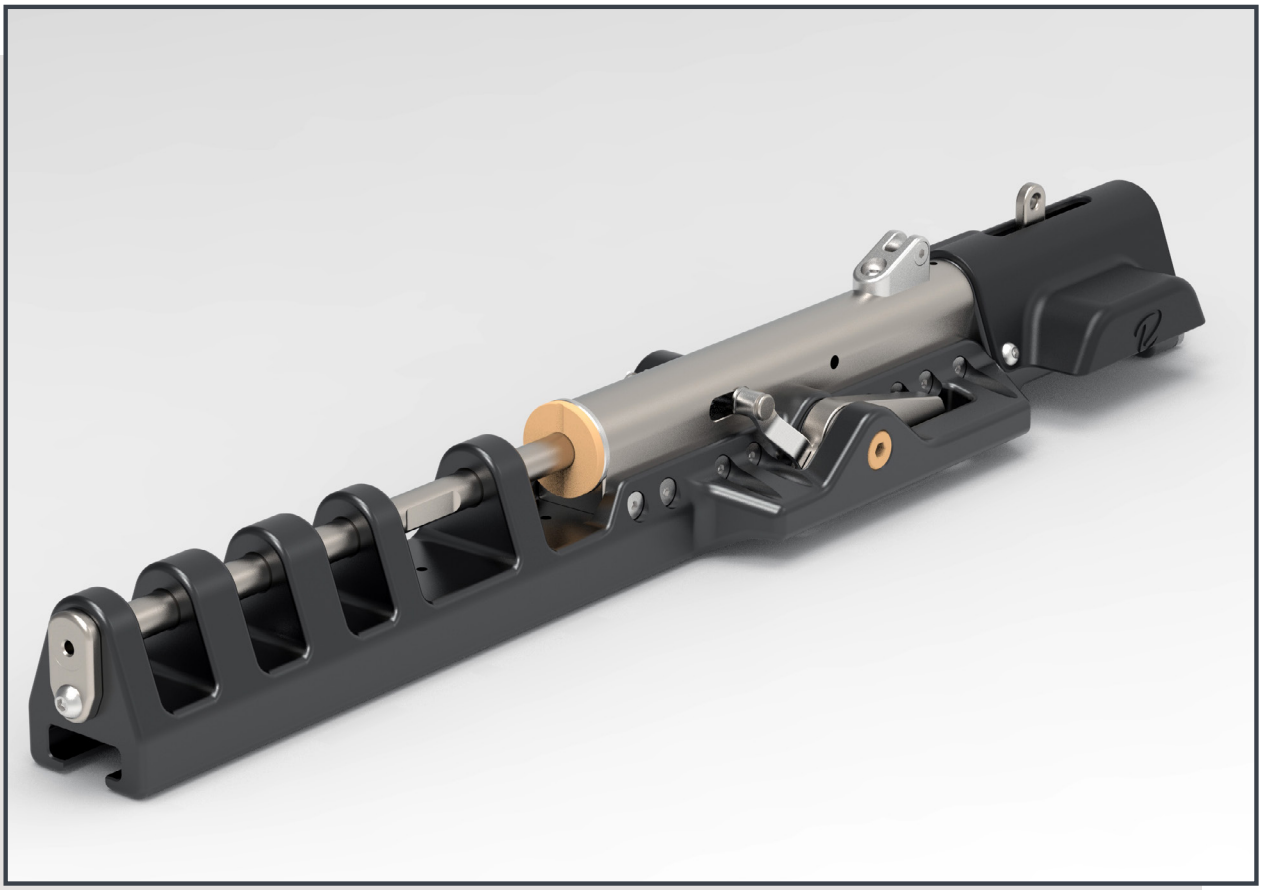
Rigging Projects

Twin Pawl Locking Headboard Car

User Guide



RP4065 - HBT- GL - UG - 01

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Introduction

This manual provides an overview of the Rigging Projects Self Locking Headboard Car Twin Pawl system and its maintenance. Please read this manual carefully before installation, use or maintenance, to ensure that you have understood and are familiar with all relevant details.

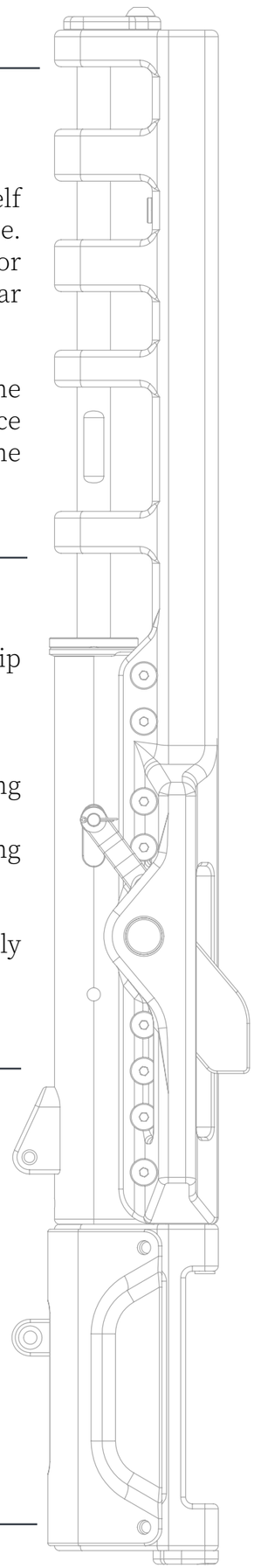
Prior to using this product, all persons should be made aware of the possible hazards associated with its operation and use. Any service work, repairs maintenance or equivalent work carried out on the product should be undertaken by technically qualified persons.

Key Design Features

- Patented self-lock mechanism; negates the need for internal trip lines within the mast
- A choice between an manual lock or self-lock
- Automatic self locking activation
- Aluminium carriage with independent titanium locking cartridge
- Titanium cartridge carries all the vertical load, hence lowering the centre of effort in the car & reducing track levering
- Impossible to false lock on fastener holes in track
- Safety system to allow triggers to be disengaged independently from trip line
- An external manual trip line is also installed as a backup

Caution

The Rigging Projects Locking Headboard Car has been tested extensively to ensure the safety of the product. However, it is important for the users to understand the risks involved in the event of a mechanical failure. Care should be taken to stow the halyard appropriately to avoid entanglement should the sail drop unexpectedly. Failure to take safety precautions could lead to severe injury or death.



Twin Pawl Headboard Car Range

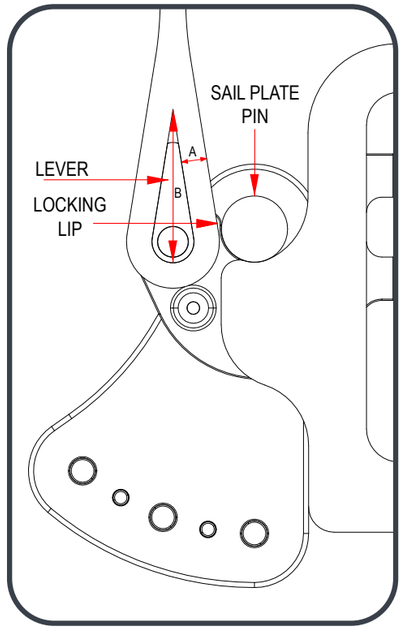
Headboard Car	(A) Max Halyard Ø(mm)	(B) Eye Splice for Lever (mm)	Max Halyard Load 80% BL (T)	Min. Gate length (mm)
HBT8	10	70	4.4	540
HBT12	12	70	6.4	690
HBT15	13	80	8.0	AOR
HBT18	14	80	9.6	AOR
HBT24	16	90	12.8	950
HBT28	18	100	14.4	1000
HBT32	20	110	16.0	1050
HBT45	24	120	22.4	1150

AOR: Available on Request

Running Rigging

In order for the Sail Plate Pin to effectively engage into the Gaff Lock the Sail Plate Pin is levered into position with the halyard. The diameter (A) of the halyard is crucial to ensure the Sail Plate Pin can move past the locking lip.

If it is required to deviate from the stated diameter, please contact Rigging Projects to dicuss a redesign of the lever.



⚠ Important: Gaff Lock Sail Plate Installation

Please find attached to your user guide pack a sail maker installation guide supplied by Rigging Projects to ensure the correct geometry for the head of the sail with the Gaff Lock sail plate.

Secure Sail Plate on Headboard Car

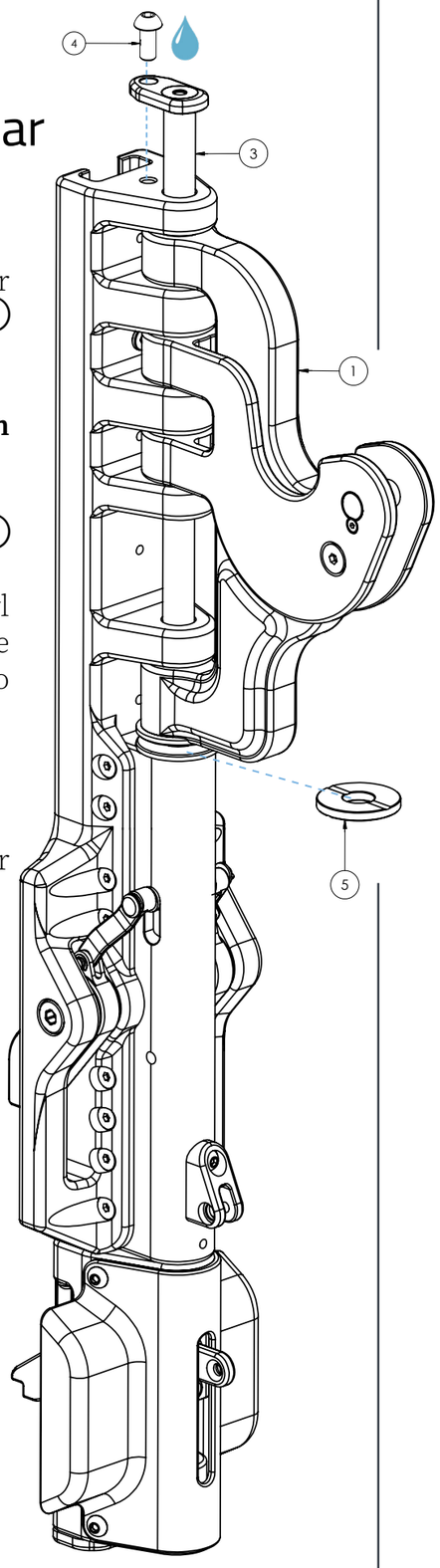
1. Undo the retaining button head fastener (4)
2. Remove car main pin (3)
3. Align sail plate (1) in place, ensure the main washer (5) is correctly positioned between the sail plate (1) and the main car (2)

Please do not apply any grease or Tef-Gel to main washer (5)

4. Insert main pin (3) through the car (2), washer (5) and sail plate (1)
5. The main pin is required to align with the pawl shaft located inside the main car housing. Some alignment of the pawl shaft might be required to seat main pin correctly

Do not use a hammer to secure the pin

6. Use a few drops of Blue Loctite 423 on the fastener (4) that retains the main pin (3)



Connect Halyard to Gaff Lock

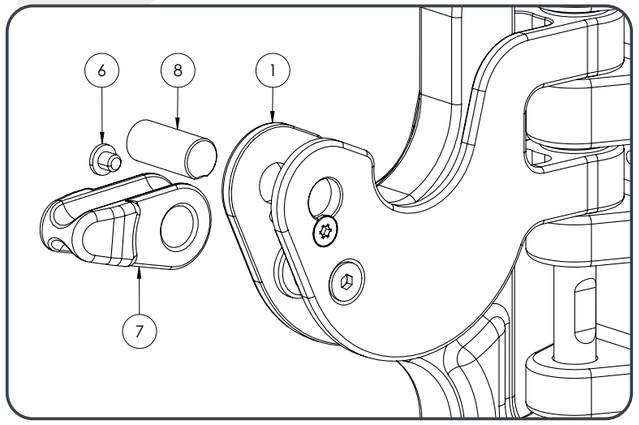


Fig. 1 Remove Thimble

1. Remove halyard pin fastener (6)
2. Remove main halyard pin (8)
3. Remove thimble (7) from gaff lock (1)

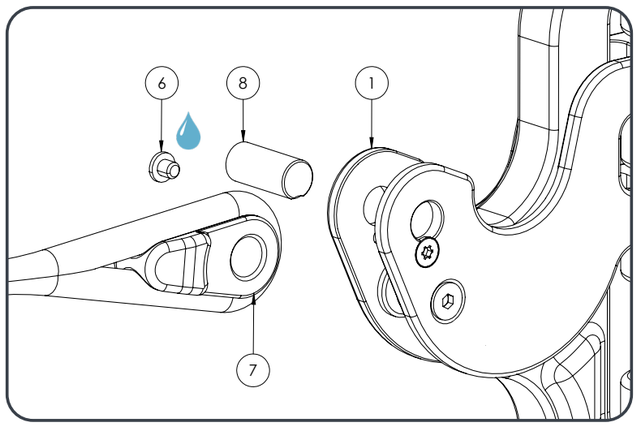


Fig. 2 Attached Thimble with Halyard

4. Secure spliced halyard eye to thimble (7)
5. Thread the halyard eye fitted with the thimble (7) through the sail plate (9) fitted to the sail (fig.2)

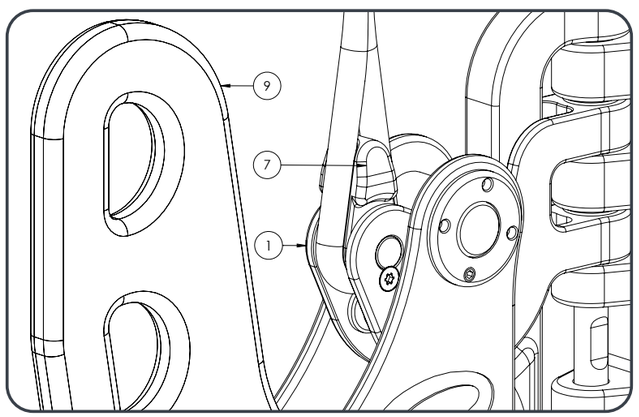


Fig. 3 Sail Plate Engaged

6. Install thimble (7) in between gaff lock cheeks (1)
7. Insert pin (8), rotate until it is seated and secure with fastener (6) with a few drops of blue Loctite 423

Installing Headboard Car onto Track

1. Remove gate track section from mast
2. Slide the locking headboard car on to track ensuring the barrel section of the car is at the lower end
3. Reinstate gate section. Make sure track joins are seamlessly aligned

Trigger Seat Installation

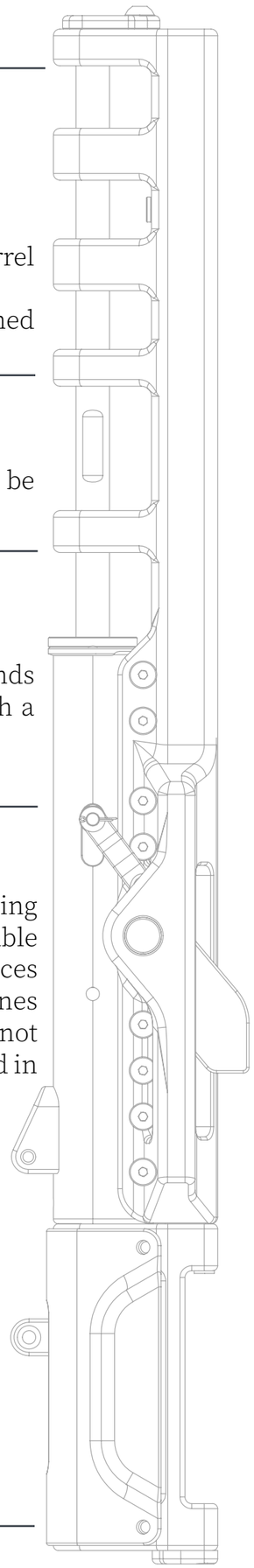
If retrofitting the headboard car, the self locking trigger seat must be installed by a Rigging Projects technician.

Halyard Indicators

If there is no sensor kit installed Rigging Projects recommends marking your main halyard at full hoist and at all reef point with a whipping in different colours.

Disclaimer

It is not permitted to modify the product or its parts, other than replacing parts specified in this manual. Rigging Projects Ltd is not liable for any dangerous situation, accidents, damage and consequences thereof caused when deviating from the instructions, guidelines and procedures described in this manual. To retain warranty do not deviate from the instructions, guidelines and procedures described in this manual.

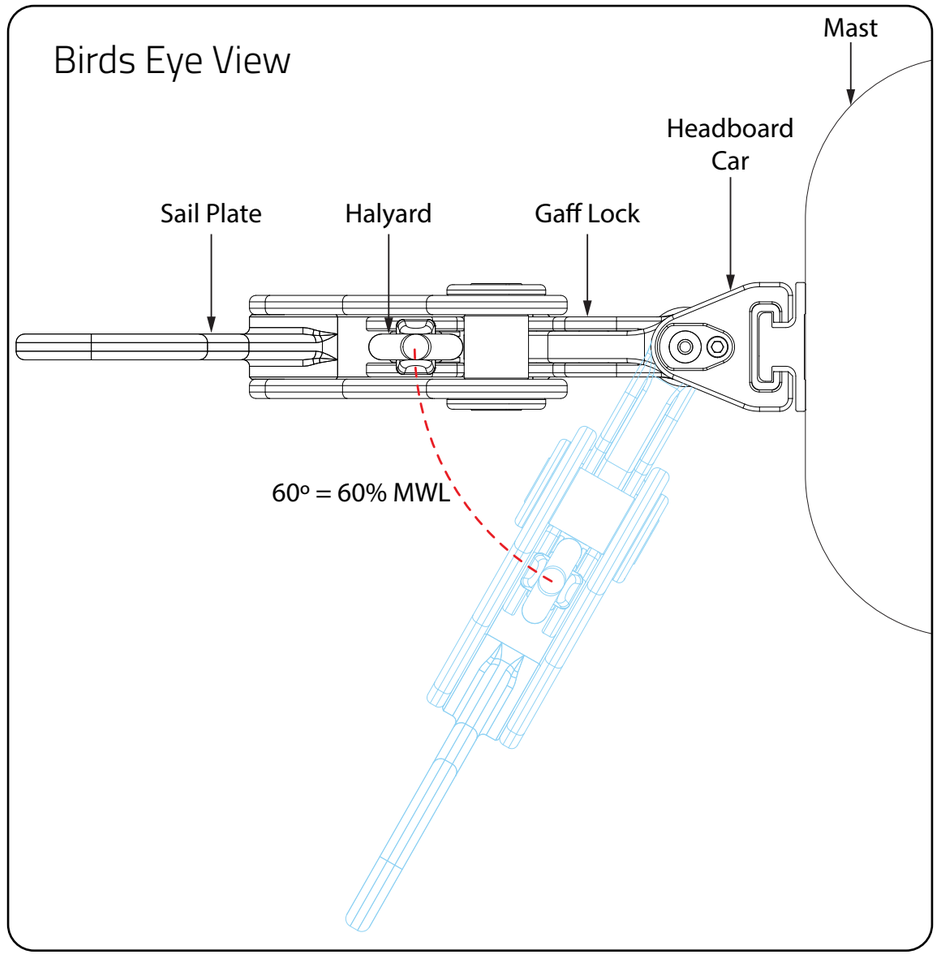


Load Diagram

Headboard Car Load Diagram

Rotation from Center	% of Maximum Working Load
0°	100%
15°	100%
30°	85%
45°	70%
60°	60%
More than 60°	Not advised
105°	Maximum Rotation

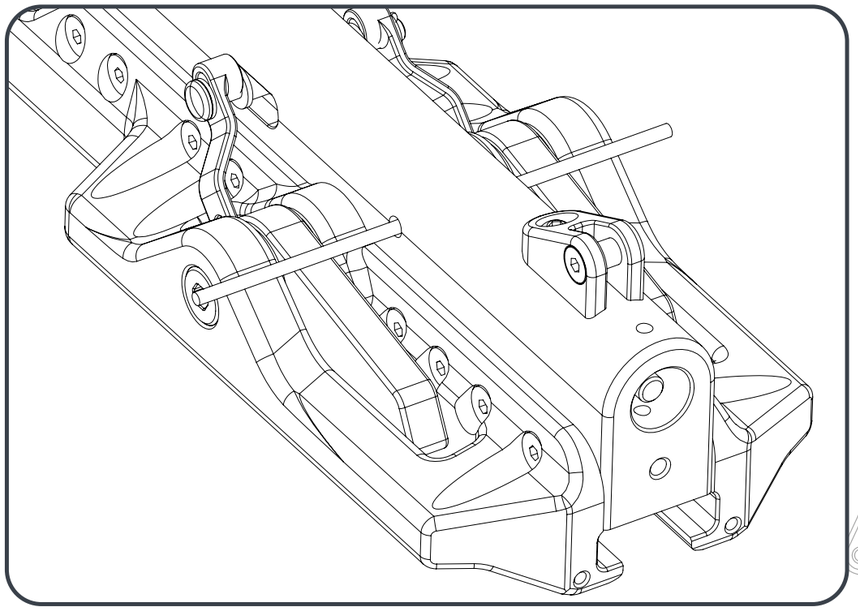
This diagram shows the operating range of a mainsail headboard car relative to the boat's centerline. As the headboard car rotates away from the centerline, its load capacity decreases.

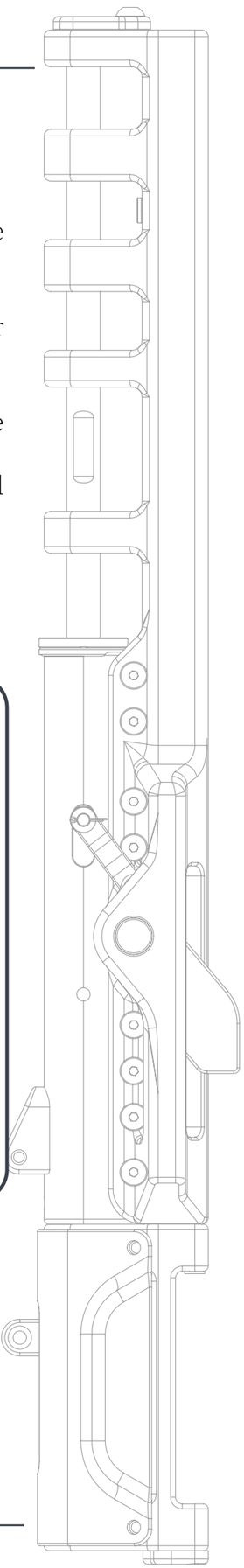


Safety Lock Out Mode

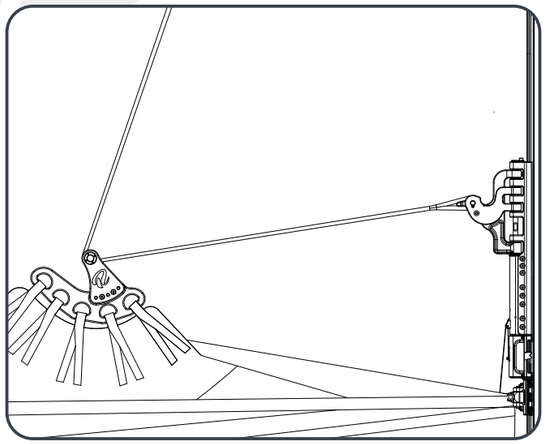
In the unlikely event of the main pawl not retracting during the dropping of the sail, follow these steps:

1. Using a metal rod (max. 5mm diameter- a bolt, Allan key or screw driver)
2. Ascend the mast to the headboard car
3. Move the car away from the high load track section where the pawl can engage
4. Insert the rod through small hole perpendicular to the pawl housing
5. Ensure the rod is installed through entire body
6. Ease the main halyard
7. Contact Rigging Projects customer support

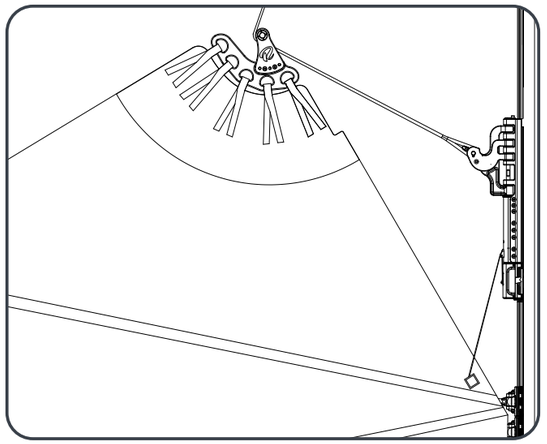




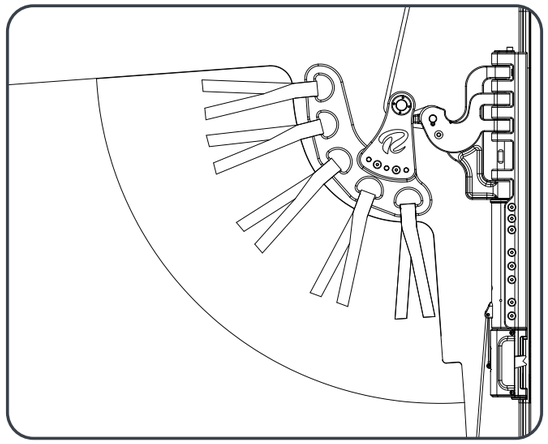
Gaff Lock
On the Lock



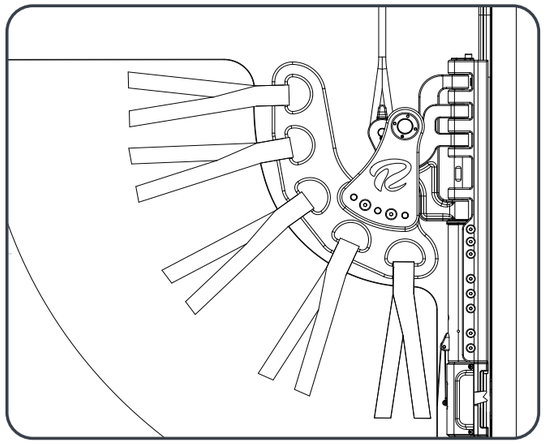
1. During the initial hoist the 2:1 system engages with the Gaff Lock sail plate and lifts the head of the sail away from the sail stack on the boom



2. The halyard will engage with the gaff lock and hoist the headboard car to meet the sail plate

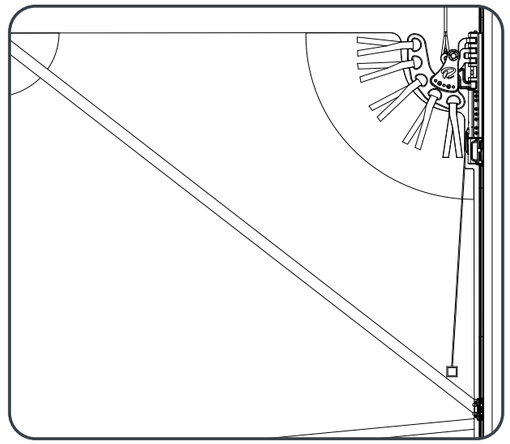


3. The sail plate will slide onto the lever and engage with the gaff lock

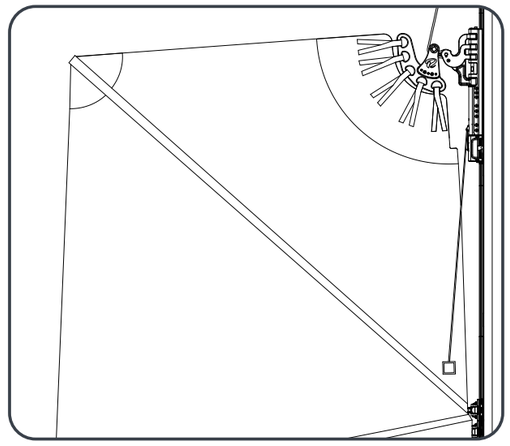


4. During the hoist the sail plate will automatically lock into position under the weight of the sail

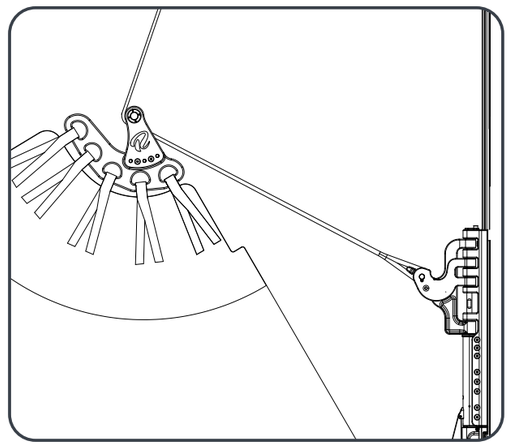
Gaff Lock
Off the Lock



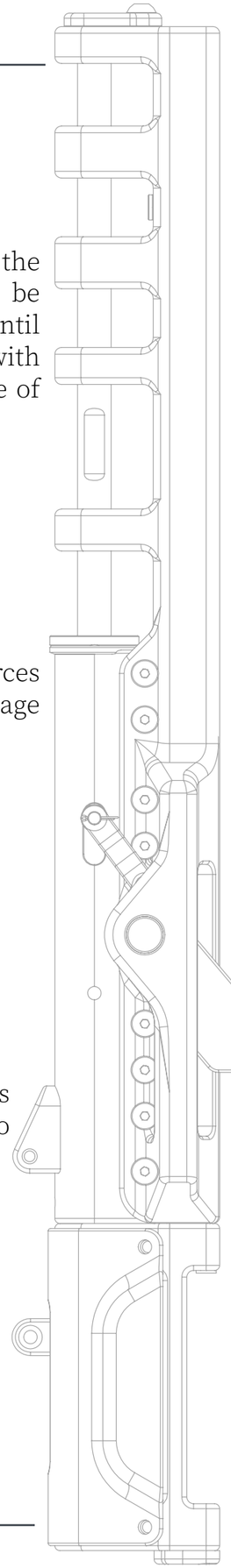
1. During the dropping of the sail the sail plate will be locked in the gaff lock until the baton car engages with the car stack at the base of the mast



2. The gaff baton then forces the sail plate to disengage from the gaff lock

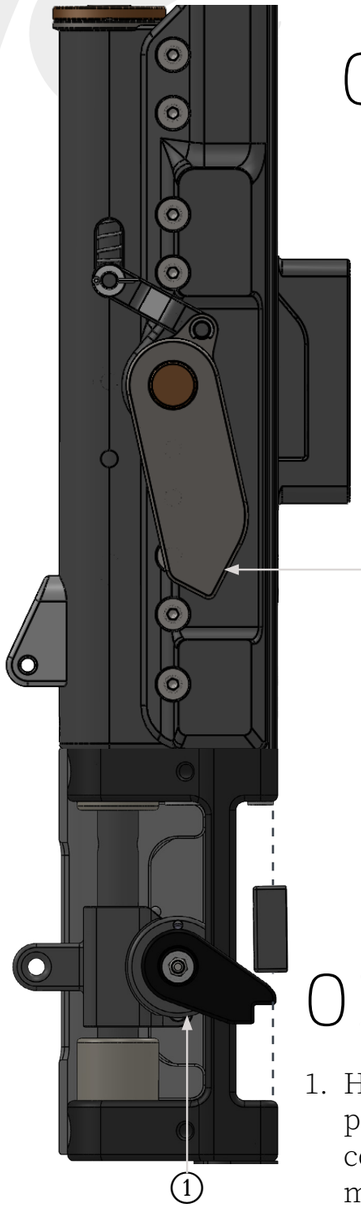


3. The head of the sail is now able to be eased onto the sail stack



On The Lock

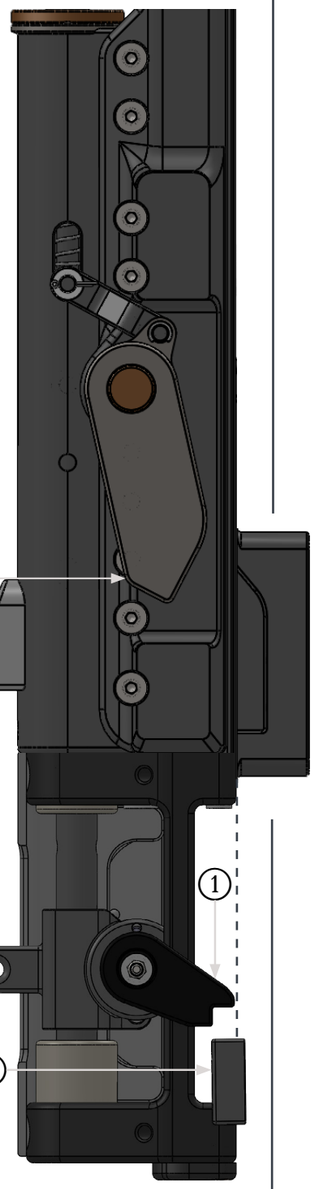
Please Note: these diagrams depict the actions of the starboard side of the mechanism. The nature of the 'twin pawl' assembly results in all pawls act simultaneously with their respective twin.



01 During Hoist Pawls Retracted

1. Ease main sheet, vang and tack tension before manoeuvre

During this time the self lock pawl is free to spring over the trigger seat and the main pawls (2)x2 are retracted



02 Over Hoist Position

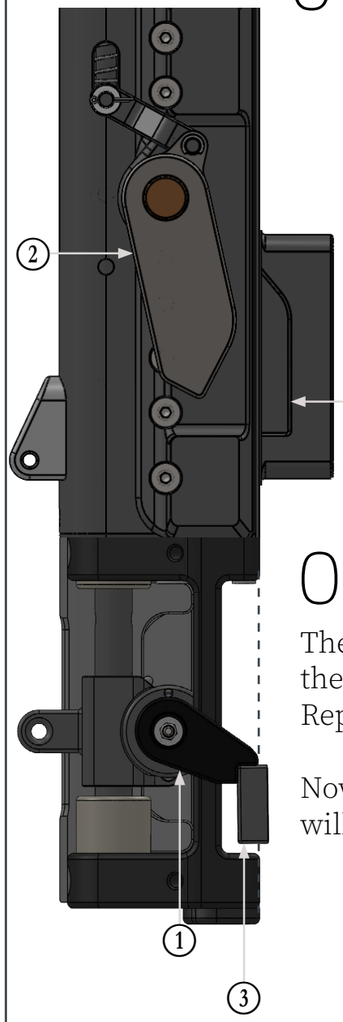
1. Hoist the halyard and wait for the position sensor signal to indicate the correct height. Without sensor kit: to maximum hoist halyard mark

Once hoisted past the trigger seat (3), the self lock pawls (1)x2 are in 'lock' mode and ready to activate the main pawls (2)x2

03 Self Lock Engages

1. **Slowly ease** the halyard to allow the self lock pawls (1)x2 to engage with their respective trigger seats (3)x2

When the self lock pawls (1)x2 are engaged with the trigger seats (3)x2, the mechanism causes a chain reaction to activate the main pawls (2)x2 into the high load track section (4).

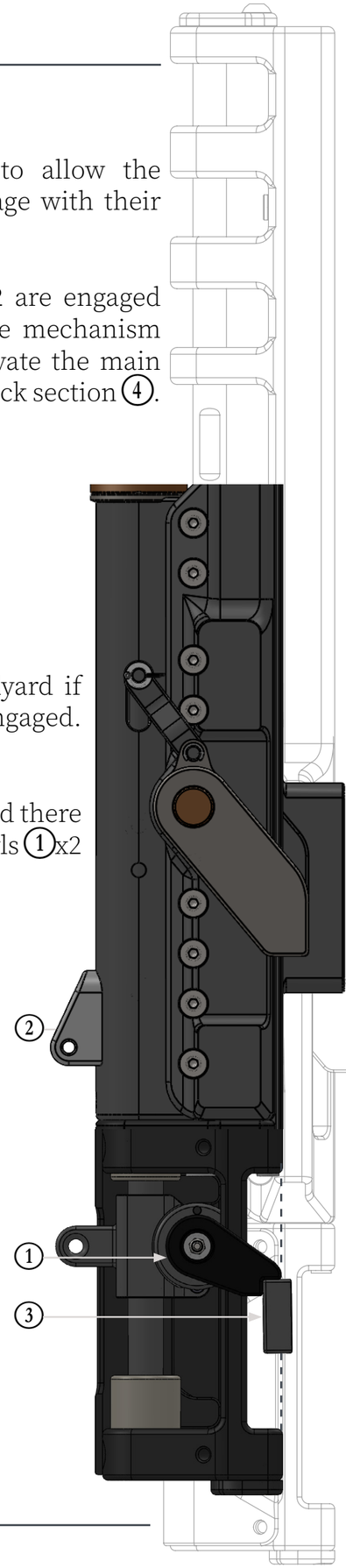


04 On the Lock

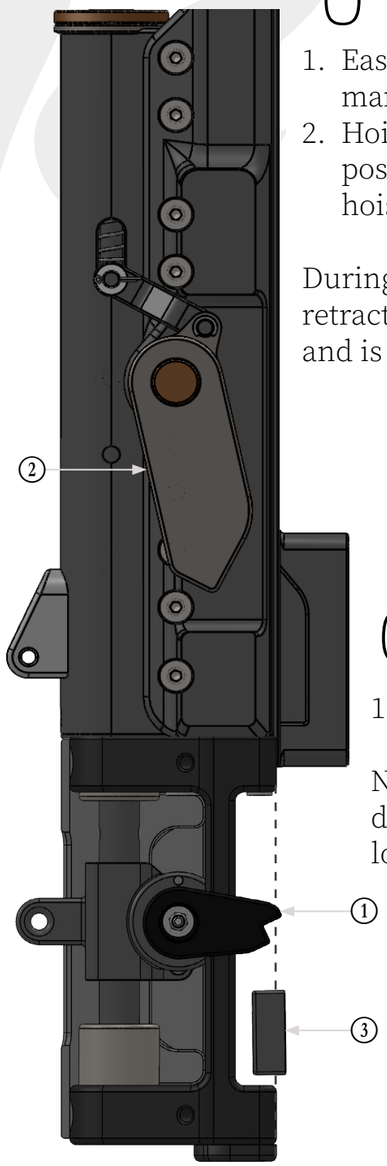
There will be no weight on the halyard if the main pawls (2)x2 are properly engaged. Repeat the process if not.

Now the main pawls (2)x2 are engaged there will be no weight on the self lock pawls (1)x2

Please ensure the halyard is stowed appropriately so that there is no risk of entanglement in the event of mechanical failure and the sail drops unexpectedly.



Off The Lock



01 Over Hoist

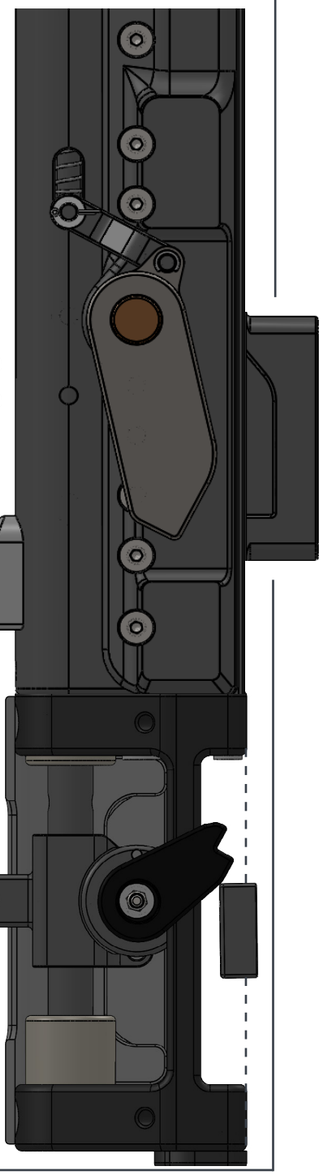
1. Ease main sheet, vang and tack tension before manoeuvre
2. Hoist the halyard until the sensor indicates the correct position of the car. Without sensor kit: to maximum hoist halyard mark

During the hoist the main pawls ②x2 automatically retract and the self lock pawls ①x2 go into '**unlock mode**' and is able disengage from the trigger seat ③

02 Halyard Ease

1. Ease the halyard to drop the sail

Now all four of the pawls are disengaged and the sail is free to be lowered



Minimum Overhoist Required to Unlock (mm)	
HBT8	50
HBT12	50
HBT24	65
HBT28	70
HBT32	70
HBT45	75

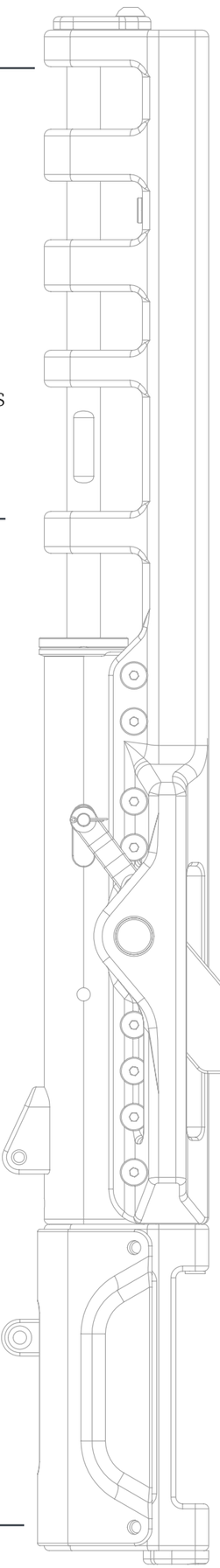
Manual Lock - Trip Line

To engage pawls on the lock using the manual trip line;
1. Over hoist the head board car
2. Gently pull the trip line
3. Ease the halyard **slowly**
4. The main pawls ② x2 will engage

Due to the nature of mechanism for the manual trip line it is important the line is **free to run** if not in use.

Reefing

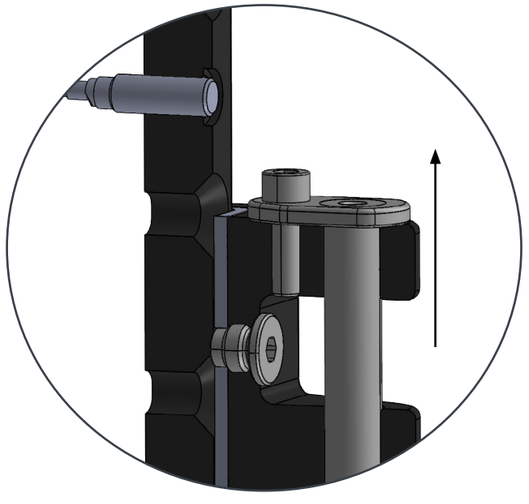
To reef the sail, please follow the same 'On The Lock' procedure.
1. Ensure the car is lowered below reef trigger seat
2. Over hoisted the head board car to activate self lock pawl
3. **Slowly ease** onto the lock



Sensor Kit Installation

Step	Instruction
1	Mouse sensor wires from the junction box to the relative reef points and full hoist locations on the mast
2	Pass the sensor through the mast and thread onto the back high load track section. **Ensure the sensor is 3.9mm** recessed from the surface of the track
3	Secure the sensor in place with backing nut
4	Test the sensor signal to ensure the function of the sensor
5	Secure the high load track section to the mast

On The Lock



01 During Hoist

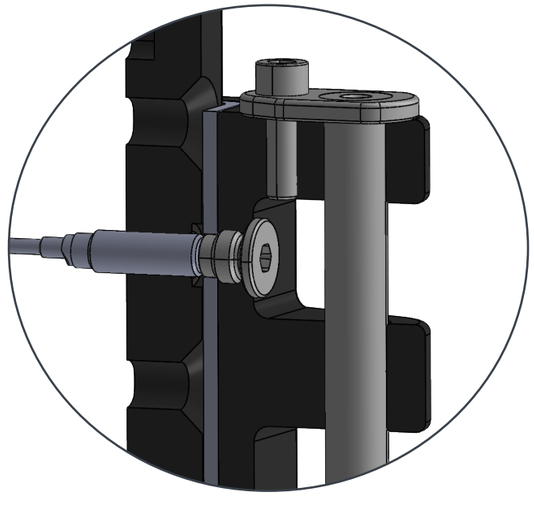
Off

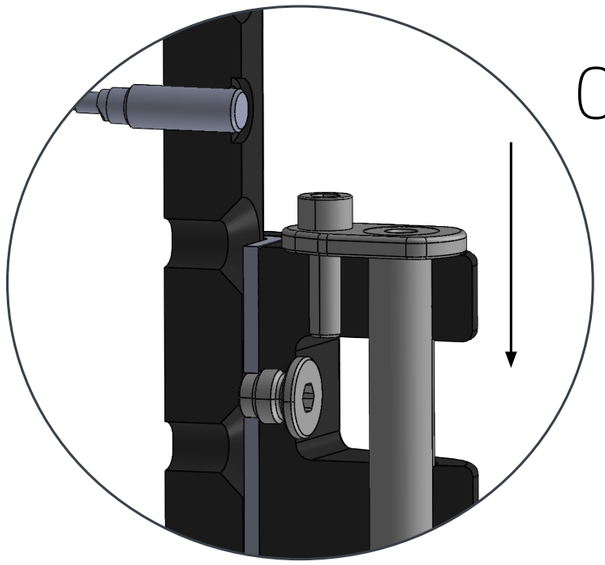
The sensor will activate at each reefing point during a full hoist manoeuvre. Otherwise the indicator will be off.

02 Over Hoist

On

The sensor will activate to indicate the headboard car is in the over hoist position and can now be **slowly eased** onto lock.





03 On the Lock

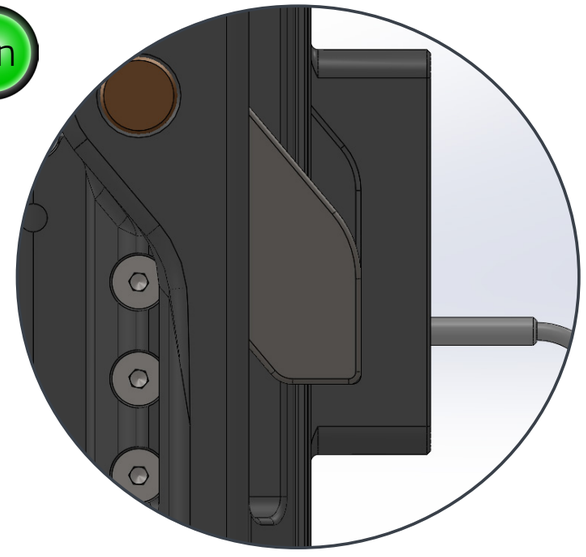
Off

After the halyard is eased the sensor will be disengaged when the headboard car is on the lock.

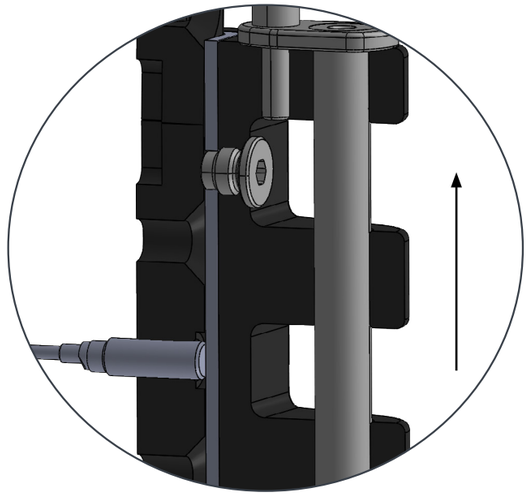
04 Pawl Engage

On

An independent signal will indicate the main pawl is engaged in the locking box.

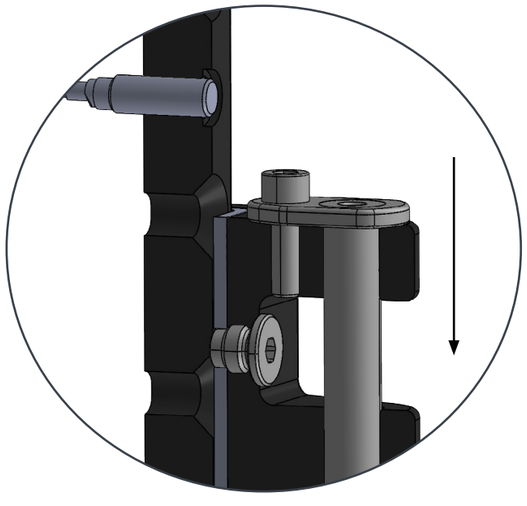


Off The Lock



01 Over Hoist

From the ‘on lock’ position, when the car is hoisted, the signal will show an Off, On, Off sequence. The headboard car is now in the unlocked position.



02 Halyard Ease

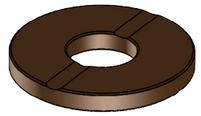
From the ‘over hoist’ position the signal will repeat an Off, On, Off sequence as the sensor is activated during the dropping of the sail.

Service Guide

Click or Scan

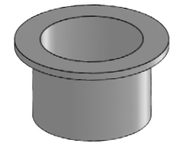
Please contact Rigging Projects customer support for assistance with replacing parts

Large Main Washer

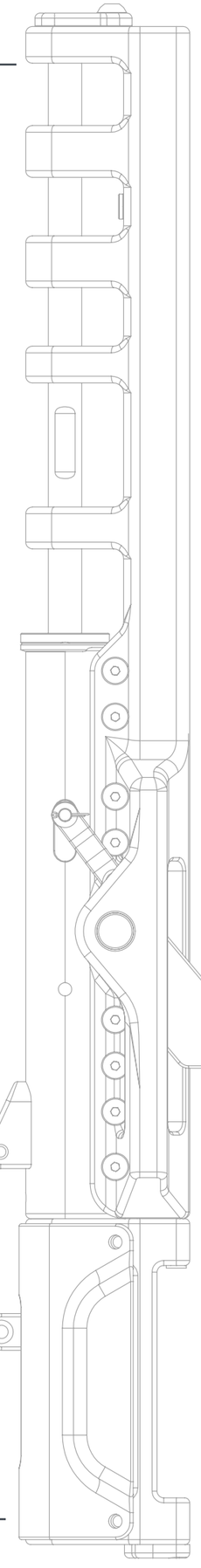


Headboard Car (T)	Original Washer Thickness (mm)	Max. Wear (mm)	Min. Washer Thickness (mm)
8	4	1.00	3.0
12	4	1.00	3.0
15	4	1.50	2.5
18	4	1.50	2.5
24	6	1.75	4.25
32	6	2.00	4.0
45	7	2.50	4.5

Sail Plate Top Hat Bushings



Regularly inspect the top hat bushings pressed into the sail plate for degradation and deformation. Do not remove these until you have received new parts.



Inspection Intervals

During each interval please carry out preceding inspection advisories

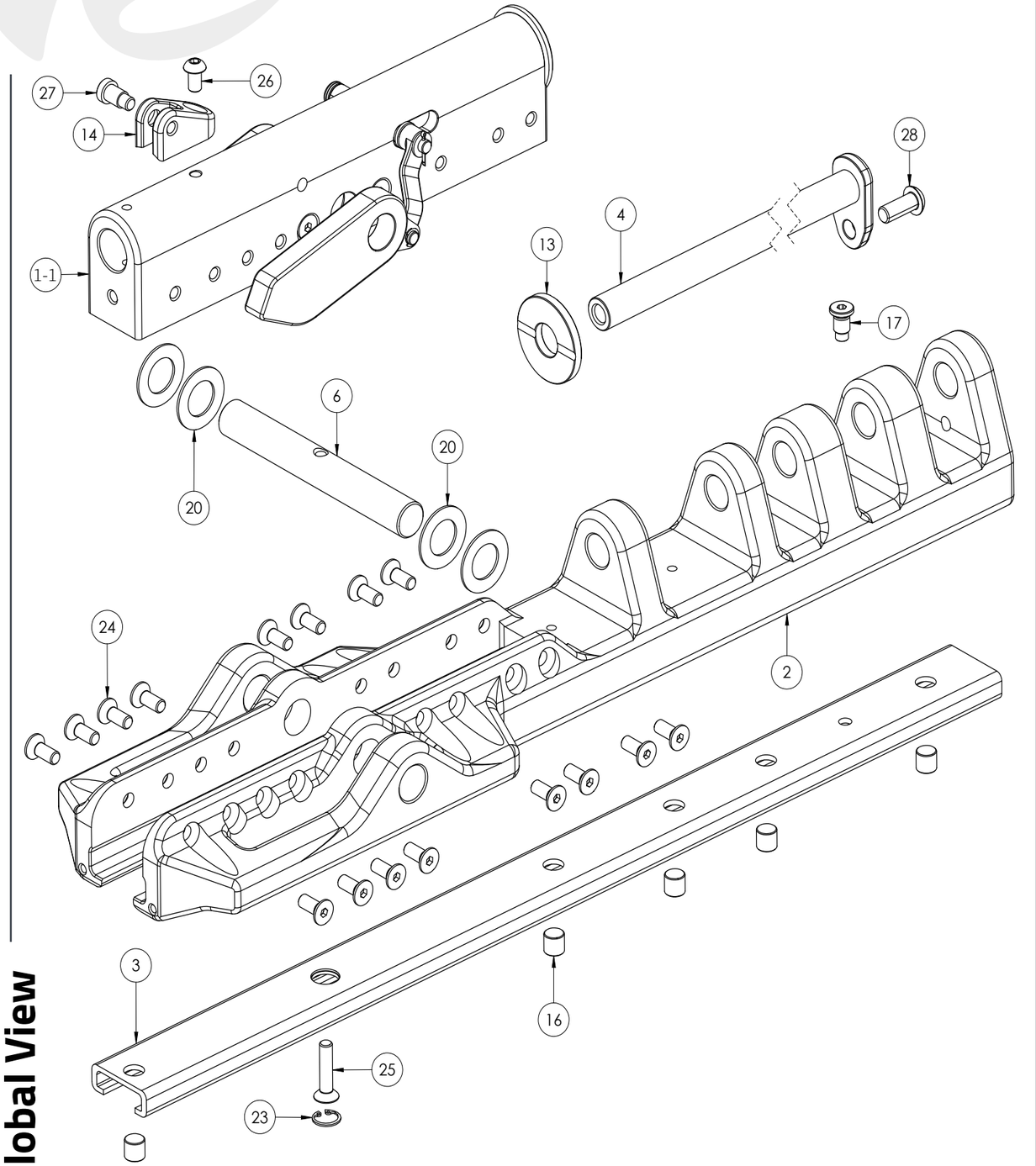
Interval	Advisory
Inshore Racing Daily Inspection	Visual inspection over the body for signs of wear and tear
	Ensure all fasteners are secure of the high load track section, sail plate and the main car
	Rinse thoroughly with fresh water
	Inspection of top face of main car body for deformation in T section
Offshore Sailing or 2 Months or 2500nm	Inspect the top hat bushings of the sail plate for signs of wear and tear
	Remove, inspect and clean the main washer
	Inspect the main pin for alignment and deformation
	Check the sail plate is free to rotate on the main pin
	Check for chafe on the manual trip line
	Inspect locking track section fasteners are secure
	Remove self lock cassette cover to visually inspect the ball plunger and self lock pawl mechanism. Please do not attempt to disassemble.
Annual or 20,000nm	The locking head board car should be removed from the track for full visual inspection

Important

Rigging Projects equipment is designed for minimal maintenance, but some maintenance is required for optimum and safest possible operation and to comply with the Rigging Projects limited warranty. In general, the most important aspect of maintenance is to keep your equipment clean by frequently flushing with fresh water. In corrosive atmospheres, stainless parts may show discolouration around holes and screws. This is not serious and may be removed with a fine abrasive. Exposure to some caustic solutions can result in discolouration of part and is not covered under the Rigging Projects warranty.

Problem	Probable Cause	Solution
Car binds on track	Slider damaged or missing	Check or replace slider and dowels
	Track misaligned	Check alignments on track
	Track fasteners protruding	Check all track fasteners are properly secured
Car jams when hoisting	Headboard is catching on running rigging e.g. lazy jacks, reef lines and halyard	Use topping lift to hold boom and pull lazy jacks forward if possible
Luff on sail is loose and car is engaged	Check range of Cunningham and luff length	Adjust Cunningham or luff length
Luff of sail is tight and not engaging	Incorrect set up of control lines	Mainsail tack should be eased, or consider floating tack car instead of lashing
Car is not locking	Self lock pawl is seized and requires lubricating	Remove plastic cover, inspect self lock spray internal mechanism with WD40
	On self-lock models, the self lock pawl may have become damaged due to a fast drop	Remove plastic cover of self lock cassette and inspect self lock pawl for damage
	Trip line damaged	Check trip line is activating lever and replace if necessary (Should be carried out by qualified personnel)
	Trip line under tension	Ensure the manual trip line slack
	Self-lock pawl shaft has deformed	Part needs replacing; please contact Rigging Projects
	The car is not moving past the high load track section	Ensure the halyard marks are correct and the car has reached the appropriate height
	Damage to self lock ramp	Part needs replacing; please contact Rigging Projects
Car is not unlocking	Manual trip line is caught and forcing the pawl to engage	Go aloft to visually inspect the manual trip line is slack
	The self lock pawl is no deactivating	Go aloft to visually inspect the self lock pawl unlocking during the over hoist. If not, disengage manually
Gaff Lock not Disengaging/ engaging	Speed of halyard ease	Hoist main slightly and drop at faster speed. Do not allow free fall
		May require small pull on leech of sail
	The sail plate is jammed in the gaff lock	Ensure you are pointing exactly upwind during the unlocking
	The sail geometry is incorrect	Please contact Rigging projects with photos of the sail head should you suspect the geometry is incorrect

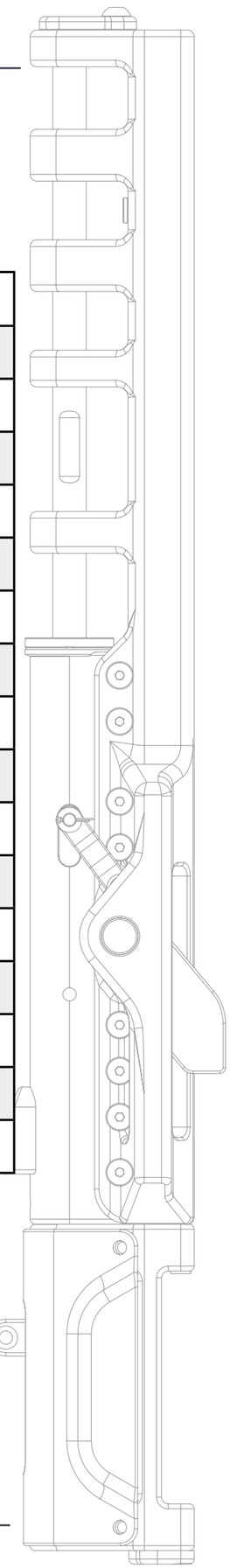
Headboard Car



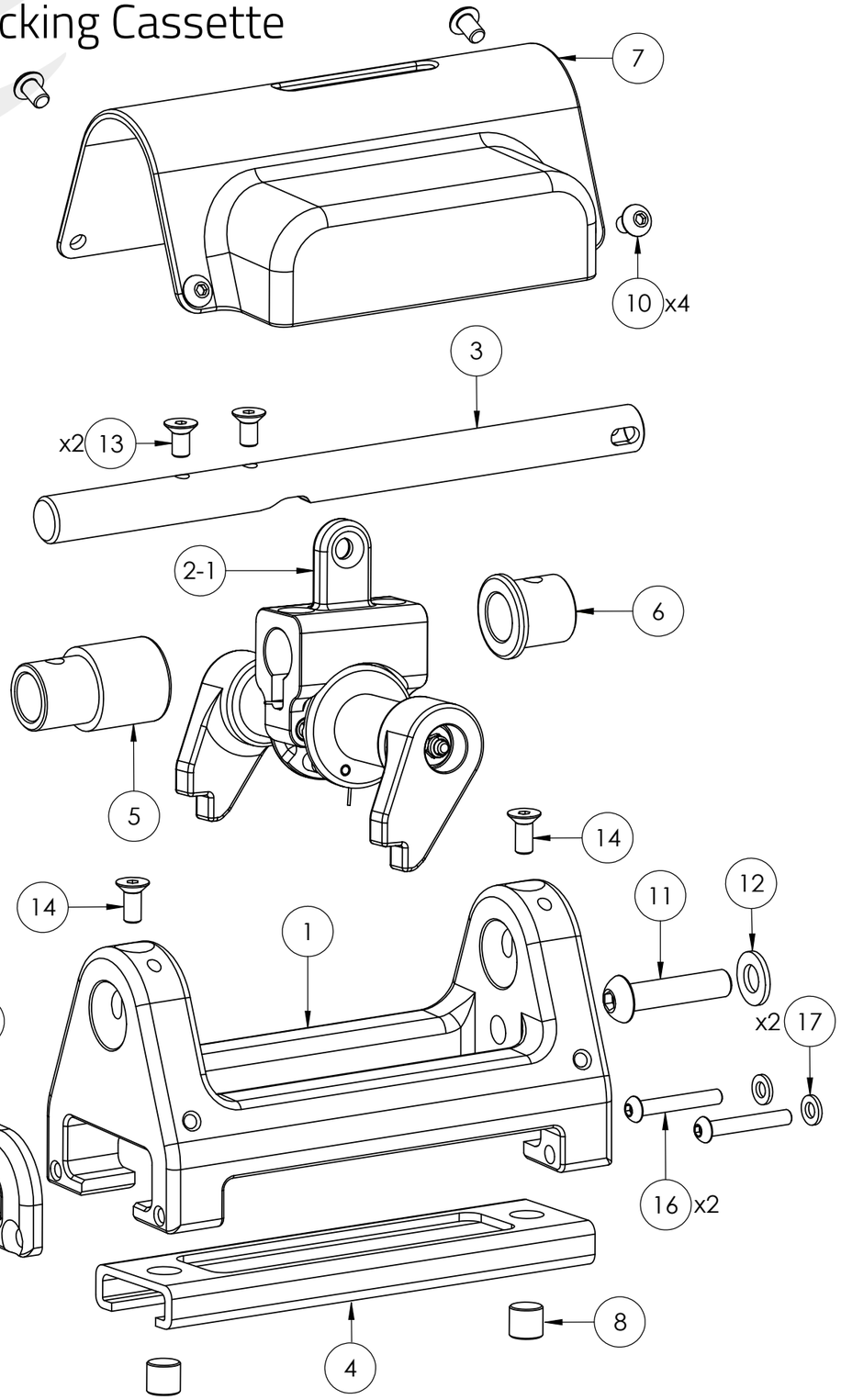
Global View

Bill of Materials

Item #	Description	QTY
1-1	PAWL HOUSING ASSEMBLY	1
2	MAIN CAR BODY	1
3	SLIDER	1
4	MAIN PIN	1
6	PAWL PIN	1
13	LARGE MAIN WASHER (Serviceable part)	1
14	BRACKET Mk2 - TRIP LINE	1
16	PIN - SLIDER	5
17	INDUCTIVE SENSOR TARGET	1
20	THRUST WASHER	4
23	INTERNAL CIRCLIP	1
24	SOCKET CSK HEAD SCREW	20
25	SOCKET CSK HEAD SCREW	1
26	SOCKET BUTTON HEAD SCREW	1
27	LOW HEAD SOCKET SHOULDER SCREW	1
28	SOCKET BUTTON HEAD SCREW	1



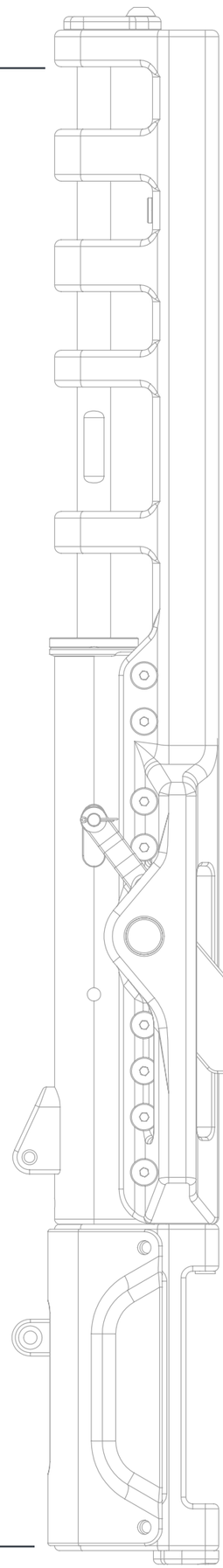
Self Locking Cassette



Global View

Bill of Materials

ITEM #	DESCRIPTION	QTY
1	HOUSING	1
2-1	PAWL ASSEMBLY	1
3	SHAFT	1
4	SLIDER	1
5	LOWER BUSH	1
6	UPPER BUSH	1
7	COVER	1
8	PIN - SLIDER	2
9	RUBBER BUFFER	1
10	SOCKET BUTTON HEAD SCREW	4
11	SOCKET BUTTON HEAD SCREW	1
12	PLAIN WASHER	1
13	SOCKET CSK HEAD SCREW	2
14	SOCKET CSK HEAD SCREW	2
15	SLOTTED CSK SCREW	2
16	SOCKET BUTTON HEAD SCREW	2
17	PLAIN WASHER	2



Customer Support

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