

This tutorial shows how to replace the propeller drive shaft

Before you start: For this work instruction it is assumed that the XE-1 is upright and supported by the foils. In a configuration where the bike is supported in a workshop or inverted on the handlebars and seat, the Rear Foil can be removed and the task can be performed without having to remove the Chain Guard and RH Rear Buoyancy.

## 1. REMOVE CHAIN GUARD (only required if Rear Foil is fitted)

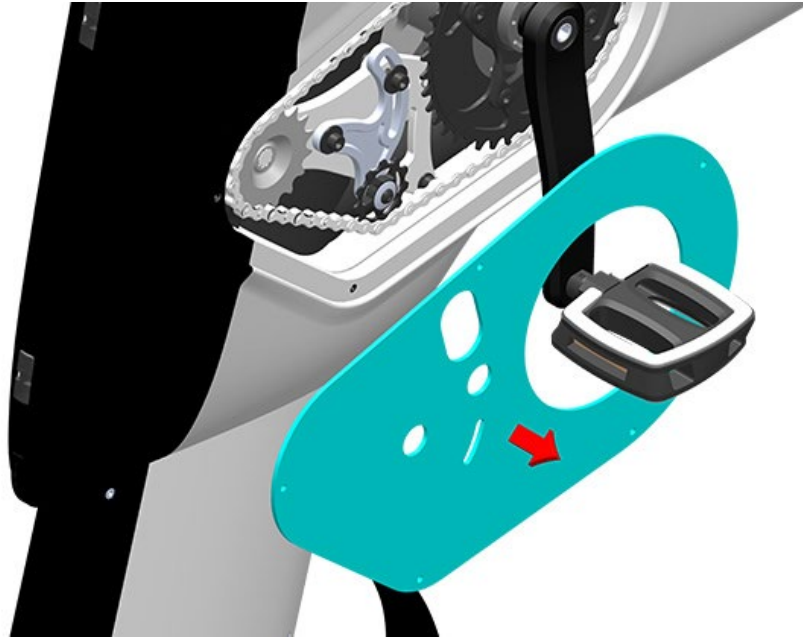
### TOOLS REQUIRED

ID	Description	Task
N/A	2.5 mm Hex Drive / Allen Key	Loosen 8 Gauge Machine Screws

1.1 Remove the five 8-Gauge Machine Screws that is used to attach the Chain Guard to the RH Rear Buoyancy. [Tools: 2.5 mm Hex Drive]



1.2 Remove the transparent acrylic Chain Guard over the RH Crank and Pedal.



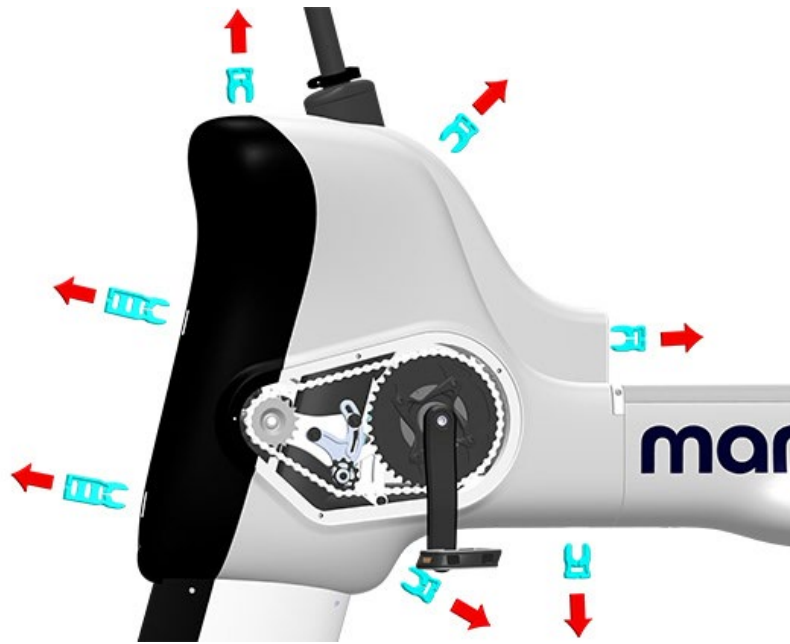
**INFORMATION:** Do not use solvents to clean the Chain Guard. Use warm soapy water (dishwashing liquid soap) instead.

## 2. Remove Rear RH Buoyancy (only required if Rear Foil is fitted)

### TOOLS REQUIRED

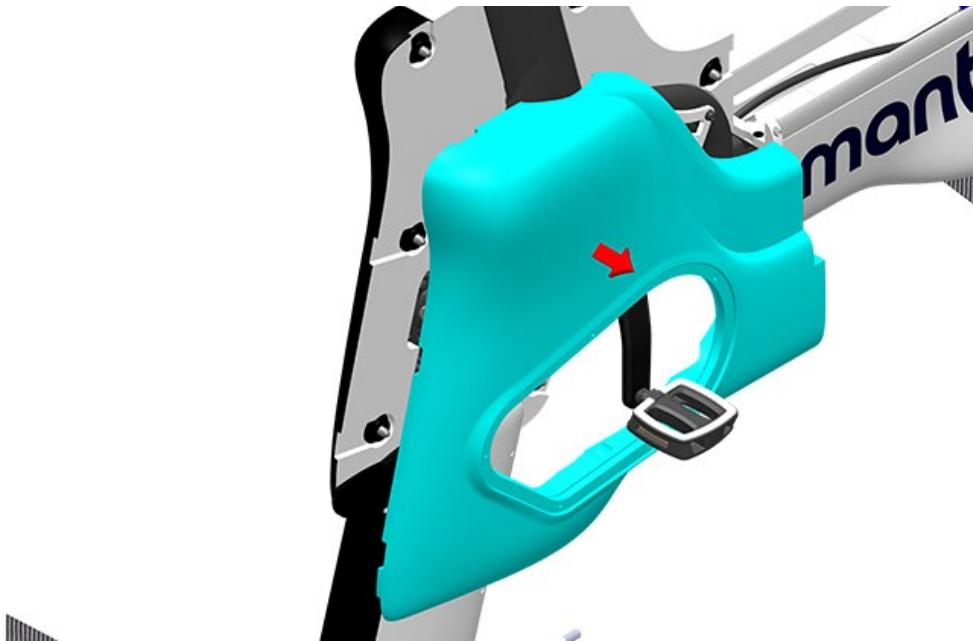
ID	Description	Task
N/A	Long Nose Pliers	Remove Buoyancy Clips

2.1 Remove all seven Buoyancy Clips. [Tools: Long Nose Pliers]



**INFORMATION:** It is good practice to remove the white short Buoyancy Clip in front of the Seat Tube last. The two long clips go at the back.

2.2 With the crank approximately in the 6 O'clock position, remove the Rear RH Buoyancy module over the Crank and Pedal.



**INFORMATION:** The transparent Chain Guard must be removed before executing this step. It is possible to remove the RH Rear Buoyancy with the Chain Guard fitted and the RH Crank in the 5 O'clock position but this practice is not recommended as it could lead to component damage.

## REMOVAL OF THE STRUT COWL IS REQUIRED TO GAIN ACCESS TO THE PROPELLER DRIVE SHAFT

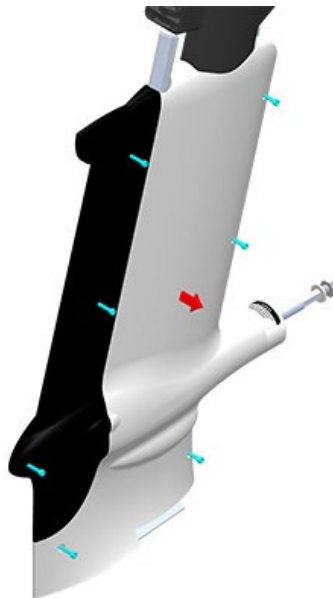
### 3. Removing the Strut Cowl

#### TOOLS REQUIRED

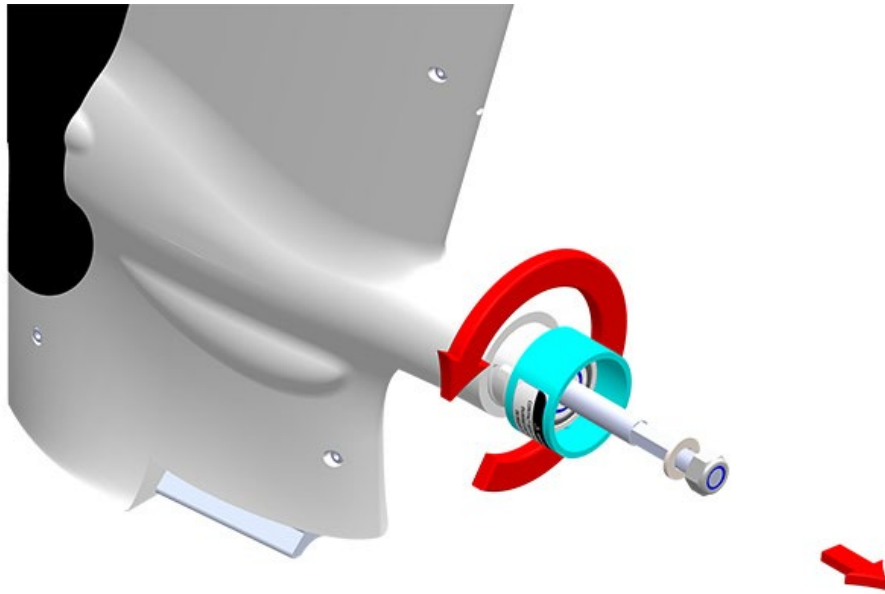
ID	Description	Task
N/A	M3 Hex Key	Loosen M4 Cap Screws

3.1 Remove the seven M4 cap screws from the RH side of the Strut Cowl [Tools: M3 Hex].

**INFORMATION :** The seven M4 Nylock Nuts positioned in the hex shaped pockets on the LH Strut Cowl can fall out. Secure the nuts or remove and store them safely.



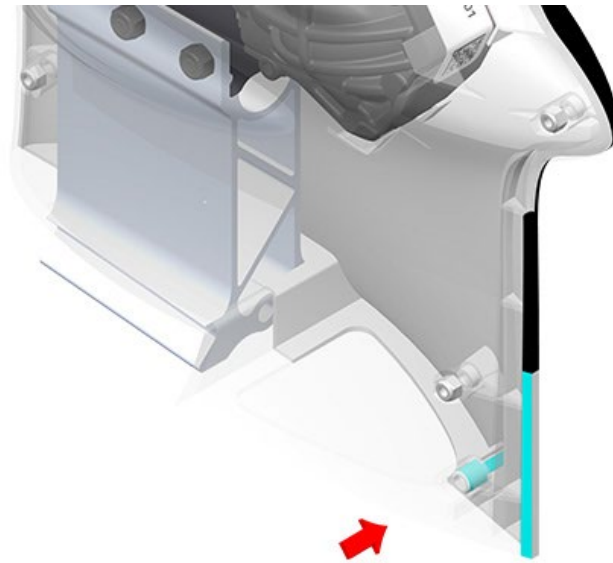
3.2 Unlock the Strut Collar by rotating anti-clockwise through 70 degrees. Remove the Collar by sliding it forward over the Propeller Drive Shaft.



**CAUTION:** Do not use pliers to remove the Strut Cowl Collar as it may cause damage to the component. The Collar is easily rotated by hand and can be removed with little force.

3.3 With the screws and Strut Cowl Collar Removed, the two Strut Cowl halves (LH & RH) is held to each other only by being clipped together at the bottom trailing edge of the Strut Cowl. Unclip the RH Strut Cowl by pushing the Cowling Halves apart at the bottom of the trailing edge.

**INFORMATION :** The LH Strut Cowl is transparent in the image below to show the mating boss clip feature on the RH Strut Cowl.



3.4 Remove the RH Strut Cowl and support the LH Strut Cowl as it is only held from falling by the Cooling Hose being routed through behind the Lower LH Motor Mount Bracket. Keep LH Strut Cowl in place.



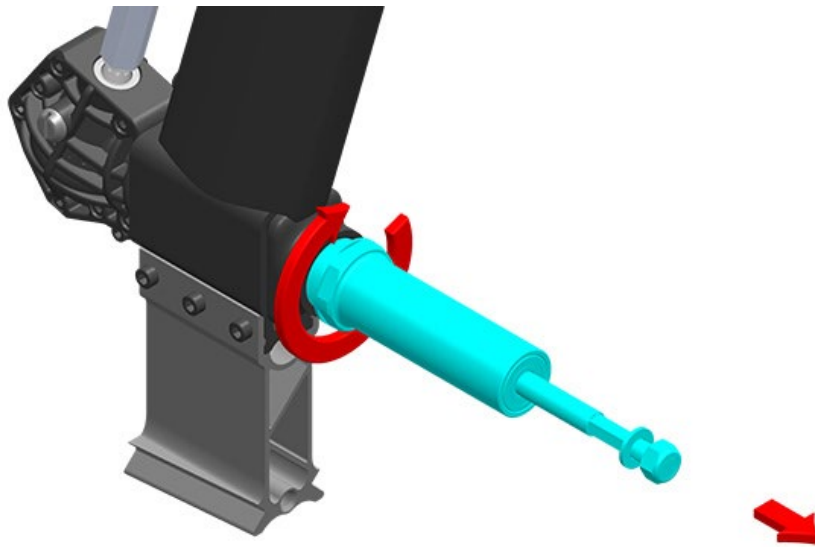
<p><b>INFORMATION :</b> Removal of the Strut Cowl provides access to the Top and Bottom Gearbox, Vertical Drive Shaft, Bayonet (Frame to Foil attachment) and Propeller Drive Shaft Assembly.</p>
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#### 4. Remove Propeller Drive Shaft Assembly

#### TOOLS REQUIRED

ID	Description	Task
N/A	40 mm Open Wrench	Loosen Propeller Drive Shaft Hub

4.1 To remove the Propeller Drive Shaft Assembly, loosen the Propeller Hub by rotating it **clockwise**. Pull the Propeller Drive Shaft forward to disengage it from the Gearbox Output Shaft. [Tools: 40 mm Open Wrench]



4.2 TO REPLACE THE PROPELLER DRIVE SHAFT, SIMPLY PULL IT OUT FROM THE HUB ASSEMBLY AND INSERT THE REPLACEMENT SHAFT INTO THE HUB ASSEMBLY



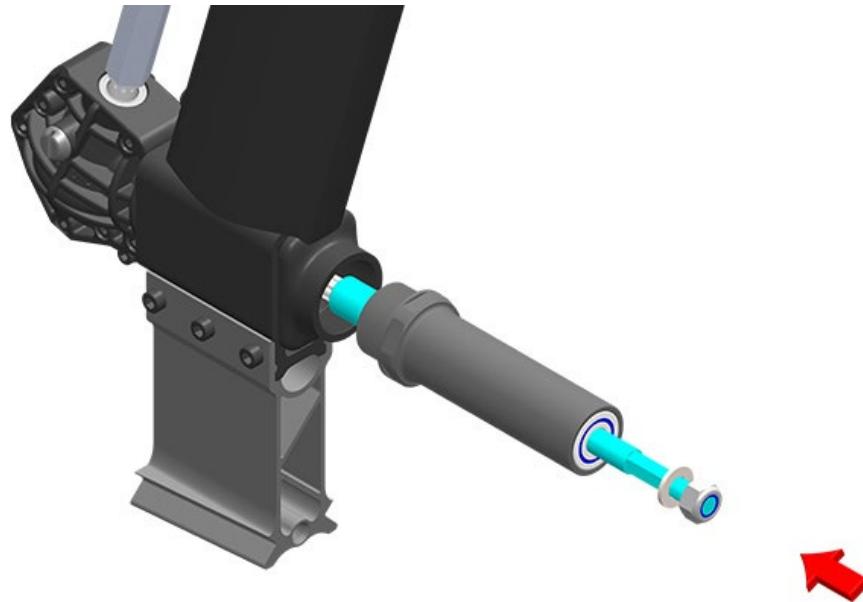
## 5. Fit Propeller Drive Shaft Assembly

### TOOLS REQUIRED

ID	Description	Task
N/A	40 mm Open Wrench	Fasten Propeller Drive Shaft Hub

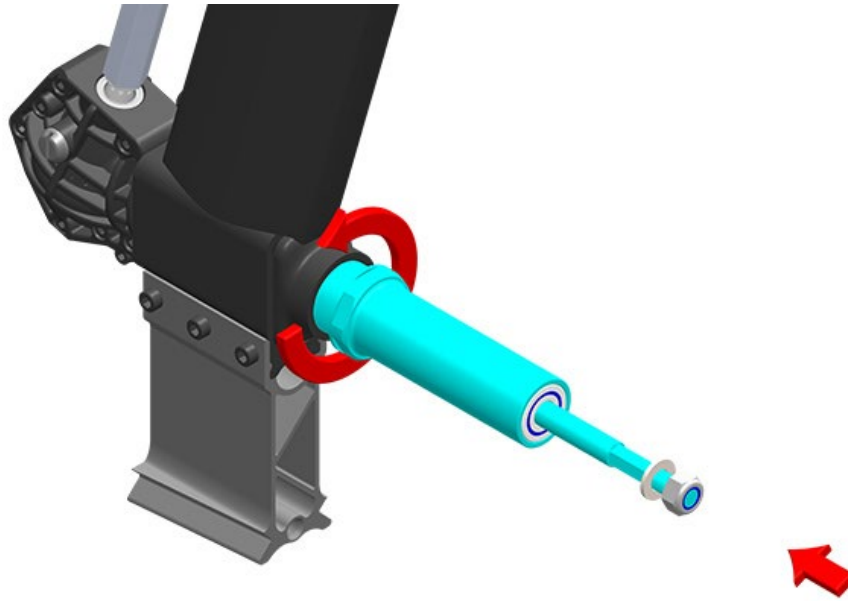


5.1 Apply Tef-Gel (or equivalent) to the internal spline of the Propeller Drive Shaft. Align the Propeller Drive Shaft with Gearbox Output Shaft Spline and push the Propeller Drive Shaft onto the Gearbox Input Shaft. [Tools: By Hand Only]



**INFORMATION:** The LH (left hand) thread of the Propeller Hub ensures that it is self-tightening while the Propeller is driven. With the fine thread extra caution must be taken not to cross thread with that of the Frame. To find the beginning of the thread, slowly rotate the Hub clockwise until you can feel it step off the first thread. Now rotate anti-clockwise to fasten. No torque value is specified but strong hand tight will be sufficient as the minimum torque required.

5.2 Apply Tef-Gel to the thread of the Propeller Hub. Fasten the Propeller Hub screwing it into the frame by rotating anti-clockwise as this is a LH thread. [Tools: 40mm Open Wrench]



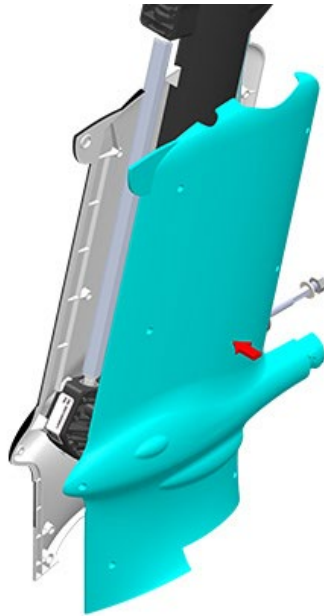
**INFORMATION:** The LH thread of the Propeller Hub ensures that it is self-tightening while the Propeller is driven. With the fine thread extra caution must be taken not to cross thread with that of the Frame. To find the beginning of the thread, slowly rotate the Hub clockwise until you can feel it step off the first thread. Now rotate anti-clockwise to fasten. No torque value is specified but strong hand tight will be sufficient as the minimum torque required.

## 6. Fit Strut Cowl

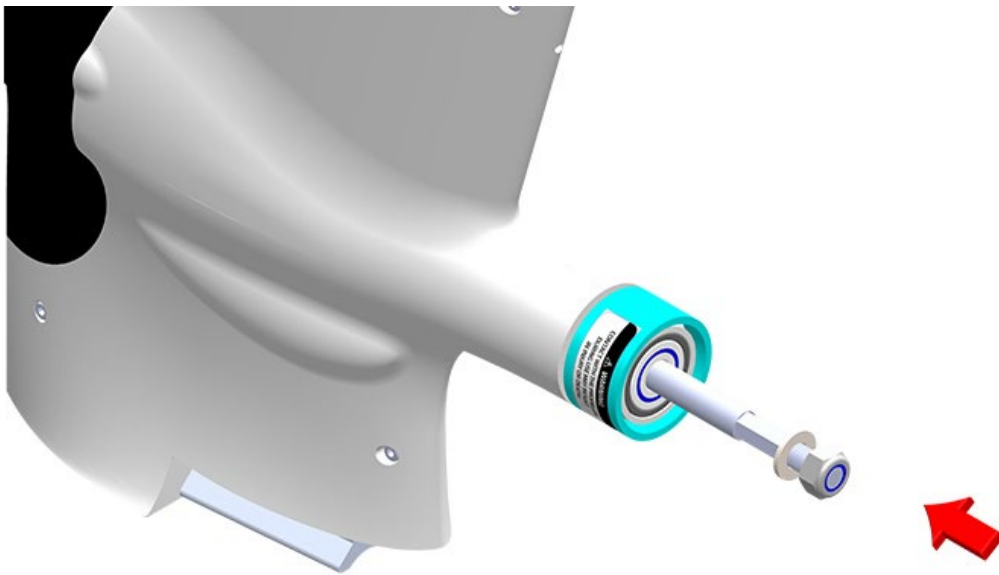
### TOOLS REQUIRED

ID	Description	Task
N/A	Hex Key 3 mm	M4 Cap Screws

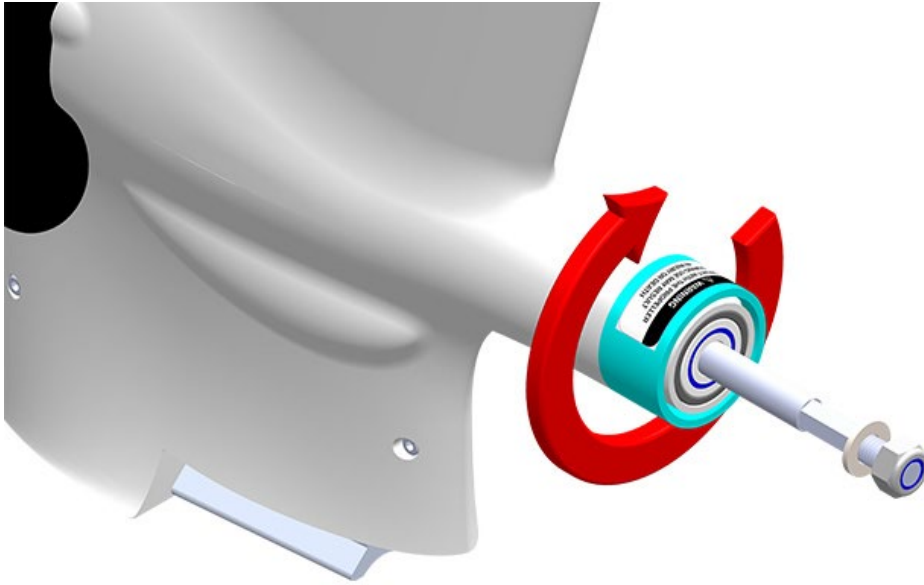
6.1 Position the RH Strut Cowl to align with the LH Strut Cowl. Gently push the bottom of the trailing edges of the two cowl halves together until you hear a clicking sound as the trailing edges interlock.



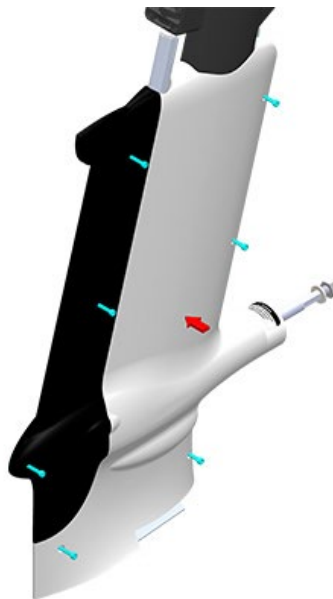
62 With the two internal molded locking boss features of the Prop Collar facing the Strut Cowl and aligned in the 11 & 5 o'clock position, push the Prop Collar into place while holding the two Strut Cowl halves together.



6.3 Rotate the Prop Collar clockwise (by hand only) through approximately 70 degrees until the lock stop is reached.



6.4 With the M4 Nylock Nuts held in the nut pockets of the LH Strut Cowl, fix the two Strut Cowl halves in place by fitting and fastening the seven M4X20 stainless steel cap screws to a torque value of 2.5 to 3 Nm. [Tools: M3 Hex Drive].



## 7. Fit rear right hand buoyancy with cranks on

### TOOLS REQUIRED

ID	Description	Task
N/A	Long Nose Pliers	Remove Buoyancy Clips

7.1 With the Crank approximately in the 6 O'clock position, position the Rear RH Buoyancy Module by sliding it over the top of the RH Pedal and Crank.

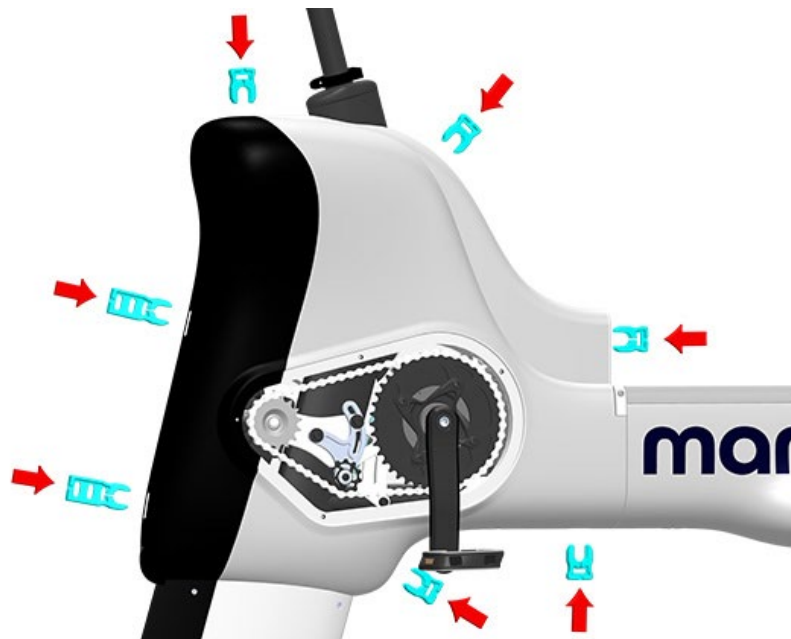


**INFORMATION:** If the RH Cranks are fitted, the Chain Guard must be removed before fitting the Rear RH Buoyancy to the bike.

7.2 Align the Rear RH Buoyancy with the Frame and LH Buoyancy so that the Insert Locating Pins align with the mating inserts on the RH Buoyancy module.



7.3 Fit all seven Buoyancy Clips to secure both LH and RH Buoyancy halves to the hydrofoil. [Tools: Long Nose Pliers].



## 8. Fit Chain Guard

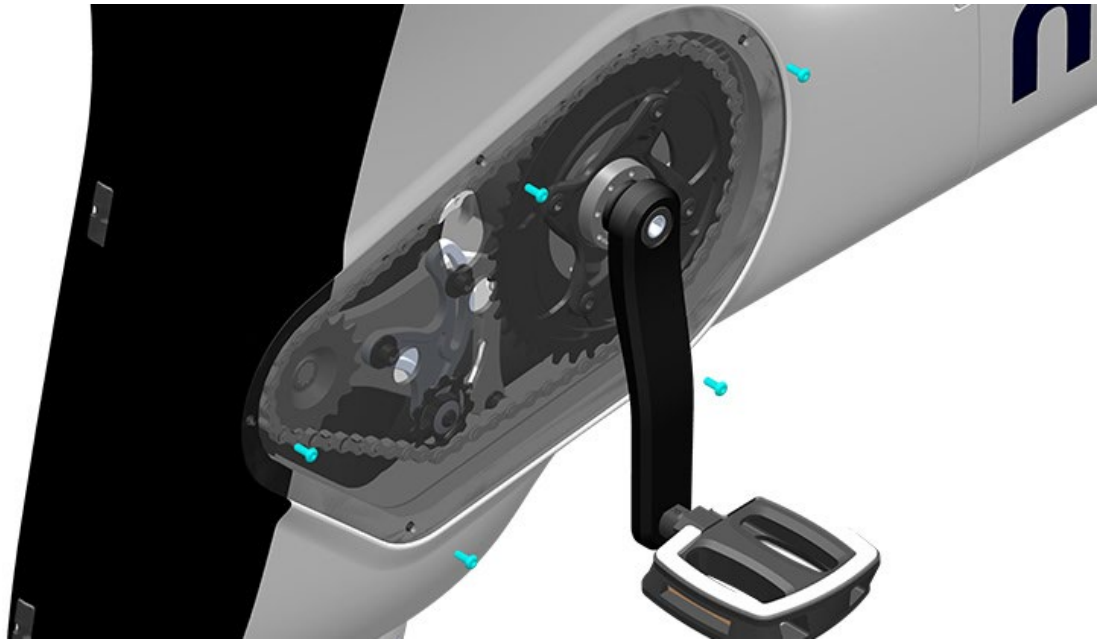
TOOLS REQUIRED

ID	Description	Task
N/A	2.5 mm Hex Drive / Allen Key	Loosen 8 Gauge Machine Screws

8.1 Fit the transparent acrylic Chain Guard over the RH Pedal and Crank and onto the RH Rear Buoyancy.



8.2 Align the Chain Guard with the recess on the RH Rear Buoyancy with screw holes aligned. Fit five 8-Gauge Machine Screws and fasten lightly. [Tools: 2.5 mm Hex Drive]



**INFORMATION:** If the machine screws are over tightened, they will slip in the insert without causing serious damage. To maximize the life of the Buoyancy Inserts, avoid over tightening and subsequent wear of the inserts.