

FLIGHT MANUAL

EXPLORE THE FLIGHT



FASTER - LONGER - SLOWER

EXPLORE THE FLIGHT

BIRDMAN SUIT • THE FLIGHT MANUAL

W A R N I N G

! Skydiving and wing flying are high-risk activities which may cause or result in serious injury or death. !
DO NOT attempt to land a wing suit without a fully inflated parachute.

The following information must be read and understood before any use of this equipment.

User knows the risks of skydiving and accepts that:

- Skydiving causes deaths and serious injuries. Many of these deaths and injuries can be attributed to equipment malfunctions.
- *Skydiving equipment can fail*, even if the user takes all possible precautions.
- Failure to activate the main or reserve parachute (or to apply emergency procedures) at a safe altitude, and/or equipment failures can result in severe injury or death.

It is the user's responsibility to:

- Receive proper training before any use of all skydiving equipment.
- Be extremely careful and cautious.
- Read and understand all owner's and operations manuals for all skydiving equipment.
- Check all skydiving equipment and replace any defective or worn component prior to use.
- Review emergency procedures before each use of this and all skydiving equipment.
- Check equipment warnings - do not exceed equipment limitations.
- Never violate the training and experience requirements for the specific equipment in use.

Disclaimer

Because of the unavoidable dangers involved in the use of this and all parachute equipment, BirdMan International Ltd and BirdMan Inc. (including, but not limited to, all owners, officers, staff and employees) makes no warranties of any kind, expressed or implied. It is sold with all faults and without any warranty of fitness for any purpose. By using this equipment or allowing it to be used by others, owner/buyer waives any liability of BirdMan International Ltd and BirdMan Inc. for personal injuries, death or damages from such use. Any promises or representations inconsistent with, or in addition to, this statement of warranty are not authorized by BirdMan International Ltd and BirdMan Inc. and shall be not binding.

If any customer of BirdMan suit declines to waive liability on the part of the manufacturer or authorized BirdMan dealer, the customer may have a full refund of the purchase price by returning the wing suit before it is used. Return the suit to the manufacturer or authorized dealer within 21 days from the original date of purchase.

! This manual is not a course of instruction on how to make a parachute jump, fly a wing suit, nor does it contain regulations that govern sport parachuting and related activities. !

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Prologue

Man has always dreamt of flying – now he can. Imagine soaring through the bright blue sky flying forward at 130km/h (80mph) but descending at only 70km/h (40mph). You feel the wind in your face, it is quiet and it makes you feel like a bird. You and your friends fly in formation – banking and chasing.

Together you accelerate your speed and fly around a puffy white cloud. You have been flying for more than two minutes so it's time to wave off to your friends and open your parachute.

History

Ever since they realized that freefall does not kill, parachutists have always wanted to exceed their limits in this beautiful and exotic environment. Brave men and women were pushing their limits, and unfortunately sometimes pushed them too far in order to achieve the dream of human flight. From the 1930s to the early 1960s a few men tried to break their freefall and fly with the help of artificial wings. They were called birdmen. *Clem Shohn* and *Leo Valentin* were two of the most famous, but like most of the early birdmen they gave their lives while doing what they loved the most. Between 1930 and 1961, 72 out of 75 birdmen died while trying to achieve their dream. During the mid-90s legendary skydiver *Patrick DeGayardon* made his own innovative wing suit. With his suit Patrick was able to fly like no one had ever imagined – not even the original birdmen. Sadly, Patrick died on April 13th, 1998 while testing his new wing suit.

Many things have changed since the days of Leo Valentin. Because of constant technological advances, skydiving equipment is safer than ever. Advances in training are also producing safer and more competent skydivers than in past years. In general, a modern skydiver knows more about skydiving and freefall after completing an AFF course than most modern birdmen pioneers ever did. Skydiving has become safer and we are now capable of things that many in the past had only dreamt of doing.

Though generations change, the dream remains

In the fall of 1998 Jari Kuosma from Finland and Robert Pecnik from Croatia joined forces with a mission to give life to the old dream of human flight. Their goal was to make safe and functional high performance wing suits that every reasonably-experienced skydiver could fly and enjoy. After nine prototypes, plenty of mistakes, many laughs and long flights the first-ever commercially available wing suit was manufactured in June 1999. The BirdMan™ suit was named after Leo Valentin (the original birdman), to honor all the skydivers who dared to dream of human flight.

The Mission

Our mission and dream is to promote safe skyflying and the ultimate feeling of flight itself. We believe that some day there will be as many bird men and women as in any other skydiving discipline. Skyflying is extremely fun. It is easy to learn and safe when flown with respect. A whole new world has been opened; the possibilities are endless. After all, we do have the biggest playground in the world – the sky!

Since the birth of BirdMan, thousands of skydivers have successfully flown with the BirdMan suit.

Jari Kuosma is president of BirdMan. Robert Pecnik is in charge of design and manufacturing. True modern day pioneers and developers of skyflying, Jari and Robert are the most experienced wingsuit flyers, designers and instructors in the world. Kim Griffin is the company's business manager, as well as a BirdMan instructor.

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Requirements for flying the BirdMan suit

EXPERIENCE

BirdMan recommends that a person who intends to use the wing suit be an experienced, current and licensed skydiver. We recommend that such a skydiver have 500 or more freefall skydives before attempting to learn to fly a BirdMan wing suit on his/her own. We recommend a minimum of 200 jumps within 18 months if a jumper is to receive one-on-one training from a BirdMan Instructor. He/she should make at least one solo practice/tracking jump without a wingsuit before making his/her maiden flight with a BirdMan instructor. More important than the number of skydives is whether the skydiver feels comfortable in freefall, especially in the tracking position, has the ability to concurrently observe airspace and altitude, and feels confident about his/her ability to perform safely in this unique type of skydiving.

PRACTICE

It is necessary to practice exit, flight, pull and emergency techniques on the ground, before you can do your first flight with the wing suit. You will also need to practice all these skills on your first wing suit flight. It is very important to read and understand the BirdMan suit flight manual before the first flight. It is also as important to understand the importance of communicating with the pilot and fellow jumpers about your flight plan.

EQUIPMENT

Because of the large burble behind your back and the fact that the wings restrict the freedom of your arms, there are a few things to consider with regards to your equipment. The main canopy should be relatively docile. Do not use any kind of canopy that you feel uncomfortable or unfamiliar with. Remember that you need time if you want to free your arms before dealing with a malfunction.

- DO NOT use a pull-out pilot chute.
- DO NOT use a bungee-type collapsible pilot chute.
- DO NOT use a leg strap mounted pilot chute.
- **Use only a BOC throw-out pilot chute with the wing suit.**

BirdMan suit with AADs and audible altimeters

Because it is possible to achieve very slow vertical speeds with the BirdMan wing suit (averaging just 70 km/h or 40mph) your AAD will probably not fire your reserve if you are passing through the hard deck (the Expert Cypress is set up for 36 m/s (about 125 km/h). Also, some audible altimeters may not function properly at slow vertical airspeeds. For these reasons it is very important to wear a visual altimeter and open at a proper altitude. Wear your visual altimeter as far away from your body as possible. We recommend wrist-mounted altimeters for the most accurate reading. **BirdMan Inc. strongly recommends using AADs and audible altimeters!**

Materials and washing instructions

BirdMan uses two different types of material for the body of any of its wingsuit: AtmoTex or Balloon ZP. Both fabric types are zero porosity, comfortable, durable and fly equally as well. AtmoTex is heavier for colder climates; Balloon ZP is lightweight for warmer climates.

The wings on your BirdMan suit are made from Balloon ZP fabric only.

The cutaway cables are made of the same yellow cable used by most rig manufacturers.

To wash your wingsuit, simply remove all cables and throw it into the washing machine. Wash on a gentle cycle using cold water. Hang the suit to dry; do not put it in the dryer!

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Hooking up your wing suit

- Free the cables from your arm wings.
- Place your rig on the floor with the back pad facing up. Lay the suit belly up on top of the rig as if you were actually in the suit and the rig. (The shoulders of the suit should be at the top of the shoulders on your rig.)
- Put the arm wings under the shoulder straps of your rig. Put the leg straps in the holes on the hips of the suit. (There is no need to undo your leg straps for this.)

Hooking up your wings

Keep in mind that wingsuit and harness sizes vary greatly. The instructions below likely apply to your suit, but use common sense. It is most important that your emergency handles are NOT covered in any way.

FRONT WING (BELLY SIDE) • LEFT AND RIGHT SIDES:

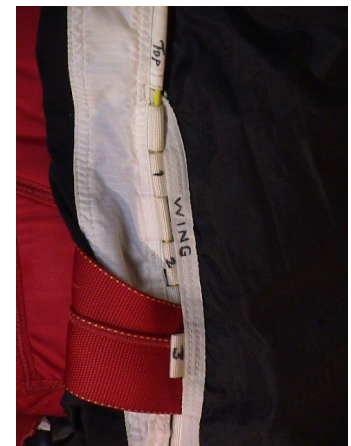
- ① Start by threading the yellow cable through the white tab on the body of the suit. Always start on the body first, not the wing!
- ② Then put the cable through the tab on the wing. Continue to thread the cable through the tabs in this manner (body tab, wing tab, body tab, wing tab, body tab, wing tab...etc.)
- ③ To leave room for your emergency handles to stick out, do NOT thread the cable through the WING TAB that is THIRD FROM THE TOP of the wing. (Top means closest to the shoulder.) See diagram ➡
- ④ Run the cable through the next body tab. There should now be two body tabs done in a row. Always run your cables behind and out of the way of your emergency handles.
- ⑤ Continue by running the cable through the next tab on the wing, then through the body tab, etc. until you are finished.
- ⑥ Stow the excess cable in its holder.



HOOKUP FRONT

BACK WING (BUTT SIDE) • LEFT AND RIGHT SIDES:

- ⑦ Follow steps one and two above.
- ⑧ To leave room for your rig's horizontal stabilizers, do the same as in step 3 and step 4. There should now be two body tabs done in a row. Run the cable behind your horizontal stabilizers. See diagram ➡
- ⑨ On the back wing, more important than how you hook it up is that your tabs will not come in contact with your rig's horizontal stabilizers on opening and while hanging under canopy. (This may weaken the tabs.)



HOOKUP BACK

Once you have hooked up your wings, put on your suit, secure all straps and zippers, and have a friend stand behind you and lift your rig to simulate how you will hang under canopy.

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Getting it on

With the suit on the ground, slide yourself feet first into your legs straps and through the legs of the suit. Bring the suit and rig over your shoulders. (You will soon develop a quick and easy technique.)

- Tighten your legs straps as if you were in freefall.
- Don the booties and close the leg zippers. Secure the zippers with the snaps.
- Close the zippers on your chest.
- Fasten your chest strap tightly.
- Close the arm zippers, locking the zipper catch at the very end of the zipper. Put the thumb cords in place (around your thumb and OVER your altimeter).

BEFORE BOARDING THE AIRCRAFT:

- Make sure that your wings are correctly assembled and that the cutaway cables are correctly routed.
- **Ensure that emergency handles are in position and are not hindered or covered.**
- Fasten your chest strap tightly.
- Ensure that your leg straps are fastened and snug inside the suit.
- Check that the arm zippers and thumb cords are in good condition.
- **Have someone give you a pin check.**
- Check that the BOC throw-out pilot chute and handle are in the correct position.
- Do some practice pulls before you enter the aircraft to ensure that you can reach your pilot chute, and to ensure that it is in correct position. To do so, touch your pilot chute handle with your right hand while bringing your left arm in symmetrically and closing your leg wing.
- After your practice pulls, rehearse getting out of your wings. One at a time, open both of your arm zippers with a controlled, rapid movement. Unzip to the top of your shoulders for full range of motion. Simulate reaching the risers. Repeat this until you feel comfortable with the procedure.

Prepare for flight

WEATHER CONDITIONS

Because you can fly long distances with the suit, make sure that the weather conditions allow you to have visual contact with the ground at all times during your flight. Remember that the same physical laws apply to you as to any non-powered flyer. You travel longer and faster in relation to the ground when you fly with the wind and the reverse happens when flying against the wind.

BRIEFING YOUR FELLOW JUMPERS, PILOTS, ETC.

Before entering the aircraft you need to brief your fellow jumpers and the pilot about your wing suit flight. Because your freefall time can be twice as long as conventional jumpers, it is safest to exit last (even after tandems). **Make sure the jump pilot is informed about your wing suit flight!**

FLIGHT PATTERN

Upon exit, fly 90° off the line of flight (perpendicular to it). How long you fly perpendicular to the line of flight depends on your spot. Keep your eyes on the DZ; when the time is right, turn 90° towards the dz and fly parallel to the line of flight. Your horizontal speed can exceed 100 mph, so know where you are and know where others are.



**Never fly across or near the line of flight.
Always have a flight plan before you enter the aircraft.**



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BirdMan flight techniques

EXITS

For the first flights we strongly suggest that you exit from inside the aircraft, head high and with your chest to the relative wind (similar to an AFF level 1 exit.) To perform a good poised exit the most important thing is to have your wings closed (arms tight to your body, legs together) for the first second that you are exposed to the relative wind. After you have safely cleared the aircraft, spread your wings (both arms and legs, all at the same time, symmetrically) and start your flight.



**It is important to clear the aircraft before spreading your wings.
If you fail to clear the aircraft, you risk having an unstable exit as well as hitting the aircraft
(body or tail) resulting in severe injuries to you and damage to the aircraft.**



FLIGHT

To obtain maximum lift you should maintain the profile on all three wings. Your wings are designed in such a way that no strong forces are needed to maintain this profile. You should fly with your arms and legs extended and spread while still feeling relaxed. You adjust the flight angle by using your torso and hips. For turns simply look where you want to go, make small movements, as large movements may result in a steep dive or instability. Your shoulders and back should be rounded and your legs fully extended, similar to a good track position.

WAVE-OFF

Since you cannot use your arms to wave off, you have to wave off with your legs. Click your legs together twice, while watching the airspace around you, so that anyone near you can see your intention to pull.

PULL

The most critical portion of your wingsuit flight is the pull. The huge burble behind you caused by your large wings and your forward speed could cause a pilot chute hesitation resulting in line twists. An asymmetrical body position could cause you to become unstable and can also lead to line twists. Since your bag will come off your back at a 45° angle you should keep your legs FULLY EXTENDED while you pull. While learning to fly the wing suit start your wave off and pull sequence higher than normal. (We recommend 4500' to 5000' to start.)

HERE IS HOW YOUR WAVE OFF AND PULL SEQUENCE SHOULD GO:

- Tap your feet three times. On the third tap keep your legs together and arch slightly.
- Symmetrically bring both your arms in for the pull. (Your legs should remain straight and closed the entire time to decrease the burble.)
- Throw your pilot chute vigorously and symmetrically in to clean air.
- Close your arm wings once you have released your pilot chute (to decrease the burble.)



**During the pull you should
keep your legs extended (even when you close them),
be symmetrical and throw your pilot chute vigorously.**



AFTER THE PULL

Once your canopy has inflated unzip the arm zippers all the way up so that your arms are completely free to reach the risers and toggles. Once the you have secured the airspace around you, unsnap and unzip your booties. The leg wing will trail between your legs and leave you free to run on landing.

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Wing cutaway system

The BirdMan wing cutaway system was designed for use as a backup device. Three reasons you may want to cut your wings away could be:

- You are unstable or not comfortable with your flight. (You can cut the wings away in freefall and bring your arms up into a box position)
- You need to get to your risers fast and do not have time to undo the zippers.
- You can't undo a zipper.

To cut away the wings, simply grab the cutaway handles and pull them up towards your head.

EMERGENCY PROCEDURES:

Know the placement of your emergency handles and KNOW the emergency procedures for the gear that you are jumping.



If you have a malfunction on your main parachute, perform your normal emergency procedures to cutaway your main and activate your reserve parachute!



The suit was designed to allow you freedom to reach and pull both emergency handles without restriction. This means that you DO NOT need to cut away your wings first before using your emergency handles (and therefore waste valuable time and altitude). However, to reach the toggles and risers of your reserve parachute you must either open the zippers on your arms or cut away your wings.

If you are going to cut away a your main parachute and your arm wings are already undone (either unzipped or cut away), close your leg wing by putting your legs together before operating any of your handles. Having your leg wing inflated may cause instability and turbulence.

Overall, be aware, be safe and have FUN!

We welcome your questions and comments. Feel free to contact us anytime at the numbers below. We wish you many long and safe flights.

Blue skies, long soars...

Jari H. Kuosma

President
BirdMan, Inc.

F A S T E R - L O N G E R - S L O W E R