NORTH WING

NORTH WING EZ2 170 / EZ2 190

HANG GLIDER OWNER'S MANUAL

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Introduction

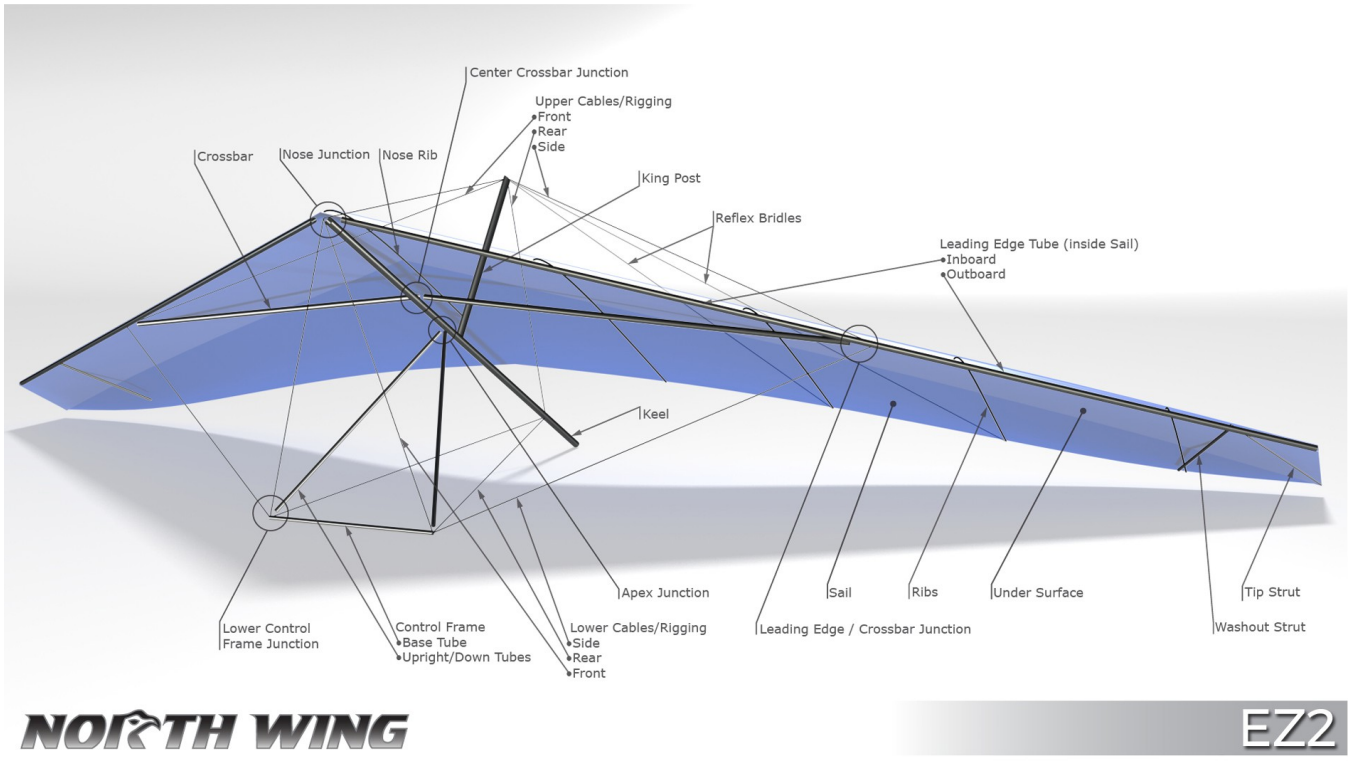
Congratulations on your purchase of a North Wing glider. We believe it to be the finest available recreational flex-wing glider on the market today. It achieves an exceptional performance and very good handling for many reasons. The EZ2 has a sailcut that is carefully matched to the leading edge bend, floating cross-tube, mylar reinforced leading edge pocket. These features combine to ensure a good usable glide angle, an excellent sink rate and a broad speed range making the EZ2 both an excellent beginner glide/soaring wing and a reliable cross country glider. Like any hang glider it has been manufactured and tuned to close tolerances and its performance and safety depend on you maintaining those tolerances. We require that you read this owner's manual thoroughly and follow its instructions to the letter when you set up the glider, fly it, break it down for storage or shipping, or perform repairs or maintenance on it. Failure to do so will not only invalidate your warranty but may also compromise the safety of your glider. The safety of this or any hang glider ultimately rest with you, because hang gliding is an inherently dangerous sport and can induce injury or death even to good pilots flying safe equipment. Because the responsibility of flying and maintaining the glider rests entirely with you, the risks of damage or injury you may cause to others and to yourself also rests entirely with you. We believe that in order to safely practice the sport of hang gliding, you must accept this responsibility, fly conservatively, and avail yourself of all safety equipment appropriate to the conditions you fly in. No glider is totally safe. It is entirely possible to push the EZ2 beyond It's tolerances that could result in a structural failure. Very strong flying conditions may also cause structural failure. Aerobatic maneuvers, pitch angles beyond 30˚ up or down, bank angles exceeding 60˚, aggressive stalls, and spins are maneuvers that should never be attempted under any circumstances. We hope to provide you with many hours of enjoyable flying. If you ever need any spare parts or advice do not hesitate to contact your nearest North Wing dealer, If they are not available, contact us direct. All of us at North Wing would like to welcome you to the growing family of EZ2 pilots.

Section 1 - Specifications

Technical Specification	EZ2 170	EZ2 190
Span	30'	32.5'
Nose Angle	118°	118°
Aspect Ratio	5.3	5.5
Sail Area	170 sq/ft	190 sq/ft
Number of Top Ribs Per Side	10	12

Other dimensional specifications may be found in Section 7.

PARTS & COMPONENTS



Section 2 - Flight Operations / Limitations

Placards bearing test flight information and operating limits are located on the glider's left cross-tubes. Special care should be taken to note the operating limitations, which are clearly stated on the flight operation placard as follows:
FLIGHT OPERATIONS should be limited to non-aerobatic maneuvers - those in which the pitch angle will not exceed either 30 degrees nose up or nose down of the horizon and in which the bank angle will not exceed 60 degrees.

WARNING: The owner and operator must understand that, due to the inherent risk involved in flying such a unique vehicle, no warranty is made or implied of any kind against accidents, bodily injury, or death. Operations such as aerobatic maneuvers or erratic pilot technique may ultimately produce equipment failure and are specifically excluded from the warranty. Reference workmanship warranty described in Section 10 of this manual.

OPERATING LIMITS

Wing Loading	**EZ2 170**	**EZ2 190**
Optimal Weight Range:	130-180 lbs	170-225 lbs.
Usable Weight Range:	115-210 lbs	155-250 lbs.
Maximum Stall Speed:	25 mph	25 mph
Minimum Top Speed:	35 mph	35 mph
VNE (Never Exceed):	46 mph	46 mph
Load Limits Positive:	53 mph @ 30 deg	53 mph @ 30 deg
Load Limits Negative:	37 mph @ -30 deg	37 mph @ -30 deg
Recommended USHGA Rating:	Hang 1 to Hang 5	Hang 1 to Hang 5

This glider must not:
a) be flown by more than one person at a time.
b) exceed 30 degrees nose up or down to the horizon.
c) exceed 60 degrees bank angle left or right to the horizon.
d) be flown inverted or backwards.
e) be flown with auxiliary power unless designed, installed and tested by the factory.

Section 3 - Testing

The EZ2 glider has undergone extensive testing and has satisfied the standards of the designers and North Wing Inc. as an ultra light glider. The EZ2 has not been tested to any state or federal airworthiness specification.

A combination of stainless steel trailing edge reflex lines and washout struts along with airframe geometry provide the most effective positive pitching system known to date. Careful test vehicle pitch experimentation was necessary to determine trailing edge line lengths. Altering those overall dimensions, even to the slightest degree, will decrease your glider's performance, or more importantly, its pitch stability.

You can verify the tested configuration of your EZ2 by using the compliance verification sheet (Section 7 of this manual).

Section 4 - Assembly From Broken Down Form

FULL LENGTH SHIPPING FORM:
Your EZ2 will probably be shipped to you in a 13 Ft. length configuration.

13 Ft. SHIPPING FORM:
If your EZ2 was shipped to you in the 13 Ft. shipping form, you can reassemble your glider to its full length by following these procedures.

1. Unpad all tubing ends. Note the 3/4" deep slot machined at the front end of each rear leading edge sections. The rear leading edge sections should be marked to indicate right and left sides.
2. Assemble your glider's control bar as described in Section 5 of this manual, and flip the glider on its folded back control bar, laying flat on the ground. Unfold both wings and spread both leading edge front sections a foot on each side of the keel tube.
3. Insert the corresponding leading edge rear section into the double surface from the tip.
4. Align both tubes and slide rear section into its front sleeve until it stops on the pin. Rotate the rear tube to position where the tip strut hook is on the topside of the leading edge. To properly align the slot with the wing bolt, push the leading edge rear section the rest of the way (3/4"). It should then be impossible to rotate the leading edge rear tube in its front section. Please insure that this is the case.
5. You are now ready to mount the sail on its leading edge tip plug. The swiveling tip plug will probably have been located in position with vinyl adhesive tape, which needs to be removed. The U-shaped webbing "loop" is easily slipped back on its plugs and should be secured in position using the two velcro tabs attached to the inside of the sail tip webbing "loop". Check the entire assembly for security and free rotation.
6. With all other shipping pads removed, your EZ2 is now ready to be fully assembled as described in Section 5 of this manual.

BREAK DOWN FOR SHIPPING:
Carefully reverse the above procedure, padding all possible wear points.

Section 5 - Set-Up And Fold Down Procedures

Your EZ2 unique components were designed to set-up in the simplest, most efficient manner.

The instructions given below provide you with the step-by-step procedure for setting up your glider. By closely following these instructions, you can assure yourself a smooth, quick set-up.

The EZ2 may be set up in either of two ways. The first technique is with the control bar set into position at the beginning of the procedure, and it allows the glider to be set up off the ground. This is acceptable in lower wind conditions, and it is effective in keeping the sail clean. In higher winds, however, the second procedure is preferable, in which the glider is left on the ground until ready to launch. In this procedure, the control bar is set into position last, and it reduces possible damage to the glider in the event of a sudden gust of wind.

1. FIG. 1: Place the glider on the ground with nose 90˚ to the wind and with the zip facing upward. Remove the ribs from their pocket in the bag, unzip the cover bag, undo the glider ties and assemble the control frame. NOTE: Check that all the rigging is outside of the control frame triangle and check that the bolt, castle nut and ring are fully assembled.

2. FIG. 2: Roll the glider over so that it is the right way up and stand on the control frame.

3. FIG. 3: Remove the cover and all the ties. Carefully walk each wing out to its approximate flying position. AT THIS STAGE IT IS ESSENTIAL TO ENSURE THAT THE KEEL AND LEADING EDGES ARE ALWAYS IN THE SAME PLANE.

4. FIG. 4: Check the battens against the template and for symmetry. Placing all white rib fittings in the right wing, insert the battens from root to tip with gentle pressure, until the batten meets resistance, then lift sail at trailing edge and gently shake it in order to billow out. This enables the rib to be completely pushed into place over the cross spar.

   DO NOT FORCE! To secure with bungee cords, lift the loop over the rib end fitting. The last 2 ribs on each side are secured in position with a “double purchase” method. To secure, place the bottom loop onto the rib end fitting and pull the top loop over and into the fitting notch. NOTE: The nose rib is inner-sleeved and can remain in the sail at all times, and need not to be removed, except for periodical inspection.

5. FIG. 5: Find the cross tube tensioning wire up inside the keel pocket. Then using the black webbing handle pull the cable back to snap into the spring catch. Now you will need to hook up the back top wire into rear spring fitting also.

   ENSURE THAT THE SPRING PIN IS PROPERLY INSTALLED WITH THE “PULL BACK” SHACKLE SITTING CORRECTLY AROUND ITS CATCH.

6. Install the tip batten. Look through the leading edge pocket at the wing tip and guide the tip batten onto the tip hook about 20” up the leading edge. Secure it with the same “double purchase” method described above in step 4.

7. FIG. 6: At this point attach the front flying wires to the nose plate by slipping the ring around the nose spring catch.

8. Install if necessary the nose batten “tail end first” from the nose of the glider seating the front end of the rib on the keel tube just in front of the nose plate.

9. FIG. 7: Install the glider's nose shroud, starting with the two top velcro tabs and gently pulling the shroud down and around the nose plate to connect the two bottom velcro tabs on the shroud to its corresponding tabs sewn on the under-surface.

PREFLIGHT INSPECTION

The nature of the EZ2 is such that most of the pre-flight checkpoints common to other flex wings are hidden to eliminate parasitic drag. A thorough pre-flight procedure is mandatory with all aircraft, however, and the best technique is a circular walk around the glider.

Start at one location, the nose plate for example and check each assembly point available for inspection. Keep in mind the THREE MOST CRITICAL set-up factors. These are the nose catch, the control frame base tube bolt and the cross tube tension cables attaching to the spring catch on the keel. As stated in the set-up procedure, ENSURE THAT ALL SECURING PINS ARE PROPERLY POSITIONED AND CANNOT PULL THROUGH.

Starting at the nose, a suitable pre-flight checklist would be:

1. Sight along both leading edges checking for similar curves.
2. Walk towards the tip feeling for dents in the tube.
3. Pause at the wing bolts and look into the sail through the velcro opening (under surface seam).
4. Continue to the tip and check the swiveling tip webbing socket.
5. Check the tip struts.
6. Walk to the keel checking the battens to ensure that they are properly secured.
7. Check the luff line attachment points, both at kingpost and trailing edge grommets. *Ensure that the luff lines are not wrapped around the batten ends.*
8. *Check the cross tube wires to spring catch connection.*
9. Check the rear top rigging and luff line attachments.
10. Repeat items 2 to 7 in reverse order.
11. Check the nose catch.
12. Check all the lower rigging.
13. *Check that the control frame uprights are straight and that the bolt is correctly assembled with wing nut and ring.*
14. HOOK IN AND HANG CHECK.
15. Instruments on, set altimeter.

FOLD DOWN PROCEDURE

To fold down your EZ2, just reverse the set-up procedure steps as described above. Included here are a few guidelines to follow which will save you time and prevent wear areas on your sail:

1. IMPORTANT: While setting up or relieving the EZ2's cross tubes and airfoil from tension, *the rear of the keel must remain on the ground at all times!*

2. Always try to fold the wings together symmetrically, bringing both leading edges back together at the same time.

Generally, if anything offers you resistance during any phase of the EZ2 set-up or fold-down procedure, be sure to **stop and investigate**.

Make sure that both the cross-tube tension cables are free to run forward. Roll the sail from the outer luff line into the foam reinforced leading edge pocket. Pull one sail tie just ahead of where the top laterals emerge from the sail, a second one half way between the A-frame apex and the nose plate holding the leading edge pockets overlapped and the third sail tie provided with your glider about 2 feet inboard from the leading edge tip. It is not necessary to over-tighten your sail ties, keep the foam pockets and the rest of your sail free of wrinkles and creases.

3. Neatness and organization are particularly important when repacking your EZ2 disassembled control bar. Cover bag pockets and pads are provided to help eliminate wear points that some fittings might create during transportation.

TRANSPORTATION AND STORAGE

Avoid hard spots pressing on the glider during transportation or storage and have as many supports as possible. Use rope or webbing rather than elastic to secure the glider and tie both ends of the glider to a support or down to the ends of the vehicle in order to stop the glider flexing. It is preferable to keep the glider dry and ensure that it is dry before storing.

Section 6 - Flying Techniques

TAKE OFF

The EZ2 has a neutral static balance and is very easy to launch in both calm and windy conditions. When you hold the glider prior to your take off run, you should have the nose slightly elevated and the wings level. **AGAIN MAKE SURE THAT YOU ARE HOOKED IN!** Run hard and ease the bar out for lift-off.

TURNS

The EZ2 has a straight-forward flight characteristic, typical for a defined airfoil flex-wing. The glider can be easily directed into a turn, even at very low flying speed. However, to obtain the best handling characteristics and fast roll rate, it is advisable to pull in for a little extra flying speed then, to enter the turn, move to one side and push out slightly. The EZ2 will maintain in a turn of a certain bank angle and radius until the turn is removed. Give yourself an extra margin of safety and DON'T fly your glider at the slowest possible airspeed when scratching for lift close to the terrain.

THERMALING

This is also very straight-forward. The trim speed of the EZ2 is slightly faster than the speed that will give you the best climb rate in a thermal. Once you have centered a thermal push out as much as possible without stalling. Maintain anywhere from 10 to 50 degree bank angle, depending on the nature and diameter of the thermal. The EZ2 will maintain a certain bank angle and radius without further input. The EZ2 feels very good in turbulence and it doesn't get displaced very easily even by strong turbulence. The EZ2's handling characteristics have been designed to give you the optimum that you need, to achieve your personal longest cross-country flight. The EZ2 is probably the least tiring glider on the market to fly, because of its ideal combination of light control inputs and inertia. There is not a lot of work involved in flying the EZ2.

STALLS

When practicing stalls always make sure that you have sufficient altitude. The stall characteristics of the EZ2 are very straight-foward. If you push out slowly it is hardly possible to stall the glider at all and the EZ2 will mush without a tendency to drop a wing. The sink rate is more than doubled, if you “fly” the glider in this mode. If you

push out harder, the nose of the glider will come up a little bit higher. A gentle pitch down will follow this and the glider will regain flying speed. There is not a lot of altitude lost in the type of maneuver. Never stall your glider completely with the nose pitched-up very high. This is one of the most uncontrollable and dangerous maneuvers for any tailless aircraft and can result in a tail slide and severe tumble. Stalls in a coordinated turn are difficult to do by mistake. If you push out too much in a turn the glider will turn tighter, unless you are flying very slowly in which case you may enter a spin (see **SPINS** below).

SPINS

The EZ2 will strongly resist spinning. However should you stall one wing in a turn, move your weight forward and the glider will recover quickly from a spin (half a turn) without entering extreme attitudes and without extreme loss of height. This is due to the EZ2'S positive roll-yaw coupling and a neutrally balanced roll characteristic.

LANDING

This is a simple matter. Your final approach should be a straight glide into the wind at faster than best L/D airspeed. Bleed your speed off slowly, wings level, and ground skim onto your chosen landing spot. In light or no wind conditions a full flare is required. When it is time to flare, flare aggressively and abruptly and hold "A" frame out. It is possible to make steep approaches to a landing area or target utilizing the mush mode, this should only be done in steady, smooth winds. It is not recommended to mush the EZ2 all the way to the ground.

Section 7 - Compliance Verification Sheet

NOTE: THESE SPECIFICATIONS ARE INTENDED ONLY AS A GUIDE LINE FOR DETERMINING WHETHER OR NOT A GIVEN GLIDER IS A CERTIFIED MODEL, AND WHETHER IT IS IN ITS CERTIFIED CONFIGURATION.

BE AWARE, HOWEVER, THAT NO SET OF SPECIFICATIONS, HOWEVER DETAILED, CAN GUARANTEE THE ABILITY TO DETERMINE WHETHER A GLIDER IS THE SAME MODEL AS WAS DESIGNED, OR HAVE THOSE PERFORMANCE, STABILITY AND STRUCTURAL CHARACTERISTICS REQUIRED BY THE CERTIFICATION STANDARDS.

GLIDER MODEL:	**EZ2 170**	**EZ2 190**
Glider Weight: (without cover bag)	52 Lbs	58 Lbs
Leading Edge Tube		
A. Distance from the nose plate anchor hole to:		
1. crossbar attachment hole:	124.5”	141”
2. rearmost sail attachment pt:	214”	230.25”
B. Outside Diameter at:		
1. nose	1.75”	1.625”
2. crossbar	1.75”	1.625”
3. rear sail attachment point	1.625”	1.50”
Cross bar tube		
A. “Pin to Pin”	109.5”	121”
B. Outside diameter	52mm	62mm
Keel tube - least and greatest distance from leading edge bolts to:		
A. Crossbar Hinge pin (plates must be resting on keel)	42”	47”
B. Hang loop	62.75” & 63.75”	66.25” & 68.5”

GLIDER MODEL:	EZ2 170	EZ2 190
Sail Chord length at:		
A. 3' from root	85.5”	95”
B. 3' from tip	49”	49”
Total span	30 Ft	32.5 Ft
Placards and test flight stickers located behind pull-back cable catch on the keel		
Recommended pilot flying weight range	120-190Lbs	160-240 Lbs
Recommended pilot proficiency level min.	Hang 1	Hang 1
Bridle measurements - inner	72.75”	84.25”
center	94.25”	109.25”
outer	122.75”	137.375”

(measured from the rear wire exit point at the kingpost cap to the batten application line at the trailing edge.)

Section 8 - Tuning and Troubleshooting

The EZ2 has undergone a rigorous test-flying program in a wide range of conditions. As a result, it is precisely tuned to achieve maximum flying performance. Therefore, it should not be necessary to make any changes in your glider's tuning or configuration. If, however, you have any questions, please contact your authorized North Wing dealer. If any adjustments are made on your glider, we recommend that they be noted in your Maintenance Log (Section 12 of this manual). It is then easy to go back and trace occasional problems. Please bear in mind that certain adjustments, like the cross tube sweep setting, are very critical and often create trade-offs in handling, performance, or (more seriously) safety. The troubleshooting chart below offers you a first solution (first action to be taken) and then a second (or more) solution for any possible problems you may encounter. Please investigate each problem as indicated by the chart. Never make more than one change at a time. This is a basic rule in test flying, which allows you to better keep track of the progress made. We sincerely hope you never have to use this chart.

TROUBLESHOOTING CHART

SYMPTOM	1st solution	2nd solution
Tail heaviness (flies too slow)	B,D	H
Nose heaviness (flies too fast)	B,C	G
Right turn	B,A	F,J
Left turn	B,A	E,K
Yaw unstable (roll response lag)	L	N
Roll unstable	B	A,R
Roll stable	M	0
Breaks left in stall	B	J,P
Breaks right in stall	B	K,Q
Trailing edge flutter	A,S	0
Sail wrinkles	S	M
Loose rigging	A	T
Tight rigging	A	T

TROUBLESHOOTING CHART KEY

KEY	ACTION
A.	Check for proper assembly, twisted thimbles. Crossbar setup cable not fouled on kingpost bolts. All ribs secured, check for proper position of trailing edge lines.
B.	Match all ribs to the airfoil maintenance blueprint provided with your EZ2
C.	Move hang strap back (1/2" at a time).
D.	Move hang strap forward (1/2" at a time).
E.	Increase camber on last 2 cambered left tip ribs by 1/4", or decrease the same on right tip by 1/4".
F.	Increase camber on last 2 cambered right tip ribs by 1/4", or decrease the same on left by 1/4".
G.	Decrease camber on last 2-cambered tip ribs on both sides, 1/4" at a time.
H.	Increase camber on last 2-cambered tip ribs on both sides, 1/4" at a time.
I.	Check leading edges for straightness, and replace if bent.
J.	Increase the tension of the right leading edge pocket, or loosen the tension of the left leading edge pocket.*
K.	Increase the tension of the left leading edge pocket, or loosen the tension of the right leading edge pocket.*
L.	Loosen leading edge pocket on both sides.*
M. to	Tighten leading edge pocket on both sides.* (NOTE: If you are using this step remove sail wrinkles, be aware that excessive leading edge pocket tension will cause excessive leading edge deflection, releasing enough trailing edge tension to cause wrinkles).
N.	Loosen rib tension on both sides symmetrically, starting at the tips.
0.	Tighten rib tension on both sides symmetrically, starting at the tips.
P.	Check for over-tension in the left side ribs #1-4.
Q.	Check for over tension in the right side ribs #1-4.
R.	Loosen tension on ribs #2-4, both sides, to remove excess reflex from these ribs.
S.	Adjust rib tension in the locality of each problem area.
T.	Modify the rigging tension by using the adjustable tangs placed on the top front flying wire.

* To modify leading edge tension, slip the tip webbing off the swivel tip plug and slide the sail forward. You will see that the swivel plug is kept from sliding into the leading edge by a clevis pin mounted in one of a series of holes in the aft leading edge. To increase sail tension, you move the clevis pin to the next available hole toward the end of the tube. To slacken sail tension, move the pin to the next hole toward the inside of the tube. Then replace the swivel tip plug and the tip webbing. Please note the small velcro tabs attached to the tip webbing "sock". Those tabs must be re-attached after each adjustment to secure the webbing "sock" in position.

If your EZ2 has a turn, you have to check for bent battens first and then for bent spars. If you cannot find a bent leading edge, it is still possible, that one of the leading edges has been stressed in a hard landing and this results in slightly different bending characteristics of both leading edges. This is not always necessarily critical and the turn can be tuned out by differential batten bending. The only two battens that should be changed are the two curved tip battens. For example, if your glider has a right turn in it, the battens on the right hand side would require an addition of approximately 1/2" to the slow wing (in this case the right wing).

The camber of the corresponding battens on the fast wing should be decreased by approximately 1/2". This seems to be the best possible method of tuning a turn out of the EZ2. Tightening the batten tension also has the same effect as increasing the camber. Having the batten tension slacker improves the handling, possibly at the expense of glide angle. Pitch trim is accomplished by simply moving the hang loop on the grip tape, which is on the keel.

To make the glider fly faster, simply move the hang loop forward. The trim speed covers a range of approximately 7 m.p.h. (hang loop all the way forward to hang loop all the way back).

NOTE: **Both hang loops** on the EZ2 are **directly in front** of the "A" frame top fittings and kingpost. The main and back-up hang loops are of different colors or at least color-coded. The **main hang loop** is always the **shorter** of the two and always located directly behind the backup.

Changing the main cross spar tension actually changes the nose angle and the anhedral of the glider. Increasing the nose angle WILL NOT necessarily increase the performance. In fact, over-tightening the main cross spar tension can deteriorate the sink rate with no advantage at high speeds. However, slackening the cross spar tension does make the handling lighter.

Section 9 - Maintenance Schedule

Your new EZ2 will require very little in the way of maintenance if you care for it properly in your everyday use. Here are some general points to follow in maintaining your new EZ2 which will help ensure the safety of your flying and the performance retention of your glider. We suggest you follow this maintenance schedule faithfully. Your care will always pay off in the future.

EVERY 10 HOURS:

- Check all ribs against the airfoil maintenance blueprint.

EVERY 50 HOURS:

- Inspect all cross tube support cable components (tangs, pins, nuts, bolts, cross tube plates, and cable itself).
- Inspect all rib tensioning cords.
- Check all tubing for possible wear damage, which could occur during set-up, fold-down, or transportation.
- Inspect sail mounting grommets and webbing at tips.

EVERY 100 HOURS:

- A complete inspection of your glider is recommended, including all rigging and components, replacement of any worn or bent bolts or locknuts connecting 2 moving parts together (i.e., cross tube plate junction bolt, crossbar clamp bolt, etc.)
- If badly scratched, dinged, or damaged, the control bar should also be replaced.
- A professional sail maker should mend critical sail tears. (see also **SAIL** maintenance below)
- Please contact your dealer for a complete and professional inspection of your glider.

SAIL

1. If you must wash the sail, wash it with a light detergent only. Better still, wipe the sail down frequently with a soft, damp cloth and that will keep detergent washing to a minimum.
2. Acetone or alcohol can be used to remove stubborn stains without harming the sail. Do not use any solvents on a mylar sail.
3. Rinse very thoroughly after cleaning with any detergent or solvent.
4. To renew the luster of Dacron, you can use a product called “Sail Bright” available from marine hardware stores.
5. Apply sail repair tape to any rips or tears in your sail. This will prevent fraying on the edges where the tear is located. However, do not worry about small tears continuing unless they are located at stress points.
6. Keep an eye on all the grommets and all areas of the sail that take extra abuse.
7. The best thing you can do for your sail is to always use the bag. Do not carry your glider on top of a car, even for short distances, without one. Sun and weather cause more deterioration than hours of flying. Keep your EZ2 covered when not in use.
8. Be careful and precise when you re-pack your glider after each flight. Keep all the foam padding that arrived with the glider when it was new, tie everything off the same way. A few extra moments when you de-rig the glider will give you many extra hours of noiseless flight.

CABLES

1. Naturally any frays or kinks in your cables should be examined with great care and any frayed cables should be replaced immediately.
2. Many expert pilots replace their flying wires every 75 hours, regardless of wear. This is certainly worth considering. Each cable has a breaking strength in excess of 800 lbs. Actual non-aerobatic in-flight loads seldom exceed 400 lbs. Inspect the thimbles - if elongation is evident, 300-400 lbs load has been applied to the cable, ferrules and thimbles. If you must constantly set your glider up and break it down in rough, rocky areas, you will need to replace you cables more frequently than someone who flies the grasslands. Use your best judgment; those cables hold the frame together.

SPARS

Examine your spars for dents, wear spots, corrosion and bends during every pre-flight check. To maintain the structural integrity of the spars of your glider, always use a well-padded glider rack on your vehicle. Ideally **the rack should support the glider in three places over the entire length**. If a glider has been badly looked after, the spars should be replaced.

HARDWARE AND BOLTS

1. For all practical purposes, North Wing hardware is indestructible in hang gliding (flight) applications. “AN” bolts, however, are not indestructible and bending them even in light crashes is common. Check them periodically to be safe. Discard and replace any bent bolts.
2. All bolts, of course, should show exposed threads above the locknut during pre-flight.

BATTENS

When inserting battens, place them in their pockets smoothly and gently to avoid wear on the sail and on the batten ends. Pushing them rapidly into the pockets at an angle will wear out the stitching on the edge of the pockets, not to mention possible damage to the sail itself.

ANNUAL INSPECTION

Even if yours is the best kept EZ2 you should have the glider stripped down for a **full inspection at least once a year**. This can be done by you or preferably by one of our professional North Wing DEALERS.

With **proper care and maintenance**, your EZ2 will remain for some years at a high level of airworthiness. There is much that we still don't know such as what is the effective lifetime of a hang glider before material fatigue and degradation compromise the airworthiness of the gliders. We do know that there are forces in nature, which can severely compromise your safety regardless of the quality of design or condition of the aircraft you are operating. Your safety is ultimately your responsibility. We strongly recommend that you **fly conservatively**, both in your choice of the conditions in which you fly and the safety margins you allow in the maneuvers you attempt. We recommend that you only fly with a harness that has been tested for strength and that you **always fly with an emergency parachute**

system.

Section 10 - Guaranteed Maintenance

The EZ2 is a very sophisticated machine and its airworthiness requires scheduled and professional attention.

Every six months, from the date of purchase, your authorized North Wing dealer will inspect and maintain all the different components of your new EZ2. He will also suggest the replacement or repair of all bent or damaged parts of your glider. This unique service, provided by all North Wing Service Centers, should be followed very seriously at the risk of voiding your warranty. Just make an appointment with your dealer and set up your glider in a “ready to fly” configuration. Your dealer will perform the inspection and will fill out the Maintenance Inspection Sheet below.

GLIDER MAINTENANCE INSPECTION SHEET

Customer's Name: _____ Purchase Date: _____

Glider Model/Size: _____ Serial Number: _____

Inspection Points (Description)	6 Months	1 Year
Check all ribs against pattern (including nose rib). Check all sail attachment points (grommets, screws, rib cords, fittings) Check all tubing for straightness, normal corrosion, wear, and fatigue areas (inner and over sleeve edges). Check all nuts and bolts (proper tightness). Check all rib cords for wear and proper tensions. Check hangs straps for normal wear and U.V. exposure.		

Six-Month Inspection Comments:

Signature: _____ Date: _____

One-Year Inspection Comments:

Signature: _____ Date: _____

Section 11 - Glider Disassembly

PREPARATION

In order to best perform this operation, you must first place your glider “right side up” on two saw horses located 3 feet from both ends, with all ties removed and with the leading edge spread approx. 1 ft apart. You can actually perform the same operation on a clean floor or lawn.

Next, you need to flip the sail on the outside and the top of the airframe in a manner to expose the under-surface facing upwards. If your glider is equipped with cross-tube to leading edge junction inspection zippers, open the zippers and move the sail around to allow you to work on the cross-tube to leading edge junction. If your glider is not equipped with that option, you will find a corresponding access point to the desired junction in the form of a velcro opening running along the under-surface seam. By separating the velcro and positioning the opening over the junction, you can perform the necessary steps. You may want to dismount the sail at the leading edge tips and slip the sail slightly forward to provide better working access to the cross-tubes junction.

STEP #1: Remove the safety wire, the lock nut and slip both side cables tangs from wing bolt.
STEP #2: Disconnect all four trailing edge reflex lines ball terminals from the cable loops and slip the lines off the grommets.
STEP #3: Remove the screws securing the sail at the nose plate junction, slip the sail back a bit and remove the top front cable tang off the top nose plate. Slip the cable off its sail slot running along side the nose rib pocket. At this point, we would recommend that you “coil” all the free top rigging into 6” rolls in order to keep the procedure organized.
STEP #4: Now you must detach the lower rear rigging tang from the keel tube. The tang is fastened to the keel with the same bolt retaining the cross-tubes “pull-back” cables catch. You will need a 3/16” allen key wrench to perform this step.
STEP #5: Lastly, you will need to completely disassemble the shackle assembly connecting the 2 “pull-back” cables and the top rear cable together and feed both cross-tubes “pull-back” cables off the two little webbing loops located on each side of the sail kingpost hole.

STEP #6: You can now proceed to slip the sail off the rear of the airframe, taking great care not to catch the sail on any parts of it. Be especially careful when nearing the washout tubes, the cross-tubes center junction, the control bar apex and the wing bolt area. You may wish to pull out the foam or mylar leading edge reinforcement at this time, depending on the nature of the disassembly.

GLIDER REASSEMBLY

The reassembly procedure of your EZ2 is best achieved by simply reversing the steps described above. Please remember that optimally **locknuts should not be used twice**, and that the disassembly and reassembly of your glider provides the best opportunity to give and extensive and thorough inspection to each and every component. **Take advantage of it!**

INSPECTION

Check the sail for tears and abrasion. Have any damage repaired by a professional sail maker. Inspect all other parts for damage and replace any thing that is suspect. Pay special attention to the lufflines, hang loops and rigging. If they show **ANY** signs of wear then replace them.

A FEW LAST WORDS

Your North Wing EZ2 is a sophisticated high performance hang glider, that will give you years of safe and enjoyable soaring, provided that you treat it properly and always maintain a healthy respect for the demands and potential dangers of flying. Please remember that aviation is always potentially dangerous and that your safety depends on you.

You are reminded, that you fly a hang glider at your own risk.

SEE YOU IN THE SKY!

North Wing Inc.

Section 12 - Maintenance Log

Glider Type: _____ Serial Number: _____

Date	Work Accomplished	Initials
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
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_____	_____	_____
_____	_____	_____

NORTH WING

Customer Limited Warranty

IMPORTANT:

Please fill out the questionnaire below and read the Warranty very carefully. This Warranty is valid only in the country of purchase. Should the warranted glider not retain the flight characteristics and performance claimed in the Owners Manual under normal use it will be repaired without charge for a period of one year from the date of delivery to the dealer, provided this certificate is on file at North Wing. North Wing will repair or replace, at its option, defective parts under the terms listed below. Your complete satisfaction is important and, to that end, we encourage honest feedback on our products. Feel free to contact us directly or through your dealer who, as part of our dealer network, has our full support.

WARRANTY TERMS AND CONDITIONS:

This warranty does not cover:

- Normal wear
- Damage caused by abuse or failure to perform normal maintenance (Refer to "Regular Scheduled Maintenance" in the Owners Manual.)
- Damage caused by alterations or modifications
- Consequential damages, incidental damages or incidental expenses, including damage to property

IMPLIED WARRANTIES:

Any implied warranties, including the implied warranties of the merchantability and fitness for a particular purpose shall be no longer than the duration of this express warranty. North Wing makes no express warranties in addition to this Limited Warranty. Authorized Dealers have no authority to make any warranties in addition to or inconsistent with those stated herein. To the extent any provision of this warranty is prohibited by Federal, State, or Municipal law and cannot be pre-empted, it shall not be applicable. This warranty gives you specific rights and you may have other rights which vary from state to state.

DEALER USE ONLY:

Dealer _____ Delivery Date _____

Glider Model/Size _____ Serial # _____

Delivery checklist completed by _____

CUSTOMER USE ONLY:

Name _____

Address _____ City _____ State _____

Zip _____ Telephone _____

Flying experience: years _____ months _____ Age _____

Type of Aircraft _____ Pilot# _____

Reason for purchase _____

Customer satisfaction rating (circle or check): 1 2 3 4 5 6 7 8 9 10

Dealer service rating (circle or check): 1 2 3 4 5 6 7 8 9 10

Comments/Feedback _____

_____

I have read, understand and accept the terms and conditions of this warranty.

Signature _____ Date _____

Warning: The owner and operator must understand that due to the inherent risk involved in such a unique vehicle, no warranty is made or implied of any kind against accidents, bodily injury or death. Operations such as aerobatic maneuvers and erratic pilot technique may ultimately produce equipment failure and are specifically excluded from this warranty.