same worm drive clips supplied.

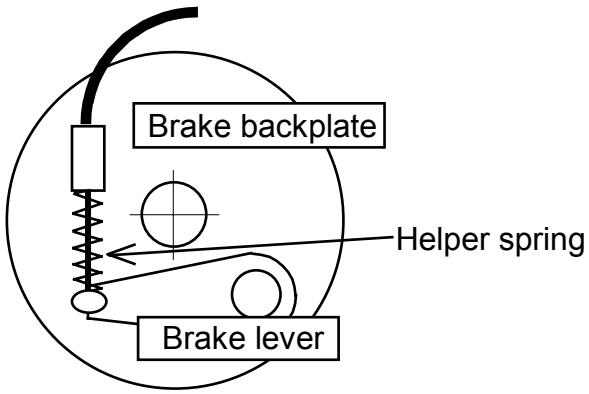
The clear plastic tubes used as vents may need heating in a bowl of hot water in order to follow the path you require. Allow a nice curve out of the tank top and secure anywhere you can using zipties.

Also insert a piece of fuel pipe inside where the vent pipe bends to prevent kinking closed.

Number 17 *Anytime after brakes have been fitted*

A compression spring has been added to give a little help, as we found that the brakes occasionally stayed on. See sketch R

Sketch R



Make sure you disassemble the brakes, as I found they are packed dry. They will need a little Molydysulphide grease in the pivots and cam mechanism. **Make sure the brake pedals are free, it is possible to over tighten the elevator cable nut, crush the spacer, and stiffen the pedal movement.**

The springs may be wound on the cable after the brakes have been assembled and adjusted. Springs are in the kit.

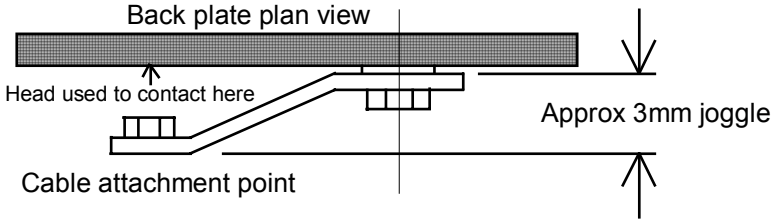
Number 18 Optional Fitting of parking brake *Anytime*

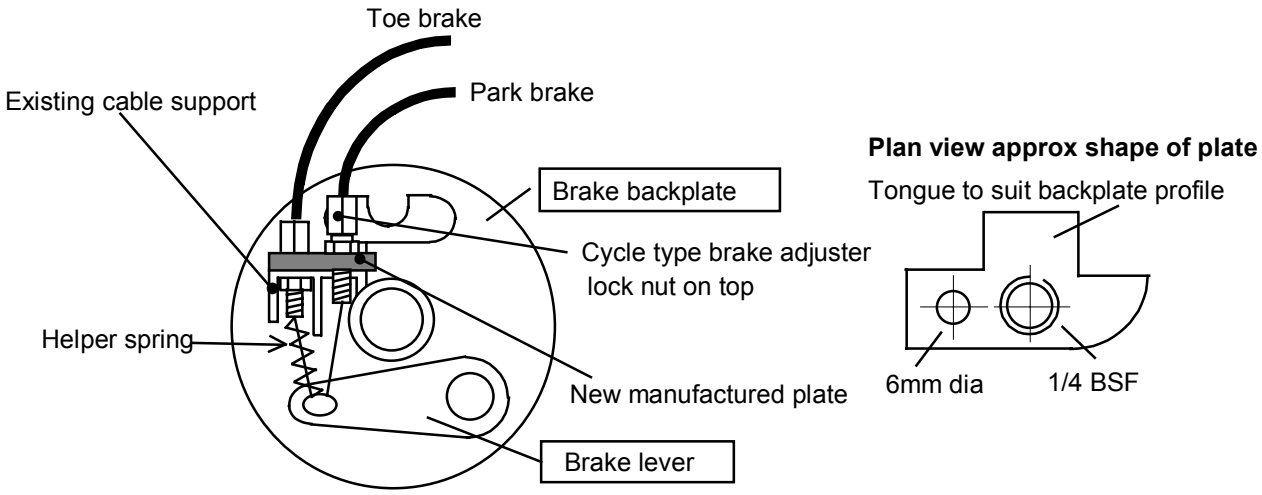
It is a requirement that the aircraft be either startable from the pilots seat whilst strapped in, or a parking brake fitted. If you are proposing to be able to start from the pilots seat (self start) **then no modification is necessary. Confirmation of the elecric start will be required by the BMAA if this is the case,** but if manual start outside the aircraft is the case, then a parking brake must be installed. If you are fitting an engine with a pull start then a parking brake kit may be purchased from Xair. The system when installed, will **need to be inspected** when complete. A parking brake does not form part of Section S, but a number of accidents have occurred with aircraft running away, so all new aircraft with outside start, will need to have them as a matter of safety. Both brake systems need to be operational.

The twin cables terminate at the brake back plate, and connect to the same lever using the existing connector. A small plate will need to be fabricated using 3mm or 1/8 thick alluminium plate in order to accommodate the twin cables. The cables will be angled slightly for the parking brake, but this is not a problem. The existing line of the cable is used for the toe brake, as is the mounting method

Slight modification of the brake cam lever

We noticed that the lever very nearly contacted the side of the backplate, and on some aircraft may actually do so. Please check this, and if it interfers, then remove it, and form a simple joggle bend in the plate to provide more clearance see sketch below : -



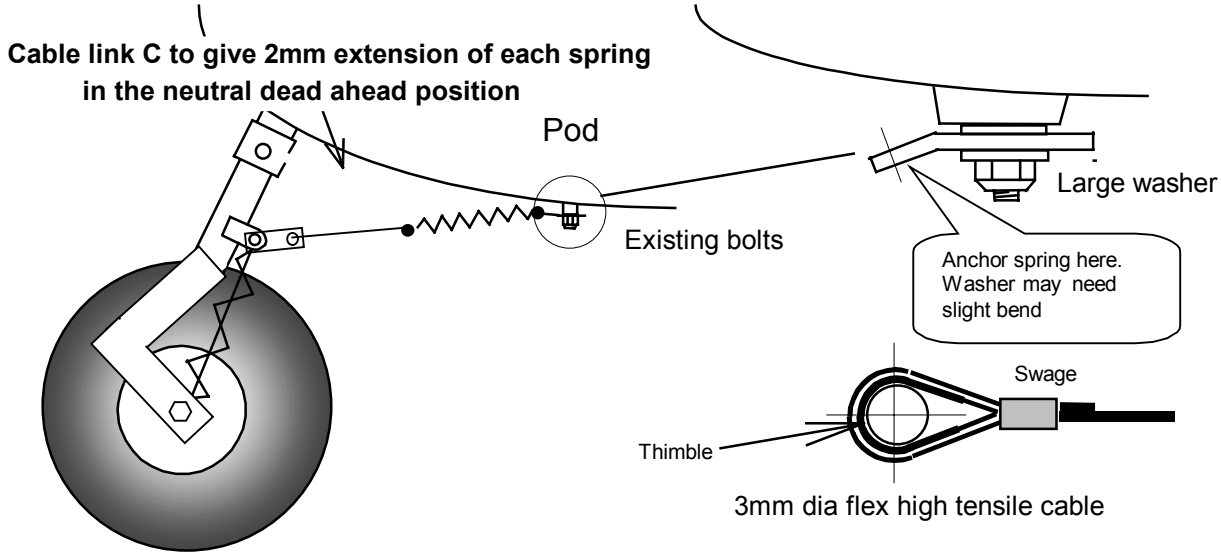


Number 19 *Do this when all adjustments have been made to steering, rudder cables etc. .*

On the first test aircraft it was found during flight testing that the rudder did not centre very well. It may not occur on your aircraft, but……..

With the considerable friction involved in the rudder, and steering linkages, a smooth frictionless movement is impossible. Two springs need to be added and attached underneath the pod to the front forks, to aid the self centring action. See sketch S

Sketch S



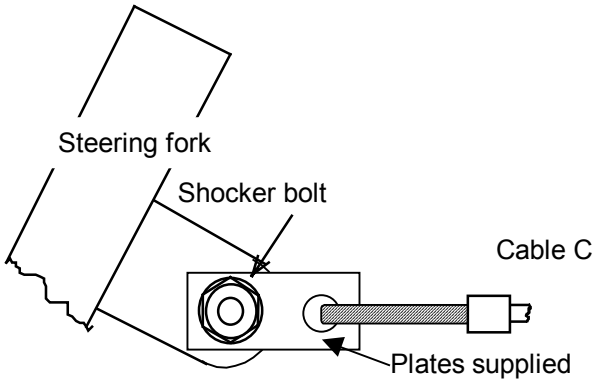
There are two 8mm bolts under the pod which locate and fix the rudder pedals. These may be used as anchor points for the links onto which the springs may be mounted. There are two large washers pre - drilled in the kit for this.

Two cable systems will need to be made up using 3mm dia flexible cable, similar to the control cables, each with thimbles, and swaged to make up the distance C on the diagram.

You will probably never be able to overcome a sight tendency for the aircraft to turn one way or the other in the neutral position. The design, with such considerable frontal area, a wide body, and a shortish tail, means the weathercock effect is limited.

See sketch T

Sketch T Method of attachment

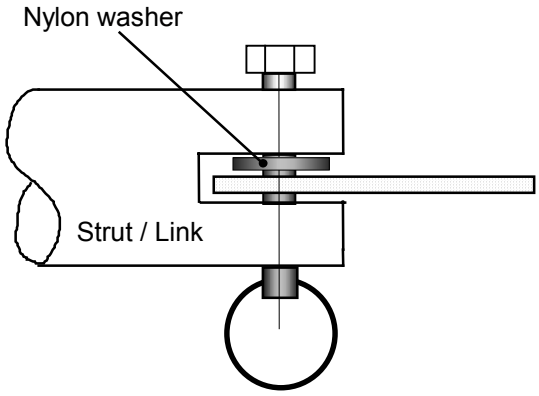


There is in the kit, an unused 3mm cable with thimbles on. You can use this for the centring cables, it is long enough for the two. Extra sleeves will be required.

Number 20 *Anytime after wings are fitted*

The location slot in the end of the jury struts has found to be much larger than the size of the bracket they attach to. Nylon washers are inserted in this gap as shown below.

On later kits this slot size has now been reduced and the nylon washers are no longer necessary. If you find that you have a Jury struts like mentioned above then the nylon washers must still be fitted.



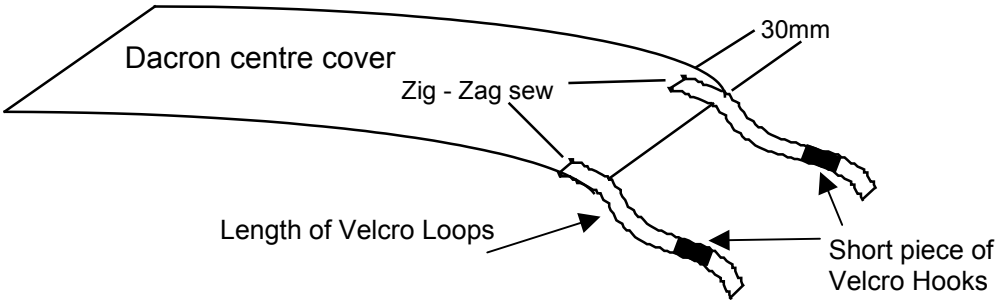
Number 21 *Now done by manufacturer*

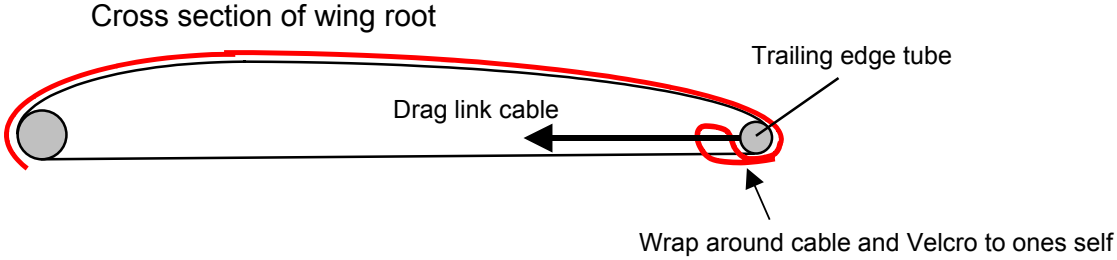
Number 22 *Anytime after wings are fitted*

During a high speed dive, the rear end of the centre wing cover may released from the Velcro attachments where it connects to each wing. Additional securing is needed here in the form of two Velcro straps, sewn to the cover which can wrap around the trailing edge of the wing and loop around the drag link cable. See sketch V

Sew a length of Velcro loops onto the wing top centre cover, and make it long enough to go under the wing and wrap around the drag link cable. Sew a short piece of the Velcro hooks onto the loops so it can secure to itself.

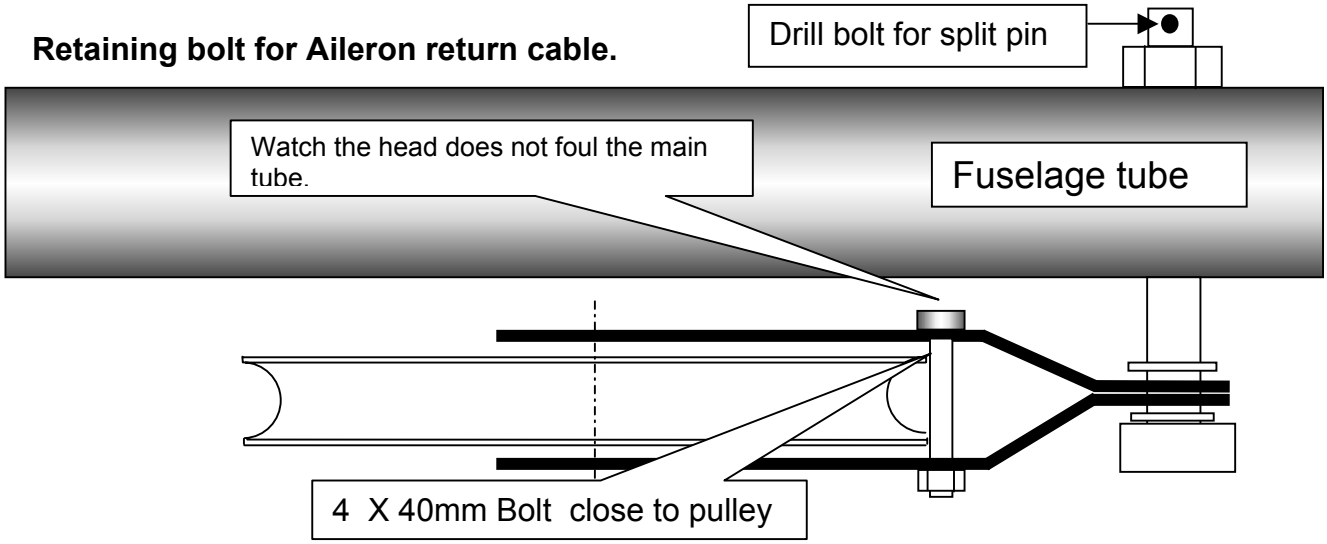
Sketch V





Number 23

Retaining bolt for Aileron return cable.



It may be possible on some aircraft for the cable of the Aileron return cable to jam down beside the pulley and the support bracket, particularly when assembling the final stages of the control systems.

In order to prevent this happening please implement the following **:-**

Drill a 4 mm diameter hole through the aluminium bracket supporting the Aileron return pulley in the centre and as close to the pulley as you can without touching it. Insert the bolt and gently tighten until the bolt is just nipped. Do not crush the bracket. This 4 X30mm bolt and nyloc nut can be found as spare in the main kit, and will prevent the cable from riding out over the pulley should the cable become excessively slack for some reason.

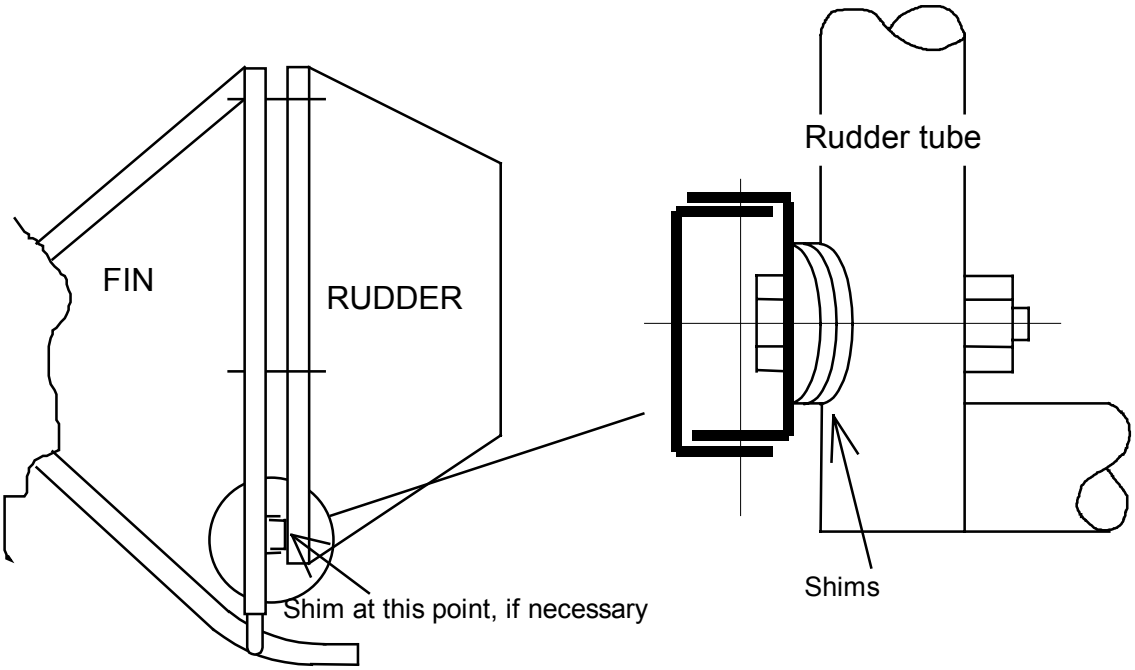
Also drill the 6mm bolt for a split pin.

IMPORTANT

Remove the bracket to drill the hole, drilling this in situ with a hand power drill could result in the fuselage being drilled as you break through.

Optional During the fitting of the rudder to vertical stabiliser the tension caused a slight curvature of the fin tube, and the rudder tube. There are three hinges on the rudder that may not align properly, due to this curvature. The solution is to shim the bottom hinge location to re-align the three hinges. The 6mm dia bolt may need replacing for a longer one to accommodate the change in length. Some curved shim washers are provided for in the kit, if you need to use them. Correcting this miss - alignment relieves the hinges of unnecessary strain, and hence accelerated wear.

See Below



Optional

It may be worth while when the instrument panel is fitted to the top portion to provide captive 4mm nuts on the back of the instrument panel. This allows much better access to the pedals, rear of instruments etc. at a later date by removing the panel easily, without needing to find the nuts at the back. You will soon realise that access to this area is a little difficult.

Optional BRS Parachute installation

This aircraft has been approved during the Section S testing and submission for the installation of a **Ballistic Recovery System**, which allows the aircraft and occupants to be parachuted to earth in an emergency.
It is **not a mandatory requirement** for Section S, but if installed, the installation must conform to **Section S standards, Subpart K.**

Installation for the BRS will be listed in the Homebuilt Aircraft Data Sheet and the installation must comply with this.

WARNING

The BRS does move the Centre of Gravity rearward somewhat, and will require a compensating balance weight forward, usually a lead weight bolted securely to the floor or engine support, as far forward as possible. Depending on the weight of the BRS, and its position, calculations can determine the mass of the balance weight when the position and weight of the BRS is known.

Optional Doors

Approved doors may be fitted and are supplied by Wessex Light Aeroplane Co.

Optional Electric fuel pump

If the fuel pressure cannot be maintained at above 0.2 bar at all power settings then an electric fuel pump will need to be fitted. It normally fits behind / under the pilots seat area, and of course will need a switch on the instrument panel and indicator light to warn that it is on. It should be wired such that it can only come on after the Keyswitch is on. Information if you require it will be sent on request.

Optional - Wheel Spats

Only Wheel spats supplied by the WLAC are presently approved for installation and any other supplied part will need separate approval. These will come with there own fitting instructions.

Optional - Landing Light

Only the Landing Light kit supplied by the WLAC are presently approved for installation and any other supplied part will need separate approval. This will come with it's own fitting Instructions.

Check List for Modifications necessary to conform to Section S for the Xair Microlight Aircraft.

Aircraft Registration Number..... **Kit No**……

Purchase date......

First owners name and address.....

.....

Post Code..... Phone No.....

Inspections may be carried out at intervals, and individually signed off, but before aircraft is check flown the list must be complete, and signed off by a BMAA approved inspector. Jan00*Modified list*

Mod. No.	Description	Inspectors signature	Date
1	**Split pinned 6mm bolts. New nuts**		
2	Split pins for 5mm bolts		
3	Trim 4mm nyloc		
4	Groove & lug Trim.		
5	Trim cable guides.		
6	Wiring of elev. struts.		
7	Stick limit stops.	Now Built in by manufacturer	
8	Washers throttle stops		
9	Zip Ties seatbacks		
10	Plates Main struts	Now Built in by manufacturer	
11	Wing strut links	Now Standard in Kit	
12	Pod locking nuts		
13	Sump drains / Adapters		
14	Pod spacers		
15	Cross tube protection	Now Built in by manufacturer	
16	Link tube / Vents Tanks		
17	Return springs/ Brakes		
18	Parking brake / Confirmation	Optional	
19	Centring Springs/ Rudder		
20	Nylon washers/Jury struts		
21	Re - enforcing sleeves & bolt	Built in by manufacturer	
22	Velcro tails		
23	Aileron Bolt	IN Kit	
24	Shims	Optional	
25			
26			

Additional Information

The enclosed sketches are a suggestion for the Pitot and Static pressure outlet, for the instruments on the Xair and Xair Falcon.

A static vent at the wing is what is presently required by the BMAA.

PITOT HEAD / STATIC VENT

Two suggested methods for mounting pitot/static tubes on the strut, and for hanging from the top of the strut are given.

TUBING

The Suggested tubing used is 6mm OD aluminium. The connecting tube is simple 6mm ID clear polythene together with plastic tee pieces. These simply push on and require no clips. Both of these are generally available from B&Q/Homebase stores in 1m lengths and by the metre respectively. There must be connections at the bottom of the strut where the tubes enter the cockpit, so as to allow removal of the wing, and to provide a means of draining moisture or water from the tubes leading down from the pitot head.

INSTRUMENT FITTINGS.

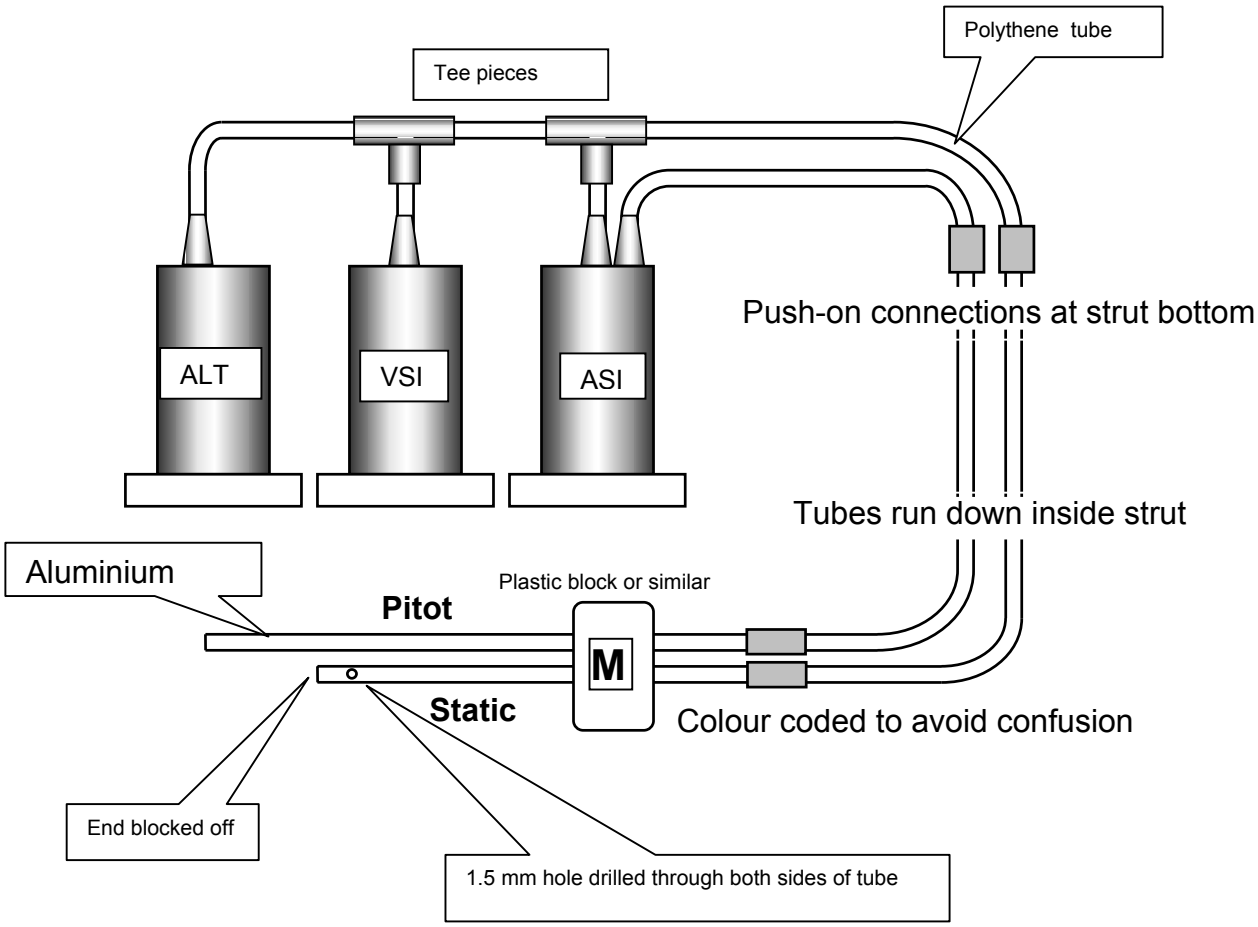
At the rear of the instruments there are threaded holes used for the connection of the barbed plastic outlets. You may have some in your instrument pack, but if not, they are available from the instrument supplier. Just a small amount of any thread sealant on these before assembly would save a lot of bother later; Hylomar will do, but be very sparing. they are 1/8” NPT (American influence).

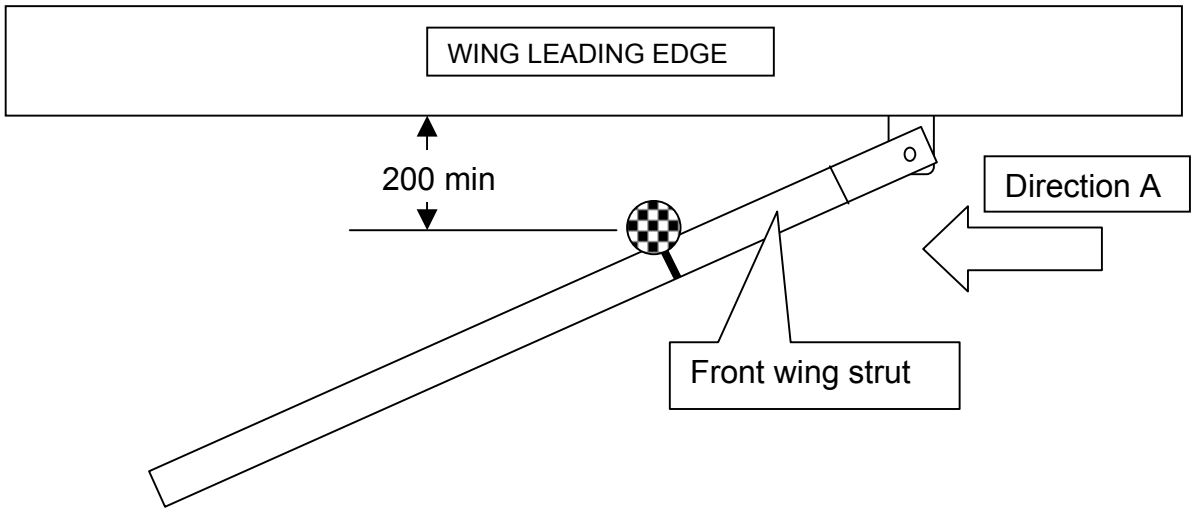
TESTING

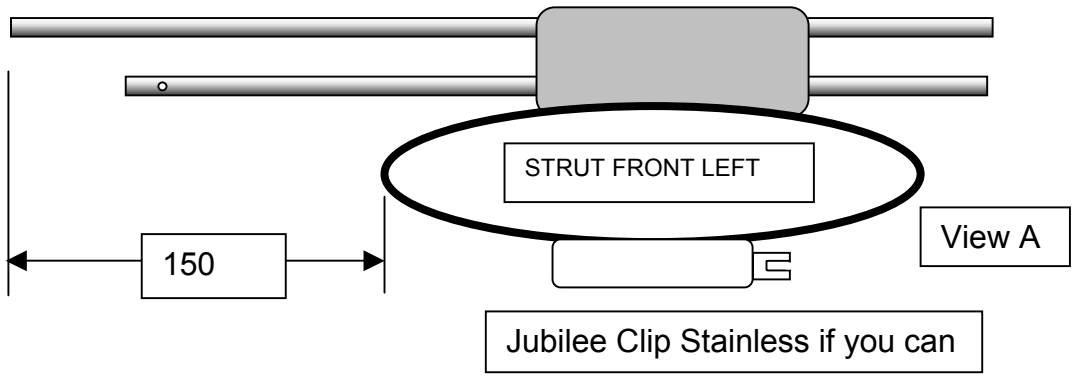
When all is connected and your ready for a test try this: -
Use a friend, or anybody who happens to be passing, to eyeball the instruments while you with the driest mouth possible blow gently down the pitot tube, and suck on the vent tube in turn,

……And I mean GENTLY

when a reasonable reading is obtained apply ones tongue over the end of the aluminium pipe to act as a plug. On the static remove the polythene tube for this test.
The instrument needles should remain stationary, if they quietly go down or move you have a leak.


Polythene tube
Tee pieces
Push-on connections at strut bottom
ALT
VSI
ASI
Tubes run down inside strut
Aluminium
Plastic block or similar
Pitot
M
Static
Colour coded to avoid confusion
End blocked off
1.5 mm hole drilled through both sides of tube

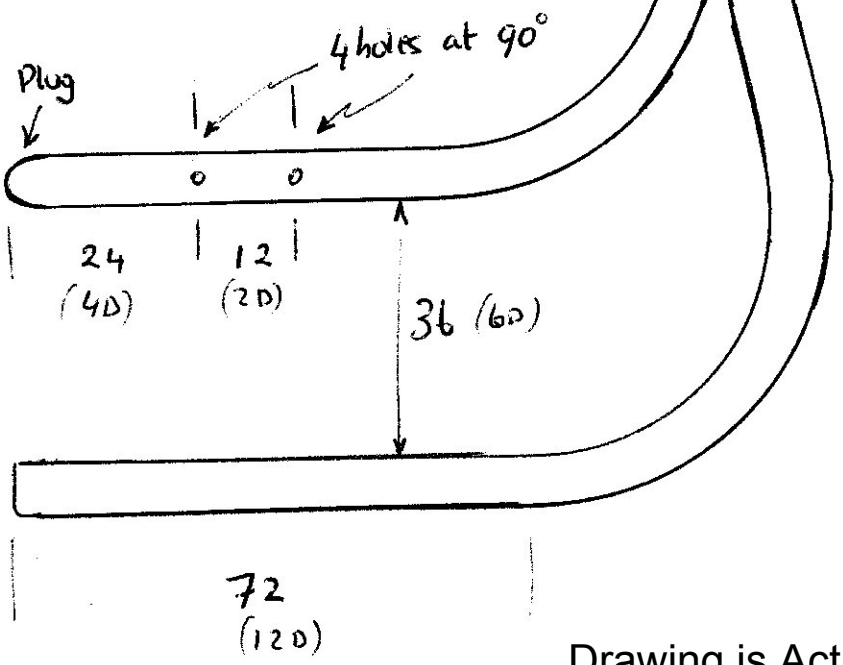

WING LEADING EDGE
200 min
Direction A
Front wing strut


STRUT FRONT LEFT
View A
150
Jubilee Clip Stainless if you can

PITOT / STATIC

For Xair and Xair Falcon

Tubing used is 6mm OD Aluminum



This is a copy of a system taken from a book on Aircraft Design,

All dimensions are based on the diameter of the tube used. 6mm
e.g. The distance between the tubes is 6D - 6 x 6mm = 36mm.

The top tube (static) being a minimum of 200mm from the lower surface of the wing.

A strip of Aluminium was formed around the tubing and holes drilled to match bolts on strut.

NOTE
This attachment method can only be used if sufficient thread remain on bolts, to allow this.

Drawing is Actual Size, so this may be used as a Template/bending guide.

Notes on Xair Flight Test 'Niggles'

Various 'niggles' have been found during the flight-testing of various aircraft. All can be easily remedied on the field, and come under the heading adjustments rather than problems/defects, but they do waste good flying time. They can all be detected and avoided even before the initial flight. They are listed below: -

Stiff & sticky controls

Elevators - If stiff then in flight longitudinal stability is neutral and the stick can be put anywhere and it stays. The trimmer has no effect.
On the ground check by disconnecting various parts of the system to see where the problem lies. All Pivot bolts should be easily turned by a spanner on the head. Use a silicone spray if needed, also check the hinge bolts. You should be able to turn the bolts with your fingers.
Correct tension on the bungee is very important, tighten just enough that the elevator stays up on it's own without falling down again.

Rudder - As above make sure that the hinge bolts are not too tight.
Also check that the pedals, rudder and nose wheel steering align, and nosewheel is moves from side to side easily.

Ailerons - If stiff or sticky, handling can be difficult, but not to the extent of the other controls. Again on the ground check all pivot bolts around the column, check that the allen head bolt at the wing tip is not too tight, and all pully's are free turning.

Throttle - A stiff & sticky throttle makes setting the throttle difficult, as it is difficult to determine when you have reached the stops. The remedy is to back off the throttle-retaining clamp until a smooth, but not loose throttle has been achieved.

Other items worth noting

Instruments
On full rudder, toes have fouled various items at the back of the instrument panel. Make sure that there are no cables/ leads/tubes that will foul the full movement of the pedals with large feet on them. Large instruments low down on the panel should be particularly avoided.
Even allowing for parallax, several slip ball have been out. Make sure the slip ball is central with the aircraft fuselage level i.e. wings level - equi-distant from the ground at the tips.

There have been cases during engine runs that the ASI has had a reading. This has been due to a static leak. Under reading ASI have been observed in the air. Check both static & pitot for leaks. Also ensure the pitot is aligned with the airflow.

Tachometers are notorious for error, and even the digital ones are not absolutely accurate being highly damped. These should calibrate by strobing them.

Seat belts
In one instance, the shoulder straps had been incorrectly fitted through the buckles. They can look right, and can be adjusted but won't hold a forward load as they slip.

Check by sitting in and tightening the harness, then see if it positively restrains you. The straps need to come up from the lap strap, through the buckle on the shoulder strap, and then through the adjusting slider from the top, then back through the slider with the tail routed back through the buckle itself. If the tail is not routed back through the buckle it will slide. Once through the buckle, it will remain there and the harness can be adjusted in the normal way with the sliders.

Battens

There have been cases of the trailing edge of battens popping out in flight. This is usually because the sail has not been tighten properly. All battens should first be removed, and then the sail tightened, but not overly. In doing so ensure that the inboard underside restraining tubes are fully home and the rear-tensioning strap on them are correctly located i.e. not on their very end. On replacing. It should be found they are now be stiff to push home. Not only should the battens stay in, but also the aircraft most likely will go a few knots faster.

Windscreens

Several windscreens have been found to ‘cave’ in. This has always been on the pilot’s side and is due to the piping/wiring/cables being forced through the windscreen along the engine support struts. Check the screen is not being forced. In addition pressure from the windscreen has been known to reduce cut of the fuel supply. Check the screen does not bear on the piping. Ideally the fuel pipe should go through the screen in an uncrushable tube - e.g. rigid plastic sleeving over the fuel pipe.

Flight Test

When calibrating the ASI, remember that even if the ASI is in mph, the GPS should be set to knots (that is what the CTO requires to calculate the calibration). Also remember the stall for an MAUW Xair is around 32 knots CAS, so anything else indicates an error. Remember to set 1013mb on the altimeter for the test.

Watch the fuel filter for air bubbles, which would indicate, leaks and particularly monitor fuel press on full power application.

End Loaded bearings and short stub axles.

It has come to notice that some of the main wheel / stub axle assembly may not be as it should. If the 6 mm bolt is done up in this situation then two things occur.

1: The bearings will be excessively preloaded endways and will fail prematurely

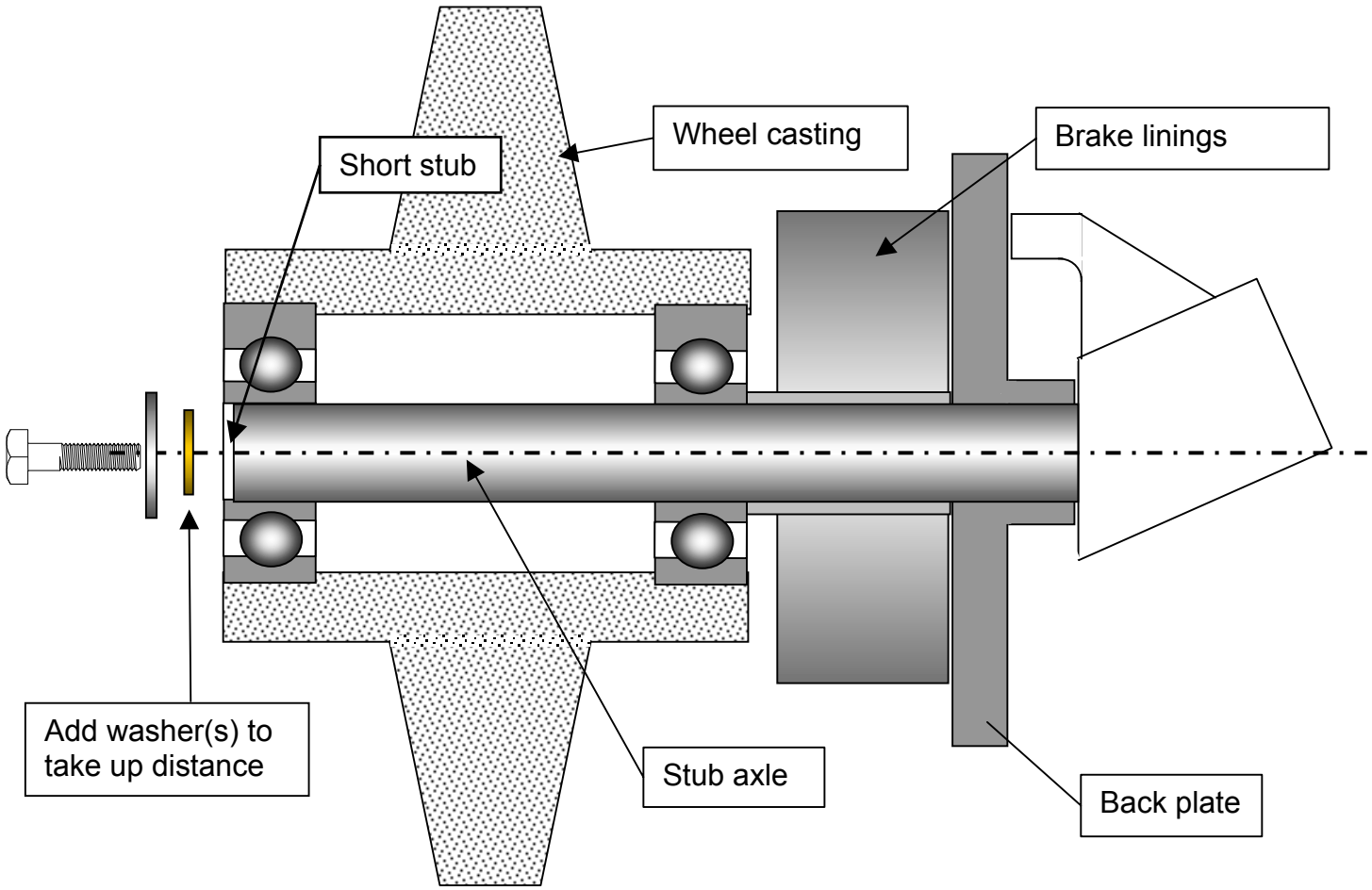
2: The bolt will not be properly done up, which could lead to the embarrassing situation of a wheel coming off just when you need it.

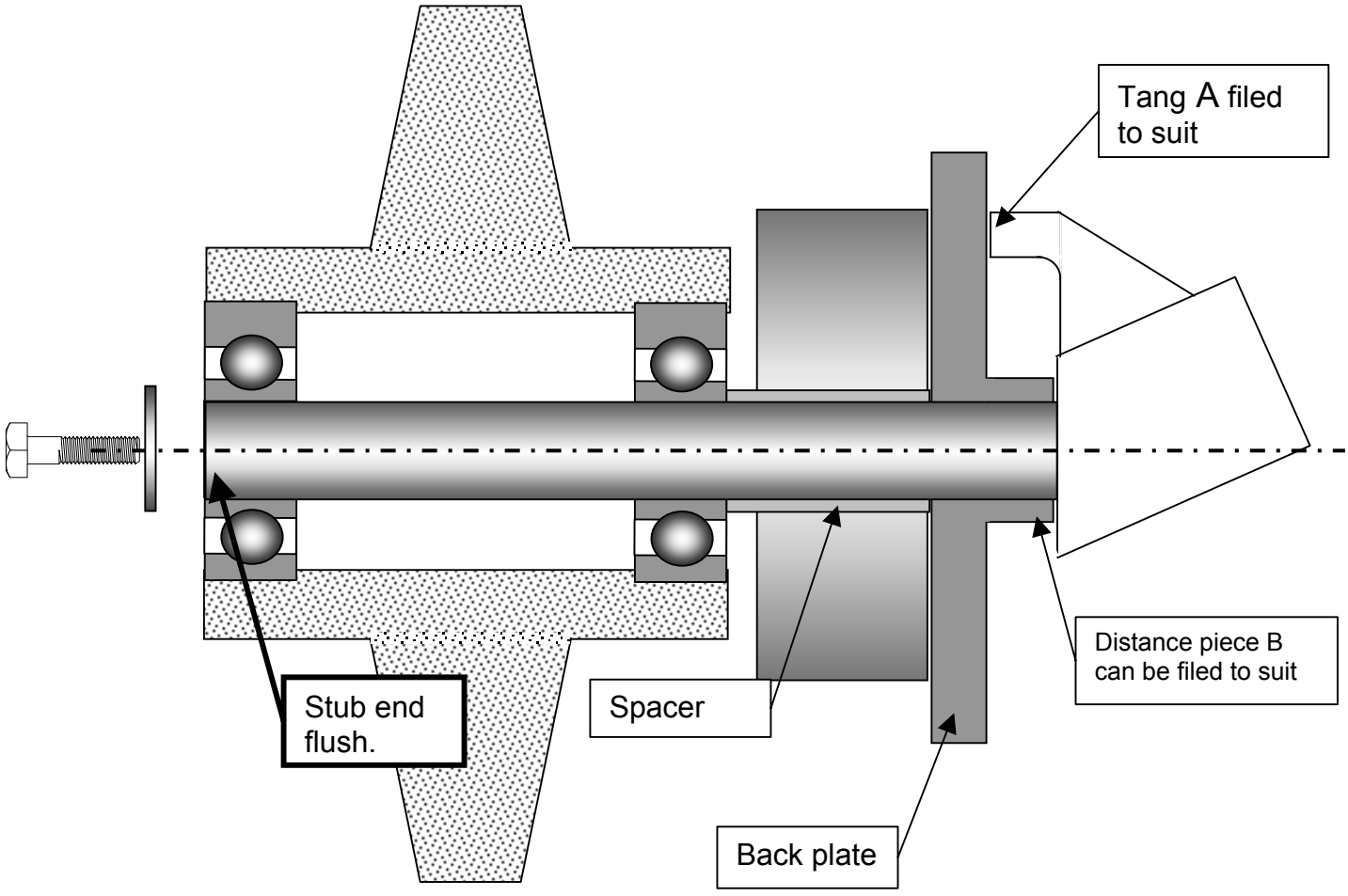
The out board bearing should just be flush to end of the shaft, and then the bolt screwed in with it's large washer to retain the wheel. Use a little Loctite 243 (blue) on the thread. If your bearing stands proud, and you have established that all bearings are fully seated.

The Fix

- you can either file away a little of the distance piece **B** to remove a little length, keeping the removal of metal square to the hole. This is really a **fitting exercise if you take my meaning**. It may be about 0.5 to 1.5 mm that needs removing. This will allow the brake backplate to move further onto the stub axle. At the same time of course some material will need to be filed away from the tang **A** that prevents the back plate from revolving. Be sure your back plate of the brake does not foul the brake drum as it rotates. Please see the sketch, to illustrate the areas in question.

Or (Preferred) You can add washers to the end of the stub axle to build out to the bearing. We have found this to be the best and easiest method and have found that normally one thick washer will do the trick.


Short stub
Wheel casting
Brake linings
Add washer(s) to take up distance
Stub axle
Back plate


Tang A filed to suit
Distance piece B can be filed to suit
Stub end flush.
Spacer
Back plate

The Xair Battery installation

Sample method used for standard 582 installation. Other engines will require a different design as it needs to be mounted further aft.

Keel Mounting (in wing)

Please refer to **Sketch A** which also continues on the next sheet.

Some dimensions have been given, but in general if you manufacture to this design, even if you have slight changes, everything will be OK.

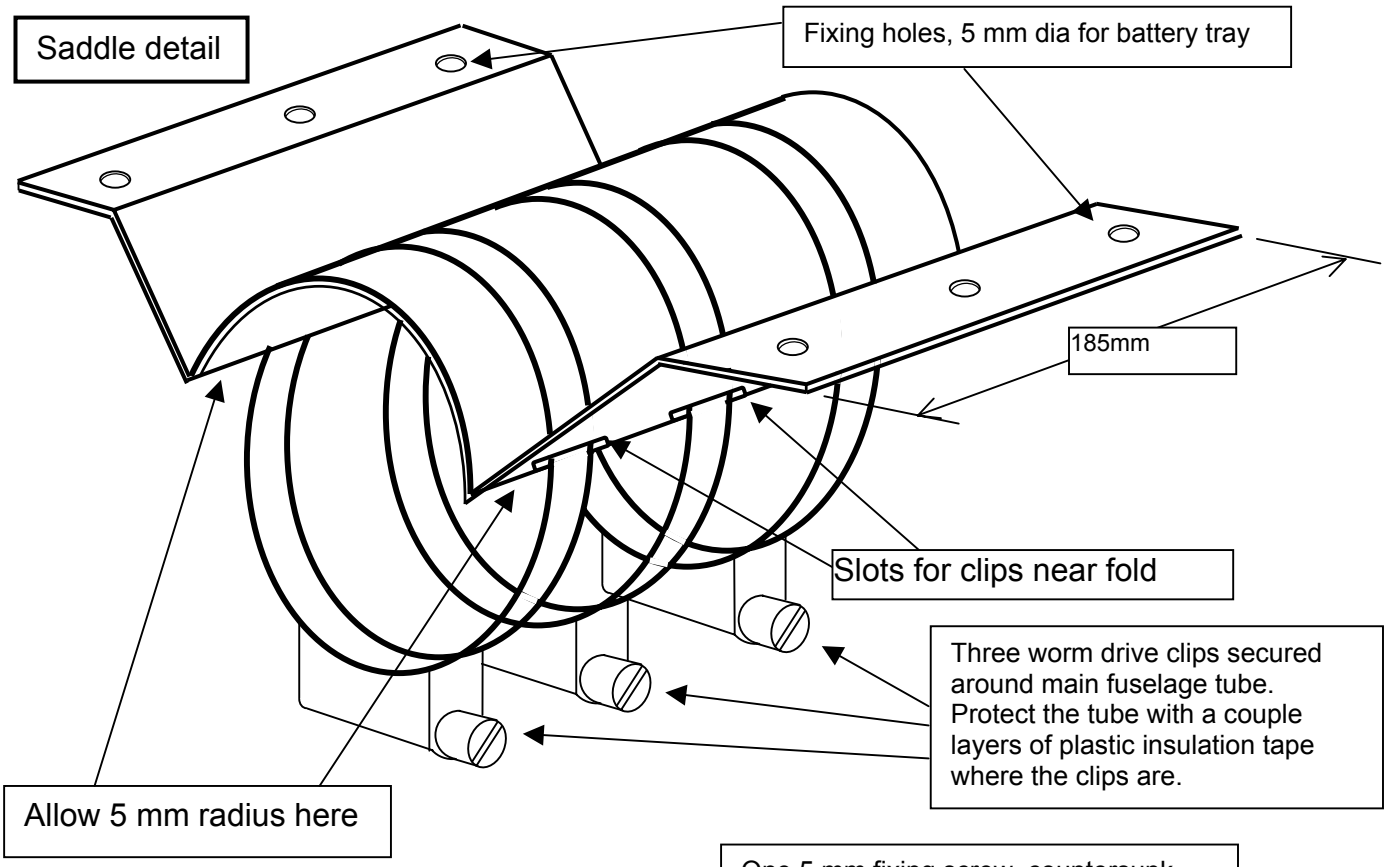
Please remember the battery is a heavy lump, if subjected to vibration, it's better for it to move about slightly (hence the lining and zip ties) rather than be secured solidly in position where all sorts of resonant frequencies could be set up. This is a powerful energy source, and presents the highest risk of fire. Make sure all is well insulated, and protected.

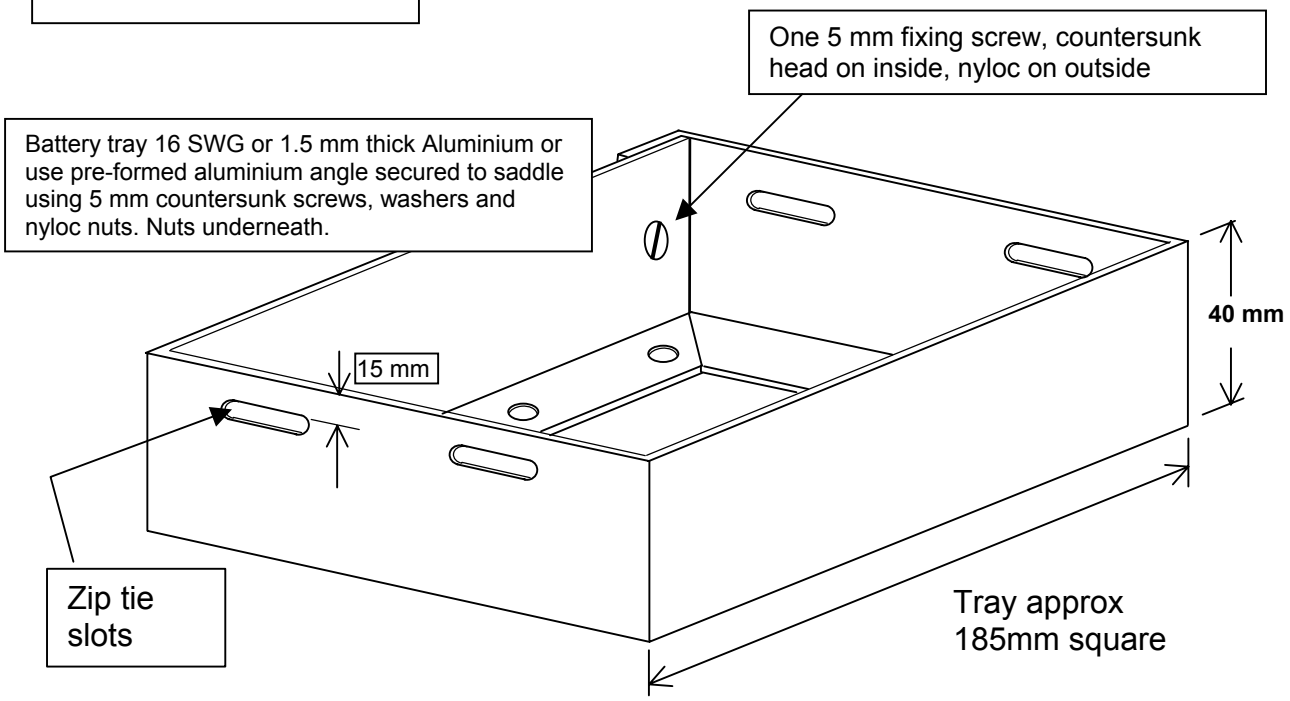
Large Zip ties about 12 mm wide, and as long as you can get them should be used to hold the battery in either method.

Approval will be obtained if you state that the battery was installed in a similar manner to aircraft **G- BYOH** which already has approval for this style of installation, together with your loading photographs. Battery for this aircraft was 6kg.

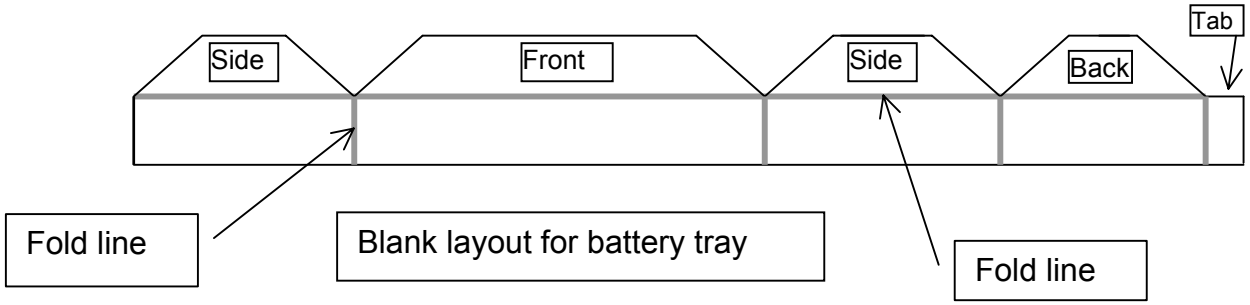
Indestructible Insulation,

Bill

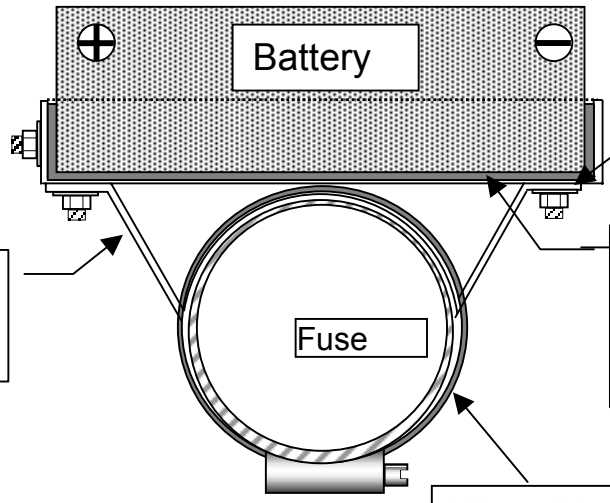




Note :- Not to scale



FRONT VIEW



Battery tray screwed to saddle using 6 X 5 mm countersunk screws 15mm long

Formed 2 mm aluminium sheet saddle

Suitable PVC Medium density plastic box or plastic lining to prevent battery chaffing due to vibration

Worm drive clips size 50-70mm Choose quality clips.

Any problems with the main kit, spare parts, etc. -

Contact Christine on 01823 256 258

For Technical Help

Contact Seamus 00353 86 2444866