

Instructions for retro-fitting of Hydro Skeg®

A good knowledge of fibreglassing will be required to fit the Hydro Skeg® successfully.

When working with fibreglass and cutting the holes, safety glasses, gloves and a face mask should be worn.

There are six stages involved in fitting your Hydro Skeg® kit:

1. Cut the hole for the glide box
2. Cut the hole for the skeg box
3. Secure the glide box in the deck
4. Glass the new glide and skeg boxes in place
5. Fit the glide cylinder and skeg cassette
6. Connect the Hydro Skeg® system
7. Bleed the Hydro Skeg® system



Hydro Skeg® kit



Hydro Skeg® bleed kit

Component List

Your Hydro Skeg® kit contains the following:

- Skeg box assembly, fitted with temporary timber spacer
- Glide box
- Skeg cassette assembly
- Glide cylinder assembly
- Bleed kit (feed tube, drain tube)
- Two lengths of 4mm nylon tube (one green, one clear)
- Two 1/8" BSP/4mm compression couplings
- One long (M6x40) stainless steel countersunk socket head setscrew
- Two short (M6x20) stainless steel button head setscrews
- One M6 nyloc nut
- Two M6 half nuts
- Two 19mm diameter rubber-bonded washers
- Hydro Skeg® stickers
- Tube clips

Tools and Materials required

The following tools are needed to fit the Hydro Skeg® into your kayak:

- Dremel tool or electric jigsaw to cut holes in the kayak deck and hull for the skeg and glide boxes
- Fibreglassing kit including acetone, polyester resin, hardener, fibreglass matting
- Gelcoat
- Pigment to match kayak hull colour
- 4mm allen key
- 10mm, 11mm and 13mm spanners
- 2 small clamps (spring loaded clothes pegs or Bulldog clips are adequate)
- Water bottle
- Drill bits: 4mm, 6mm and countersinking bits
- Marker pen
- Anti-freeze
- Masking tape
- Basin
- Duct tape
- Sandpaper
- Sikaflex
- ABS solvent cement
- Junior hacksaw
- Sharp knife
- Foam rubber blocks

1. Cut the hole for the glide box

- If your kayak already has a deck mounted skeg slider, then disconnect the existing skeg wires and remove the slider components.
- Mark out the position of the new glide box on the deck, positioned so that you can reach the glide comfortably when sat in the cockpit. If your kayak already has a deck mounted skeg slider hole then you will need to mark the position of the new box so as to best overlap that of the existing hole.
- Cut out the hole neatly through the deck to match the recessed part of the glide box and clean up any ragged edges.
- Place the glide box into the hole with the hole for the cylinder facing towards the stern of the kayak, then loosely assemble the glide cylinder into the glide box to check the fit.
- Mark the flange's position on top of the deck with masking tape. Sandpaper up to the edge of the masking tape to roughen the surface.



Glide box cut out on deck

2. Cut the hole for the skeg box

- If your kayak already has a skeg fitted, you should disconnect and discard the existing components.
 - Turn the kayak upside down. Position the new skeg box (upside down) on the hull at the stern of the kayak along the keel line and mark round the edge of the skeg box.
- Ensure that when the skeg box is positioned in the hull you will be able to reach the back of the skeg box through the rear hatch.** If your kayak already has a skeg fitted then ensure that the outline of the new hole best overlaps the existing hole.



Skeg box positioned for marking out

- Cut out the hole neatly through the hull

Tip! Cut the hole on the small size and clean up the edges so that the new skeg box has a tight fit: the tighter the fit now the less finishing later on.



Skeg box cut out in hull

- Turn the kayak over.
- Place the new skeg box containing the timber spacer through the hull from the inside ensuring that the flange on the skeg box is a good fit in the keel.
- Clean out all the cuttings and fibreglass dust from the inside of the kayak. Wipe the inside of the kayak around the edge of the hole with acetone.
- Dummy fit the skeg mechanism to the skeg box and fit temporarily into the hull. With the skeg lowered check the alignment both vertically and longitudinally.

3. Secure the glide box in the deck

- Place Sikaflex around the underside of the glide box flange and push into place, with the brass insert towards the stern of the boat. Clean up any excess Sikaflex from around the edge of glide box and remove the masking tape.



Glide box in place in deck

4. Glass the new glide and skeg boxes in place

- Prepare the materials for fibreglassing. Cut strips of fibreglass mat 5cm (2") wide and long enough to go around the base of the skeg box and to give a couple of tabs for the glide box.
- Tip! Wrap the upper section of the skeg box in clingfilm beforehand for a clean finish.*

4. Glass the new glide and skeg boxes in place (continued)

- Paint the base of the skeg box (see hatched area in picture) liberally with ABS solvent cement.
- Immediately overpaint the same area of the skeg box with polyester resin and hardener.
- Place the skeg box into the hole in the hull, making sure that the skeg box is in the centre of the kayak and is vertical (wedge in place with foam rubber blocks: see picture).
- Mix sufficient resin and hardener and then lay up the fibreglass mat strips between the skeg box and the hull of the kayak. *Tip! Butt one edge of the mat strip against the flange on the side of the skeg box for a neat finish.*
- In the same way, glass a couple of tabs between the underside of the glide box and the inside of the deck.
- Leave until the fibreglass has gone hard (24 hours should be long enough).
- Turn the kayak over and trim the edge of the new skeg box neatly back until it is in line with the kayak's hull. Clean up around the edge of the skeg box, then finish off with gelcoat in the same method as laying up a keel rubbing strip (see picture).
- Remove the timber spacer from the skeg box.



Skeg box: hatching shows where to apply cement



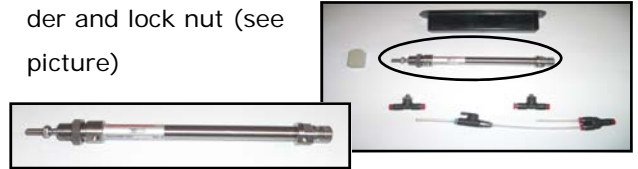
Skeg box wedged in hull with rubber blocks



Gelcoat around finished skeg

5. Fit the glide cylinder and skeg cassette

- Dismantle all the fittings from the glide cylinder including the glide button leaving only the cylinder and lock nut (see picture)



Tip! Press down on the coloured collar to release the pipes from the fittings. To reconnect, just push the end of the pipe back into the fitting.

- Push the piston rod of the cylinder from the inside of the cockpit out through the hole in the glide box
- Screw the glide button back on to the end of the piston rod and tighten up the locknut.



Working from inside *Glide cylinder inside cockpit*

- From the cockpit, screw the glide piston into the brass insert in the end of the glide box so that the face of the cylinder just protrudes into the glide box by about 0.5mm (1/32"). Thread and tighten the cylinder lock nut, finger-tight only at this stage.
- Re-fit the two T connectors onto the cylinder, aligning them along the body of the cylinder. *(Tip! Take care not to overtighten the connectors: tighten finger tight only then tighten a further quarter turn with a spanner).*
- Rotate the cylinder so that the hole in the back end of the cylinder is perpendicular to the deck of the kayak at the point closest to the cylinder. From the inside of the kayak cockpit, drill a 6mm diameter hole through the kayak's deck using the hole in the end of the cylinder as a guide. Countersink the hole from the outside.
- Place the long stainless steel countersunk socket head setscrew through the kayak deck. From the inside of the cockpit, thread the 19mm rubber-bonded washer onto the setscrew with the rubber side facing out towards the inside of the kayak deck.

5. Fit the glide cylinder and skeg cassette (continued)

- Thread the 2 half nuts onto the setscrew, then pass the end of the screw through the hole in the back of the cylinder.

Tip! See picture for order in which items are threaded onto the set-screw.



- Tighten up the outermost half nut onto the rubber-bonded washer to make a watertight seal against the kayak deck. Run the other half nut up against the side of the cylinder, then screw the M6 nyloc nut onto the end of the setscrew and tighten up against the side of the cylinder. Tighten the cylinder lock nut fully.
- With a junior hacksaw, cut any excess off the tail of the setscrew.
- Drill two 4mm diameter holes through the bulkheads between the cockpit and the rear hatch, and push the two 4mm nylon tubes through the holes.

Tip! You may be able to reuse holes from your previous skeg installation, but otherwise drill the holes high up in the corner of the bulkheads for a neat finish (see picture).



Example of pipe routing through bulkhead immediately below deck

Take care when drilling the holes not to drill through the kayak deck!

- Screw the two 1/8" BSP compression couplings into the two holes on the nose of the skeg box.

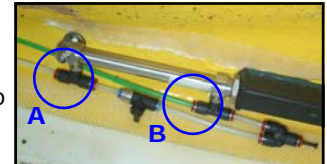


Green and clear pipes connected to skeg box

Tip! Make sure not to lose the olives from inside the compression couplings.

6. Connect the Hydro Skeg® system

- Reconnect the short lengths of tubing to the glide cylinder as shown on the picture. Do the same with the ends of the long lengths of tubing at the glide box end (in the cockpit). The clear tube connects to the T connector furthest from the glide



Green and clear pipes connected to glide cylinder

- the green tube to the other (B).
- Working inside the rear hatch, feed the other ends of the two long lengths of tubing through the compression couplings in the front of the skeg box as shown. The green tube should be run through the fitting nearest the bottom of the kayak hull.
- Feed tubing through the skeg box couplings until you are happy with the routing of the pipes, making sure that there is enough nylon tubing in each hatch to allow the tubing to follow a neat path along the side of the hull when it is finally secured later.
- Mark tubing with a marker pen at the face of the compression coupling, then temporarily pull the tubes back out from the coupling.
- With a sharp knife, cut the tubes 25.5cm (green tube) and 37cm (clear tube) beyond the points you have just marked. **Take care not to cut tube too short!**
- Push the tubes back through their respective compression couplings, but do not tighten the fittings yet.

6. Connect the Hydro Skeg® system (continued)

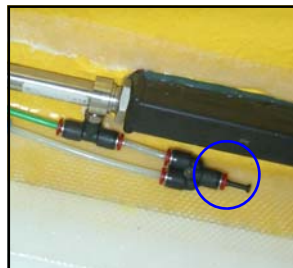
- The next step is to connect the bleed kit to the system. Firstly, connect the drain tube to the pipes at the skeg box end: simply take the two loose ends of the pipes, now sticking through the bottom of the skeg box, and push them into the holes on the 'Y' piece on the drain tube. Place the end of the drain tube into a receptacle suitable to catch excess fluid.
 - At the glide box end, open the bypass valve. The valve is open when the operating lever is aligned along the pipe.
 - Remove the blanking plug from the 'Y' piece at the glide box (see picture)
 - Put the blanking plug to one side – it will be needed again shortly!
 - Fit the end of the bleed kit feed tube into the 'Y' piece in place of the blanking plug. Fit the other end onto a water bottle or similar. *Tip! The bleed kit feed tube is supplied with a fitting which connects directly onto a Platypus type water bottle drinking tube.*
 - Place a clamp (a clothes peg or bulldog clip will do the trick) onto the soft part of the feed tube. Have a second clamp to hand ready for use on the drain tube.
- The Hydro Skeg® is now ready for bleeding.



Bleed kit Y piece connected to pipes protruding from underneath skeg box



Closeup of bypass valve, shown in open position



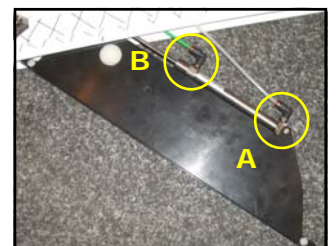
Blanking plug at glide box end



Blanking plug after removal: don't lose this!

7. Bleed the Hydro Skeg® system

- Fill the water bottle with a solution of 75% water and 25% anti-freeze and secure above the kayak. *Tip! the higher up the water bottle, the more efficient will be the bleeding process.*
- Remove the clamp from the feed tube to allow the fluid to flow through the system, collecting in the receptacle at the drain tube end.
- While the fluid is flowing through both tubes, slide the glide button forwards and backwards to expel all air from the glide cylinder and tubes. Repeat if necessary until no more air bubbles are seen emerging from the drain tube.
- Place the clamps onto the soft parts of the drain tube first and secondly the feed tube.
- The final part of the bleeding process is to bleed the skeg operating cylinder, which is done before fitting to the kayak. Place the skeg cassette in a tub or basin of water and move the skeg blade up and down to expel all air out of the cylinder. When no more bubbles emerge, close the skeg blade while the cassette is still under the water.
- Remove the skeg cassette from the water and take to the kayak. Disconnect the green pipe from the drain tube 'Y' piece and immediately plug it into the elbow nearest the skeg hinge (port B: see picture) on the cassette cylinder.
- Repeat for the clear tube, plugging it into the other elbow (port A).
- Slide the skeg cassette into the skeg box making sure that the tubes are not twisted. Secure in place with the two short stainless steel button head setscrews. Manually move the skeg blade to the up (retracted) position.



Sliding the skeg cassette into the box: note position of the green and clear tubes

7. Bleed the Hydro Skeg® system (continued)

- Remove the bleed kit feed tube from the glide cylinder 'Y' connector and replace the blanking plug. Slide the glide button to the up position (nearest the stern of the kayak). Close the by-pass valve by the glide cylinder: the valve is closed when the operating lever is at right angles to the pipe.
- Working from inside the rear hatch, gently push the two tubes through the compression couplings to their full extent, to ensure that they do not interfere with the operation of the skeg blade.
- Tighten the compression couplings, taking care not to overtighten: tighten by hand first, and then a further quarter turn with a spanner.
- Using tube clips supplied, attach the tubes to the inside of the hull to stop them from getting snagged when loading the hatches.

The skeg system is now installed and bled, and only needs final adjustment before use.

8. Adjust the Hydro Skeg® system

- Push the glide button forward to deploy the skeg and then move it fully back to retract it again. If the skeg blade does not fully return into the skeg box, then adjust as follows.
- Push the blade into the box manually, then temporarily open the bypass valve (The valve is open when the operating lever is aligned along the pipe.)
- Slide the glide button slightly forward towards the skeg down position and close the bypass valve again.



Operating the glide button



Skeg blade deployed

The Hydro Skeg® is now ready for use.

Happy paddling!