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Hydra Monoski Owner's Manual

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Introduction

Thank you for purchasing a DynAccess Hydra monoski. We appreciate your business and are committed to providing you with not only a quality product, but also excellent service. The following pages will provide you with basic information for your new monoski. Upon receiving your monoski, read the information below and become familiar with your monoski.

Warning!

It is essential that you read this manual and fully understand your new monoski and its features before using it. Please pay special attention to the safety information and cautions to help you reduce the risk of serious injury. If you have any questions or do not understand something, please contact DynAccess directly.

Note: This manual is not intended as a comprehensive use, service, repair or maintenance manual. Please contact DynAccess for all service, repairs or maintenance.

Disclaimer: DynAccess Ltd is not responsible for any damages to you or others arising from riding, transporting, or other use of your DynAccess monoski. In the event that your monoski breaks or malfunctions, DynAccess shall have no liability beyond the repair or replacement of your monoski pursuant to the terms outlined in the warranty provisions of this manual.

Safety First

Warning!

Like any sport, riding a monoski involves risk of injury and death. By deciding to ride a monoski, you assume the responsibility for that risk. In order to reduce that risk, we strongly urge you to read and follow the safety information and cautions in this manual.

Please note that it is impossible to anticipate every situation or condition that can occur while riding a monoski. This manual makes no representation about the safe use of your monoski under any condition. There are risks associated with the use of any monoski which cannot be predicted or avoided, and which are the sole responsibility of the monoskier.

1. Correct Fitting

- Make sure that your monoski fits correctly to your body, riding style and riding conditions. If your monoski does not fit properly, it increases the risk that you may lose control. Making the proper adjustments to your monoski requires experience and skills. If you are unsure about how to adjust your monoski, we

recommend you take it to a specialized workshop or contact us directly before riding.

- For fitting you in the bucket seat, see p.9
- For footrest adjustment, see p.9
- For adjusting the center of gravity, see p.8
- For adjusting the ride height, spring rate, rebound and compression damping, please see the separate *Shock Manual*.

2. Mechanical Safety Check

- Routinely check the condition of your monoski before each use (e.g. loose bolts and nuts, cracks, fraying straps, etc.).
- In tightening the fasteners (e.g. nuts, bolts, and screws) on your monoski, use correct tightening torque. Incorrect tightening torque can result in component damage or failure.
- Make sure that the tri-glides used for non-sewn side-release buckles prevent the belts from slipping out of the buckles.
- Check the condition of the shock absorber for any visible damage and oil leakage.
- Check the rebound and compression damping of the shock absorber.

3. General Safety on the slope

- Spend considerable time and effort to learn how to get on a chairlift, to sit on it safely, and to get off safely. Some chairlift seats are very thick and lead to you sit closer to the edge. Make sure you sit in a stable and secure manner without any risk of falling off. See “Using the Chairlift” section of this manual for details.
- If you are a beginner and/or are not familiar with ski slopes, always ski with a certified instructor.
- If you ride the monoski independently, make sure that you have enough knowledge and skills to ride it safely and under full control at all times.
- Ski on properly prepared ski slopes.
- Observe the rules on the slopes.
- Always wear a helmet which meets the latest certification standards and is appropriate for the type of skiing you do.
- Always wear ski gloves and goggles.
- Start slowly on easier terrain and build up your skills.
- Be familiar with how your suspension works as it changes the way your monoski performs.
- Avoid skiing alone.
- Avoid riding the lift alone.
- If you want to adjust the shock absorber on the slope, find a relatively flat place where there is no heavy traffic.
- Ride at speeds appropriate for the conditions. Higher speed in general means higher risk.

- Ride defensively and always under full control.
- Always assume that others do not see you.
- Don't do stunts or jumps.
- If you intend to do stunts or jumps with your monoski despite our advice not to, think carefully about your skills before deciding to take the large risks involved with this kind of riding.
- Avoid riding in bad weather, at night, and anytime when visibility is limited.
- Pay attention to the snow conditions, which affects your ride significantly.

National Ski Areas Association “Your Responsibility Code”:

DynAccess is a member of the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA). As a provider of adaptive sports equipment, we ask that you abide by the RESNA Adaptive Sports Equipment standard for responsible use:

Your Responsibility Code:

- 1.) Always stay in control – Be able to stop or avoid other people or objects.
- 2.) People ahead have the right of way. It is your responsibility to avoid them.
- 3.) You shall not stop where you obstruct a trail or are not visible from above.
- 4.) Whenever starting downhill or merging into a trail, look uphill and yield to others.
- 5.) Always use devices to help prevent runaway equipment (e.g., SMBs¹)
- 6.) Observe all posted signs and warnings. Keep off of closed trails and out of closed areas.
- 7.) Prior to using any lift, you shall have the knowledge and ability with or without personal assistance to load and unload safely.

General Description

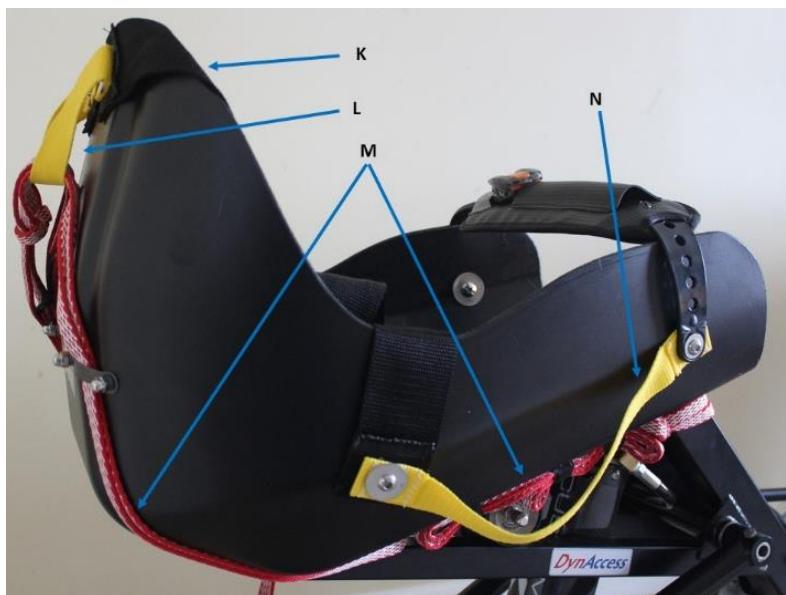
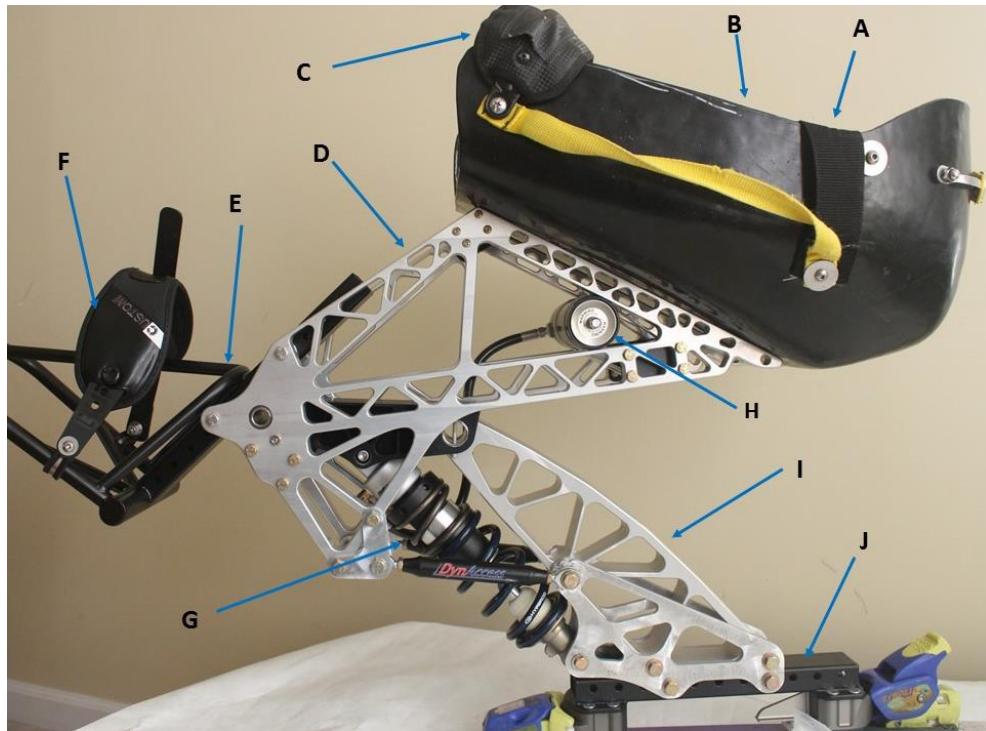
The monoski, also known as a sit-ski, is intended to be used by people with limited use (or absence) of the lower extremities. The recommended maximum weight of the skier is 230 Lbs. (105 kg).

Your monoski is already assembled when delivered unless otherwise requested. Please see the picture below to familiarize yourself with all components and parts. The frame and suspension arm of the Hydra are made of 7075 aluminum. The coil-over shock absorber is a product of Penske Racing Shocks custom built for DynAccess monoskis (see *Shock Manual* for details).

¹ SMB stands for sit-skis, mono-skis and bi-skis

Various seat buckets can be mounted on the Hydra, including DynAccess' thermoformed bucket seat complete with seat belts and bucket straps. A photo below is that of Aspen Seating/Ride Design's bucket.

- A. Lap Belt
- B. Bucket Seat
- C. Ratcheting thigh belt
- D. Frame
- E. Footrest
- F. Foot strap
- G. Shock absorber
- H. Remote reservoir
- I. Foot tower
- J. Sole
- K. Chest belt
- L. Back handle
- M. Evacuation straps
- N. Side handle



Instructions

Mounting the Seat:

A seat of your choice may already be mounted on the monoski when delivered. If you should change to a different seat for the monoski, please contact DynAccess regarding its compatibility with the Hydra.

If you need to mount a seat, place the seat bucket onto the frame. Four $\frac{1}{4}$ " bolts and four nylock locking nuts are used. The two bolts in the front are 1.25" long and the two in the rear are 1.0" long. Large and relatively thick washers are used inside the bucket seat.

Plenty of anti-seize (preferably food grade) should be used on the four seat mounting bolts, since stainless steel fasteners in general are prone to seizing. Food grade anti-seize has already been applied on the fasteners. If the plan is to seldom remove the seat then thread locking compound may be used on these bolts as well; clean the bolts and nuts carefully before using thread locking compound.

Torque the bolts properly and be careful not to seize the fasteners. Replace any worn, over-torqued, seized or otherwise damaged fasteners.

In general, bolts and nuts have three different means of preventing getting loose: Nylon insert locking nuts ("nylocks") should be discarded after each use. All-metal deformed-thread locknuts, as well as the bolts used with them, should be discarded after each use. With thread locking compound such as "Loctite", nuts and bolts can be reused with new thread locking compound applied.



Caution!

Please be advised that some non-DynAccess Seats are not optimal for the Hydra and mounting such a seat on the Hydra may result in serious injury or death.

Mounting bindings and optional binding blocking set:

The DynAccess Hydra can be fitted to the snow ski using conventional high-strength bindings. The standard length of a DynAccess foot is 325 mm.

DynAccess offers a “blocking set” designed to fit the following bindings: Marker Comp 20 or 30 bindings, Marker Race Xcell/Xcomp 24, Head Freeflex Evo 20 X RD /Fischer RC 4 Z 20X Race Freeflex Bindings, and Atomic EGA X20 bindings. The blocking set consists of a front blocking plate and a rear block with a locking pin.

According to the RESNA standard, ski bindings for monoskis are not intended to release. The front plate prevents the toe binding from releasing under most circumstances. It is made of a super-austenitic stainless steel with superior corrosion resistance, high strength and ductility. It mounts under the binding. Professional mounting using longer bolts is recommended.

The rear block is CNC milled and made from material with high low-temperature ductility.



Installing the binding on the Snow-Ski and the monoski

The DynAccess monoski can be fitted to the snow ski using conventional high-strength bindings. The Hydra works best with the binding mounted at the boot center of your ski. The standard length of a DynAccess foot piece is 325 mm, but other lengths (e.g. 300 mm) are also available upon request.

To fit the monoski onto your ski:

1. Make sure you completely understand your particular bindings and how they are adjusted.
2. Remove any snow or ice from your monoski’s foot and the ski’s bindings.
3. Secure the ski so that it does not slide, then raise the monoski to about a 30 degree angle and fit the tip of the foot into the front binding (see image).
4. Center the monoski over the ski and binding, keeping the tip of the foot in the front binding, and push down until the rear binding locks.



5. Check to ensure that the foot has locked properly into the bindings.
6. Many programs and skiers pin the front binding and block the rear binding such that they cannot release.

Adjusting the Center of Gravity (COG):

The standard setting of the Hydra is in the center, from which the skier can move 3" (75mm) forward or 3" (75mm) back in 1" (25mm) increments. The Hydra was designed such that if the bindings are mounted boot center for a 325 mm boot, then for ~95% of all monoskiers the center location will be optimal. Mounting the bindings boot center is important for the ski to bend correctly in turns.

There are a few exceptions to the COG mounting:

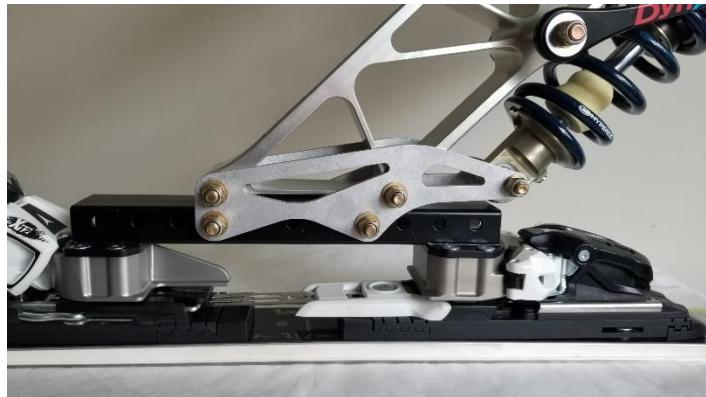
- skiers with one or two legs missing may want to move forward. 1" or 2" (25 mm or 50 mm) is usually sufficient,
- skiers with heavy legs and/or heavy feet may want to move back. 1" (25 mm) is usually sufficient. Moving further back is usually not a good idea,
- racers who want a lot of early tip pressure may want to move forward on the ski,
- skier who ski very steep terrain may want to move back on the ski. However, this tends to make the ski less harmonic in anything but very steep terrain,
- some park skiers also like to move back on the ski as this tends to reduce the risk of breaking skis.



Caution!

- ⚠ The Hydra balances differently than other monoskis because of different kinematics (the frame moves backwards when loaded whereas most other monoskis move forwards when loaded). The Hydra will therefore sit considerably further forward on the ski when unloaded than other monoski. Dowel tests can be misleading and are in general not recommended.

To change the center of gravity:



1. Lay the monoski on its side.
2. Locate the two bolts connecting the foot tower to the foot.
3. Remove the two bolts, and put them and the six washer in a safe place. You may need to loosen the bolts just above the removed bolts to release the pressure.
4. Slide the frame forward or backward to adjust your center of gravity and center it with the proper holes. Align the holes perfectly, using for example a drift (tapered alignment) pin.
5. Replace the bolts, washers and nuts
6. Take care to ensure that all screws are tightened properly. Do not over-torque the bolts.

⚠ Caution!

Make sure to install all parts, in particular the washers, correctly. The thick conical washers are very important; do not replace them with flat washers as this may damage the rodends and lead to failure.

Sitting in the Seat:

When sitting in the bucket seat, sit deeply so that it is snug throughout your entire hips and bottom. You may want to lean forward and wiggle down into the seat, adjusting so that your pelvis is as far into the rear of the seat as possible.

Once you are seated properly adjust the height of the footrest. You may want your thighs to contact the seat edge slightly, but not so hard that you could not slide a finger under your thighs.

Adjusting the Footrest:



You can adjust the height of the monoski's footrest. To do this:

1. Locate the two long $\frac{1}{4}$ " bolts attaching the footrest to the frame.
2. Remove the bolts, nuts and spacers. Put them in a safe place. Note that there are O-rings in the spacers.
3. Move the footrest up or down as desired and center it with the proper holes.
4. Replace the two screws and four spacers to reconnect the footrest to the frame. O-rings should be against the frames. Take care to ensure that all screws are properly torqued.



Buckling your belts:

Your monoski comes standard with four strap belts and one ratcheting belt. The buckles for the strap belts are of the non-sewn type that are easy to adjust. Straps are secured with a tri-glide on one side to prevent the straps from slipping out of the buckle.



Caution!

Before using the monoski, make sure that the belt straps are threaded correctly through the buckles and are secured with a tri-glide.

Once your feet are positioned on the footrest, use the two straps to secure your legs just below the knees and at the ankles (see image). A ratcheting foot strap is also available as an option



Next, buckle in using the chest and lap straps. These should fit snuggly across your chest and lap, securing your body to the seat. The lap belt should be relatively snug without causing discomfort. The chest belt can be snug or loose depending on the skier's preference and disability.

The Shock:

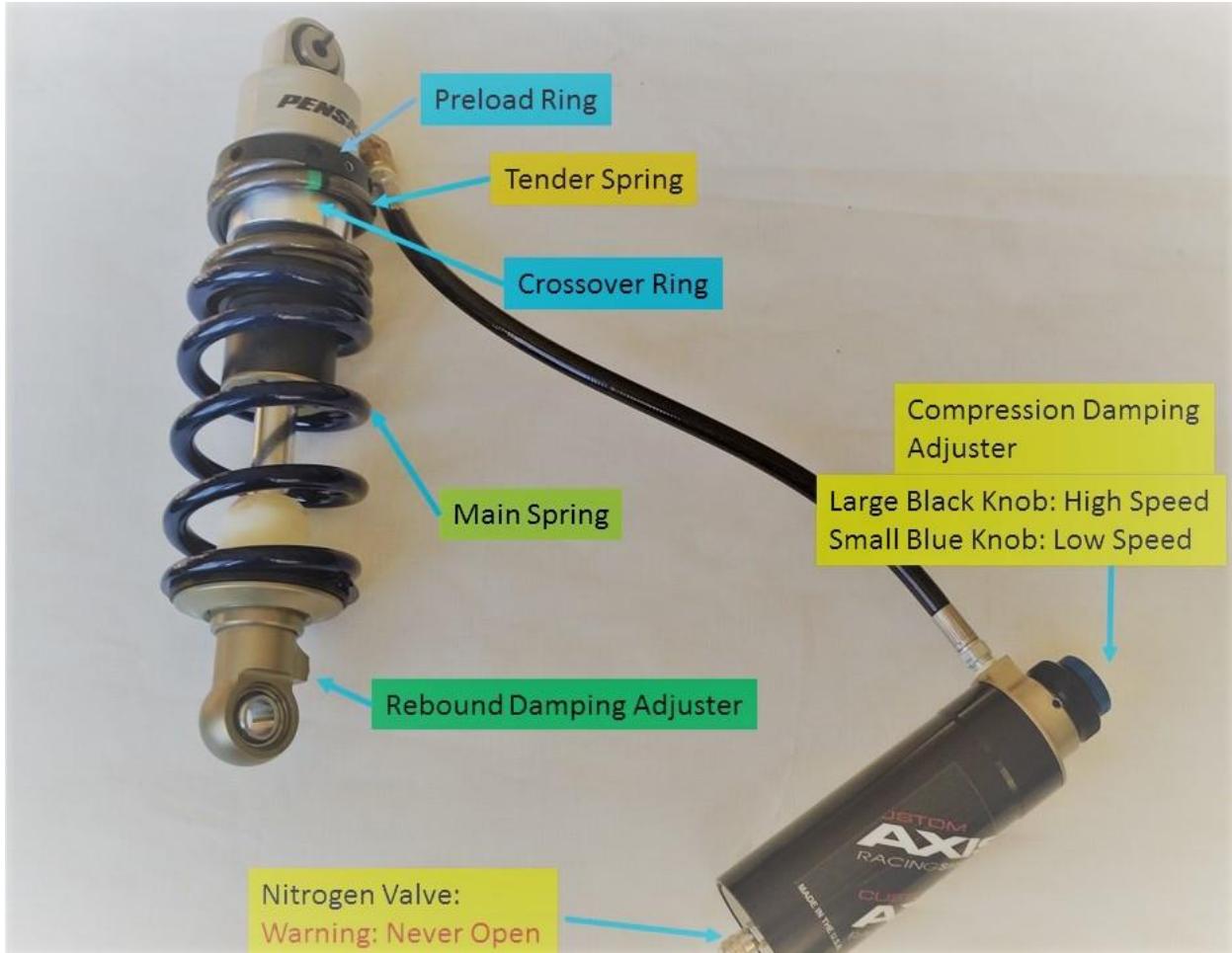
Penske Racing Shock's "Custom Coil-over Monoski Shock"

The Hydra is equipped with a Penske Racing Shocks' custom coil-over monoski shock. DynAccess is the sole source for their monoski shocks.

There is quite a range of adjustment possibilities.

Your shock is equipped with either a single coil spring or dual coil springs. Your springs have been carefully selected by DynAccess based on the information provided by you. You can easily

adjust preload, rebound damping and high/low speed compression damping of your shock. With some more effort you can change spring rate(s) and crossover point of a dual rate spring setup. For adjusting your shock, please refer to the Shock Manual.



Using the Chairlift

The standard Hydra is not equipped with a lift mechanism. Due to the unique height of the bucket seat above the ski, loading onto a lift is in most cases simple and can be done with the use of outriggers or with the assistance of one or two ski buddies. Please note that you sit differently on different chairlifts. Pay special attention when you ride the chairlift at ski resorts that you are not familiar with. Always check any chairlift slowly and carefully before committing to ride it.

When using a chairlift:

1. Inform the lift attendants if you have any specific needs. They can slow down or stop the chair if desired.
2. Position your outriggers upright at your sides. As the chair approaches, push down on your outriggers to lift yourself up and back onto the seat.

PLEASE NOTE: The seat of the monoski is equipped with yellow side and rear handles for assistance in maneuvering the rig. These can be used for ski buddies and lift attendants to assist in lifting the monoski onto the chairlift.

3. Once on the lift, sit back as far as possible in your chair, lean back, and hold on to the chairlift. USE A RETENTION STRAP SUITING YOU AND THE LIFT TO MAKE SURE THAT YOU CANNOT COME OFF THE CHAIR UNINTENTIONALLY.
4. To unload, wait until you are securely over off-load ramp, then unhook the retention strap.
5. Push off the chair and ski away from the off-load area.

PLEASE NOTE: If you are a beginner skier, you may ask one or two ski buddies or instructors to help you get off the lift and balance you when skiing away from the off-load area.



Warning!

Never use the red evacuation straps as handles.



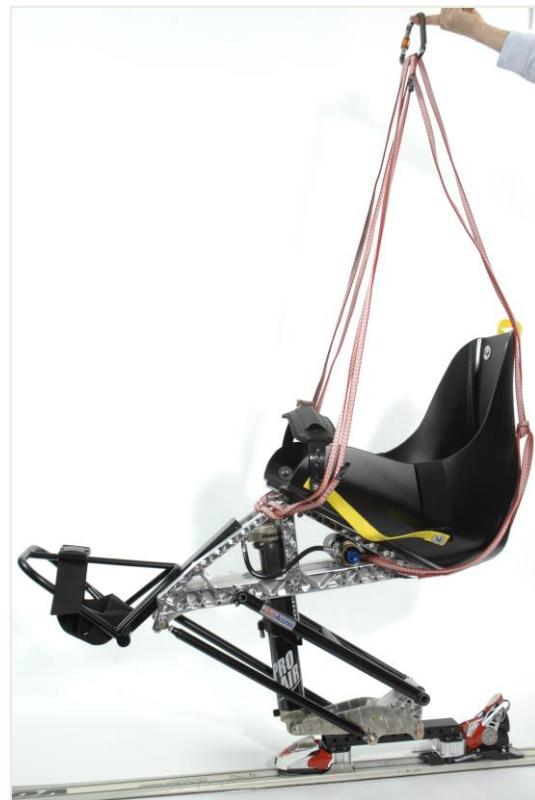
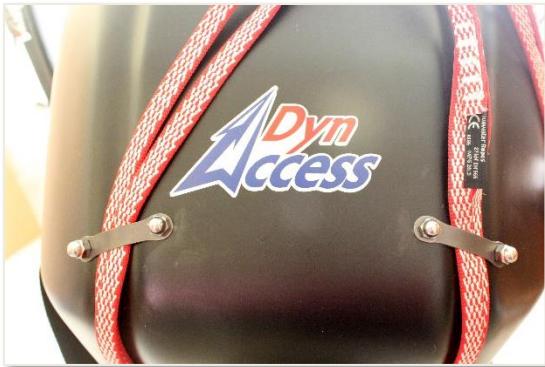
Warning!

Some chairs may use thick seat cushions, causing you to sit on the front part of the seat. Make sure to push you in and sit back as far as possible and hold onto the lift chair. NEVER ride a chairlift unless securely seated.

Evacuation:

⚠️ Warning!

Never rely on the evacuation system of the monoski alone. It should always be used together with a separate independent evacuation system (such as a climbing harness). Failure to do so may cause serious injuries or death.



⚠️ Caution!

For shipping, zip ties as well as Velcro straps are sometimes used over the evacuation straps. It may be a good idea to remove the zip ties carefully before using the monoski since they can be difficult to remove on the chairlift.

DynAccess uses a three-point evacuation strap system to distribute the weight from the rider and rig in the event of an evacuation. Three separate straps are currently used for the evacuation system. In the event of an evacuation:

1. Always use a backup evacuation system together with the monoski evacuation system
2. Inform the rescue team that your monoski is equipped with an evacuation system.
3. Locate the evacuation line as directed by the rescue team.
4. Locate your rig's rear evacuation strap, found on the back of the bucket seat.
5. Locate your rigs two side evacuation straps.

6. Pull the carabineer with the rear evacuation strap up over your head, and put the two side evacuation straps in the carabiner.
7. Screw the carabiner tight so it cannot open.
8. Attach the carabiner with the three evacuation straps to the evacuation line.
9. Once the evacuation line is taut, hold on to the evacuation straps. Follow the instructions of the rescue team.

Maintenance and Service

Frequent inspection of your monoski is very important for your safety. Keeping the monoski clean and free from salt, dust and other abrasive particles will greatly reduce wear and increase the life of your monoski. Periodic, more detailed maintenance and service is also important. The frequency of the service and maintenance depends upon the use of your monoski, how hard you use it and where you use it. Because we can not track your use, you must take responsibility for periodically maintaining and servicing your monoski. Please contact DynAccess to order replacement parts such as buckles, straps, evacuation straps and other parts.

All belts (seat belts, evacuation straps, etc.) should be replaced at least once every year.

DynAccess recommends having the monoski professionally serviced once per year. DynAccess can check the monoski, replace worn hardware (bearings, rod ends, nuts and bolts, etc), repair any damage, and service the shock.

Professional shock service includes disassembling the shock, cleaning and checking all parts, replacing ice scrapers, seals, O-rings, worn valves, etc., re-assembling the shock, filling new oil and vacuum degassing it. If desired the shock can be re-valved (for example, if you're skiing with the rebound almost all the way in, then the shock can be re-valved such that your desired setting is near the middle of the range of the rebound adjuster).



Warning!

Replacing any component on your monoski with other than genuine replacement parts and components is not recommended and may compromise the safety of your monoski and may void the warranty. It can result in serious injury or death.

Limited Warranty:

DynAccess Ltd. warrants all products to be free of defects in material or workmanship for a period of one year from the date of purchase.

This warranty applies only to the product's original owner and is non-transferrable. DynAccess Ltd. will, at its discretion, repair or replace any component that is deemed to be defective. DynAccess Ltd. is not responsible for the transportation or shipment costs associated with transporting the product to be repaired.

NOTE: These limited warranties do not apply to normal wear and tear, misuses, improper assembly, or neglect of the product.