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1 The Razor BAT Wing

1.1 Package Content

HEAVY DUTY 3 LAYER DOUBLE REDUNDANT WING WITH 45LBS / 20KGS LIFT IN BOTH THE PRIMARY AND BACKUP.

1 Primary wing:
- 19” large diameter inflation hose with fixed low profile elbow and power inflator
- Large Razor Logo Wrap for large diameter Inflation Hose
- 8” LPI Hose fitted with Hose Hat

2 Backup Wing:
- Oral Inflation Hose with Bite-On Mouthpiece
- Low Profile Coin Dump Valve
- Separate Extension Piece for fitting the top of the BAT Wing to the DSP of the Razor Harness
- Long Waist Bungee with snap bolt attached
- Short Waist Bungee no snap bolt
- Wing Tab with Bungee cord
- Wing Tri-glide (this will already be fitted to your Razor Harness if you ordered a complete RSMS)

3 2 Button head screws
4 2 Washers
5 1 Hex nut
1 The Razor BAT Wing

1.2 Overview

Once your Razor Harness and T Weight System have been set up then you can attach the BAT Wing to the Harness.

The BAT Wing should be worn with the Primary Wing on the outside and the Backup Wing on the inside.

This makes finding both the Primary and Backup wing dump valves easier and allows both to be vented more effectively and the Backup wing is very well protected.

The design of the BAT wing places the position of the dump valve and the inflator elbow in a well protected low profile position between the Side Mount tanks and the diver’s body.

In addition the outside material of the wing is not placed between a hard object such as the dump valve and the ceiling of a cave, or a sharp object in a wreck for example where it may be more prone to damage.

In the very unlikely event that the dump valve or inflator elbow or large diameter inflation hose should be damaged these components are easily and cheaply replaced which is not the case if the wing material is damaged.

The BAT Wing is supplied with a 19” long large diameter inflation hose and an 8” long LPI hose fitted with a hose hat.

This configuration should fit just about everyone but shorter large diameter inflation hoses of 16” or 13” and shorter LPI hoses of 6” or 4” can be purchased separately in order to customize hose lengths if required.
1.2 Overview

The Hose Hats can be removed from the LPI hoses simply by just pulling them off if required but are recommended for quick one hand operation of the LPI/Schrader valve connection especially when diving in cold water with thick gloves.

Hose hats can be purchased separately if you need to replace any or wish to fit them to any existing LPI hoses.

The dump valve and the large diameter inflator hose elbow have compatible fittings and can be positioned on either the left or right hand side of the BAT wing according to diver preference.
1.2 Overview

Normally when using a Drysuit the dump valve will be positioned on the left hand side of the wing with the large diameter Inflator hose on the right hand side of the wing. The large diameter inflation hose will deliver in front of the diver across the chest from the right hand side with the LPI hose delivering from the regulator on the right SM tank.

When using a wetsuit normally the fittings should be switched so that the large diameter inflator hose is on the left hand side and the LPI hose can deliver from the regulator on the left hand Side Mount tank.

The BAT wing is supplied already set up in this configuration.
When changing the fittings make sure that they are not cross threaded when screwing them in. The best way to do this is to turn anti clockwise until the threads drop into position and then tighten gently. No force should be used to get the threads started.

When the Inflator hose is unscrewed remember to also take out the sealing O ring and replace it in the other fitting with the rounded side of the O ring facing down so that the flat side of the inflator elbow will seal against the flat side of the O ring.

The inflator elbow is keyed and it is important that it drops into position so that it will seal on the O ring when the fitting is screwed back into place.
The orientation of the elbow can be adjusted so that the large diameter inflation hose routes comfortably under the arm and across the chest.

To do this start the threads a couple of turns but do not tighten them until the correct orientation of the elbow is achieved making sure the keyed flange drops into place to ensure a seal and then tighten fully.

Once fitted pressure test the seal by inflating the wing and making sure it is airtight.
1.2 Overview

When replacing the dump valve it is important that the spring is located in the right position in the center and can move freely so that the valve does not stick in the closed position.

Hold the dump cord and spring under a little tension as you screw the fitting back into place.

After tightening the dump valve fully check to make sure that it operates correctly and that the spring moves freely when the cord is pulled.

Check correct operation of the wing by inflating and deflating it and making sure there are no leaks from either of these fittings before going diving.
2.1 Tools

You will need the following tools to rig your Razor BAT Wing:

- A hex wrench to fasten the button head screws. (included with the complete system in the Universal Spares Kit.)

- A lighter to burn and seal the ends of the cut webbing and elastic bungee cord.

- A knife or scissors to cut the harness webbing and the elastic bungee cord.
Step 1: Adjusting and Attaching the top of the BAT Wing to the DSP of the Razor Harness

The top of the BAT Wing bolts into the DSP of the Razor Harness and should be positioned so that the waist bungee cord and dump valve / inflator elbow are at the height of your belly button just above the waist strap of the Razor Harness.

Depending on the individual setup the top of the wing can be bolted directly into the DSP or the separate extension piece can be added if required to get a perfect fit.

Ideally the top hole in the DSP should be used to leave the bottom hole free to attach the Lumbar Strap of the T Weight System but you can attach both the BAT Wing and the T Weight System to the same hole either at the top or bottom of the DSP using the longer button head screw provided if required.
Step 2: Attaching and Adjusting the BAT Wing Waist Bungee

The BAT Wing Waist Bungee is designed to secure the sides of the BAT Wing in a low profile streamlined position even when the wing is inflated and still give easy unrestricted access to all of the Razor Harness attachment points.

The waist bungee on the right hand side of the BAT wing should have a long loop with a small snap bolt attached to it. This will feed across the waist and through the loop of the crotch strap of the Razor Harness and clip into the short bungee loop attached to the left hand side of the BAT wing.

STYLES

1. A simple overhand knot tied into the end of the bungee cord will hold the right hand side bungee in place. This knot should be on the inside of the wing.

2. On the left hand side of the wing a short waist bungee cord is held in place with 2 overhand knots tied either side or the wing grommet to secure it.
Step 2: Attaching and Adjusting the BAT Wing Waist Bungee

- The waist bungee should be fairly snug with the wing completely deflated and both bungee cords will need to be adjusted to achieve the correct length and tension to keep the BAT wing in a nice low profile position when it is inflated and to prevent it from floating away from the diver’s body.

- It will take a little bit of trial and error to get the length/tension correct so leave the bungee cords long to begin with and do not tie the knots too tight so that they can be released and moved easily if necessary.

- Once the correct length is achieved then any excess bungee can be cut off and the ends of the cords burnt to seal them and the knots snugged tight.
Step 3: Attaching and Adjusting the BAT Wing Rear Bungee to the Razor Harness

The BAT Wing Rear Bungee is designed to secure the bottom of the BAT Wing in a low profile streamlined position even when the wing is inflated and still give easy unrestricted access to all of the Razor Harness attachment points as well as the coin dump valve of the Backup wing.

The Rear Bungee is secured to the BAT Wing with the Wing Tab and the BAT Wing can be quickly and easily removed from the Razor Harness by undoing the button head screw leaving just the Wing Tab and bungee cord still attached to the MBP.

The bungee cord is attached to the Wing Tab with a Lark’s Head Hitch (aka Lanyard Hitch). The bight of the Larks Head should be on the outside of the wing tab.
Step 3: Attaching and Adjusting the BAT Wing Rear Bungee to the Razor Harness

The Wing Tab can also be removed from the bungee cord if required by passing the hitch of the Lark’s Head Hitch back over the body of the Wing Tab which will just leave the bungee cord attached to the MBP.

The bottom of the BAT Wing with the Wing Tab attached should line up with the slot of the Wing Tri-glide of the Razor Harness that holds the Butt B ring in position. The Wing Tri-glide can be moved up or down the crotch strap webbing of the Razor Harness to achieve the desired location.

This ensures that the Butt B ring will not be covered by the BAT Wing and will remain accessible at all times even with the wing fully inflated.
Step 3: Attaching and Adjusting the BAT Wing Rear Bungee to the Razor Harness

1. The free ends of the bungee cord coming from Lark’s Head Hitch on the Wing Tab should be passed through the slot of the Wing Tri-glide attached to the Razor Harness and then run up to the MBP and passed through the two holes either side of slot B.

2. The bungee cord can be locked in place with a simple overhand knot tied on the inside of the MBP.

3. The bungee cord should have some tension on it with the BAT Wing completely deflated so that it will be held in a streamlined low profile position when inflated and will pull tight when deflated.

4. It will take a little bit of trial and error to get the length/tension correct so leave the bungee cords long to begin with and do not tie the knots too tight so that they can be released and moved easily if necessary. Once the correct length is achieved then any excess bungee can be cut off and the ends of the cords burnt to seal them and the knots snugged tight.
With the BAT Wing now attached to the Razor Harness the harness should be put on so that the large diameter inflation hose and power inflator can be correctly positioned. The large diameter inflation hose with the power inflator can be configured to use from either the right or left hand side.

The BAT Wing is supplied with the large diameter inflation hose and power inflator delivering from the right hand side but it can be easily changed to deliver from the left hand side if required as previously noted.

The “clocking” of the power inflator is also supplied with a right hand delivery orientation with the oral inflation mouthpiece facing up towards the diver with the power inflator button and Schrader valve on the underside.

This can be changed easily to a left hand delivery orientation if required by removing the 2 cable ties locking the power inflator in place and then rotating it 180 degrees before fastening with 2 new cable ties to resecure it in place.
Step 4: Adjusting and Attaching the Large Diameter Inflation Hose of the Primary wing to the Razor Harness

- The oral inflator mouthpiece should now face up towards the diver with the power inflator button and Schrader valve on the underside.

- The large diameter inflation hose will run over the kidney area under the arm and across the lower chest. The end of the Power inflator will be attached to the D ring on the opposite shoulder with a loop of bungee cord tied with a Fisherman’s knot through the loop of a small swiveling snap bolt.

- The bungee loop can be positioned between the large diameter inflation hose and LPI hose while diving so that it is securely retained.

- The LPI hose to the power inflator should route directly across the chest from the 5th port in the end of the swiveling turret of the regulator first stage.

- It will run under the large diameter inflation hose.
Step 4: Adjusting and Attaching the Large Diameter Inflation Hose of the Primary wing to the Razor Harness

The large diameter inflation hose can be secured to the lower shoulder strap of the Razor Harness below the shoulder D ring using the large Logo Wrap provided with the BAT Wing.

Please note that the BAT Wing Logo Wrap which has to go around the large diameter inflator hose as well as the webbing of the Razor Harness is larger than the 2 Logo Wraps that come with the Razor Harness. They should not be confused as they are not interchangeable.

The orientation of the keyed hose elbow can be adjusted as noted earlier to ensure a streamlined comfortable routing of the large diameter inflator hose. This is done by loosening the locking ring a few turns until it is possible to lift out the locking plate of the elbow then rotating it until it locks back into the desired orientation and tightening the locking ring ensuring that it has bottomed out properly and is forming a good seal.
Step 5: Positioning the Oral Inflator Hose of the Backup Wing

- The oral inflator of the Backup wing should be routed over the right shoulder and can be held securely in place by passing it under the neoprene logo wraps on the right hand shoulder of the Razor Harness webbing.

- The hose should bend towards the center of the chest just above the right shoulder D ring and should be long enough to reach the mouth comfortably.

- It can be held in place in a clean streamlined fashion by passing it through a couple of bicycle tire inner tubes placed around the large diameter inflation hose spaced a few inches apart.

- The oral inflation hose should be positioned either on top or on the inside of the large diameter inflation hose so as not to interfere with the LPI hose to the power inflator that is routed underneath it.

- Any excess hose can be cut off to customize the length. Remove the bite on mouthpiece, cut the hose to the desired length and then replace the mouthpiece.
Step 5: Positioning the Oral Inflator Hose of the Backup Wing

The mouthpiece can be glued in position when you are happy that you have the correct length. Spare mouthpieces are available and it is recommended to carry one in your Razor Expandable Pouch in case you should lose it while diving.

In the event it should be lost while diving and you have no replacement it will have no effect at all unless you are actually using the Backup wing.

The only problem then will be that the hose will tend to vent gas when you are in a head up position such as when ascending. This can be prevented by placing your finger over the end of the hose and releasing it when you wish to vent gas to adjust buoyancy or slow an ascent.
Step 6: Correct Use of the BAT Wing

Only use one wing at a time either the Primary or the Backup.

Make sure the wing you are not using is completely empty while diving so that you only have 1 air space to control.

The Primary wing can be inflated in the following ways:

- By using the power inflator connected to a tank with an LPI hose
- By oral inflation by holding down the dump button of the power inflator and blowing into the mouthpiece

The Primary wing can be vented in the following ways:

- By using the pull dump while rolling the body to the opposite side when in a horizontal position to get the dump valve to the highest position of the wing
- By using the dump valve on the power inflator when in a head up position
- By sucking a vacuum on the power inflator when in a head down position

The Backup wing can only be inflated orally using the bite on mouthpiece.

Not having a power inflator connected to the Backup wing avoids any problems associated with a mechanical failure or accidental inflation of the wing resulting in a potential buoyant ascent.

To use the oral inflation hose place the very end of the bite on mouthpiece between your teeth horizontally and make a seal around it with your lips.
Step 6: Correct Use of the BAT Wing

To use the oral inflation hose place the very end of the bite on mouthpiece between your teeth horizontally and make a seal around it with your lips.

Now bite down gently to open it and blow into the hose. No force should be required.

If you are having difficulty inflating the wing check the orientation of the bite on mouthpiece as it will only open when you bite on it in the horizontal axis.

Also make sure that you are biting at the very end of the mouthpiece as it will not open if you are biting further up.

You should practice doing this before you go diving until you become familiar and comfortable with the technique.
Step 6: Correct Use of the BAT Wing

The Backup wing can be deflated in 3 ways:

- By using the coin dump at the rear of the wing. Roll slightly to the left and slightly head down to position the coin valve at the highest point of the wing then deflect one side of the coin valve by pressing on it gently with your thumb or finger. No force is required as you just need to break the seal.

- By holding the oral inflation hose at the highest point and pinching gently on the bite valve between thumb and forefinger to open it

- By biting gently on the bite valve of the oral inflation tube and sucking a vacuum on it.

If you are having trouble venting air from the oral inflation tube check that this dump valve is at the highest position of the wing, that you are pinching it in the correct orientation across the horizontal axis and that you are pinching at the very end.
Step 6: Correct Use of the BAT Wing

Please note that the coin dump valve also functions as an over pressure relief valve so that in the event you have a lot of gas in the Backup wing and start to ascend it will vent automatically to prevent a wing rupture.

For this reason if the Backup wing is very full and you put any pressure on it the coin dump valve will release a small amount of air without you touching it. This is a design feature and perfectly normal.

After diving both the Primary and Backup wings should be drained of any water that is inside and partially inflated to dry.

Both Primary and Backup wings can be drained of water in exactly the same way air is vented from them although it is easier if you orally inflate them a little first so that you can force any water out under pressure.

Please note that even when not using the Backup wing during a dive a small amount of water may enter it by being forced through the coin dump valve under pressure as you descend as any small internal airspace remaining inside the backup wing is not equalized with external pressure.

This is completely normal and will not affect the function of the wing in any way but will need to be drained at the end of the dive.
Last Step: Go Diving!

- There is no substitute for time spent in the water.
- Take it easy to begin with while you get used to your new Razor Side Mount System.
- Please contact Go Side Mount directly if you have any questions or problems with your Razor BAT Wing.

Best Wishes

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