

HARKEN®

INSTALLATION SHEET

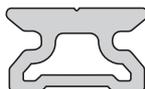
3176, 3177, 3178, 3179 Windward Sheeting Cars 3180 Windward Sheeting Adapter Kit

For use on Harken 3163, 3164, 3165, 3166 Big Boat CB Cars

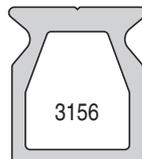
ONLY CB CARS ROLL ON CB TRACK

Car	Car Width	Track
Big Boat	3 ³ / ₈ " (85 mm)	3154, 3155, 3156, 3159, 3162

Note: Track not shown actual size



3154, 3155,
3159, 3162



3156

1. Position car at end of track, sheave side aft.
2. Gently roll car on track. Car should roll on easily, if not check to make sure you are using CB track. *Do not remove ball retaining wires. Cars will not roll unless they have retaining clips.*

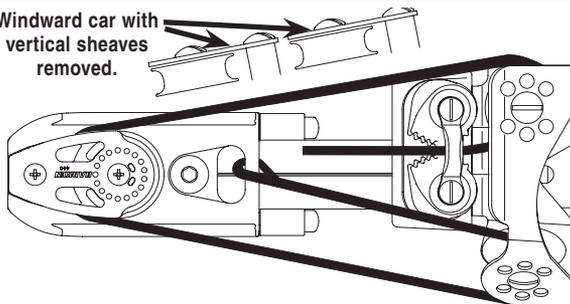
Important: Do not install a stand-up spring between mainsheet block and windward car assembly.



4:1 Control Lines — Use 3168 Big Boat End Controls

1. Attach eye splice or tie a bowline knot to inside bar of 3168 end control.
2. Remove vertical sheave and becket.
3. Reeve line downwards through angled sheave, around end control sheave then around top sheave on windward mechanism and out through cleat.
4. Tie stop knot in line end to prevent damage to car in an uncontrolled gybe.

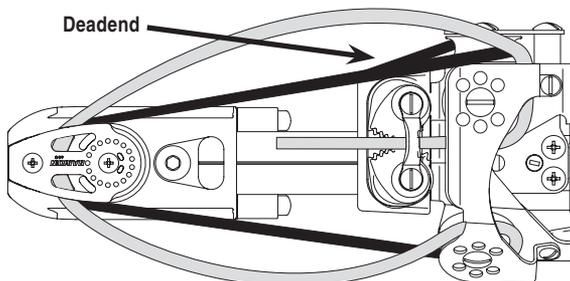
Windward car with
vertical sheaves
removed.



5:1 Control Lines — Use 3169 Big Boat End Controls

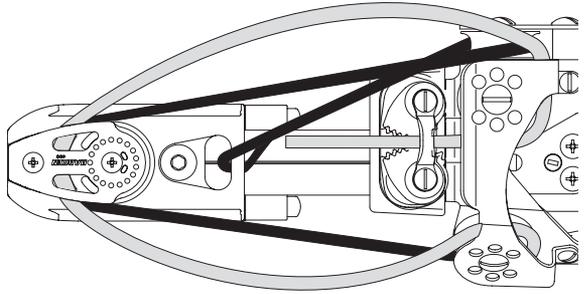
1. Deadend line to vertical sheave by splicing, tying a bowline or overhand knot as a stop under the sheave.
2. Reeve the other end of the line through the lower end control sheave, around the angled car sheave in an upwards direction, around the upper end control sheave, around the upper car sheave and out through the cam cleat.
3. Tie a stop knot in the end of the control line, placed to prevent damage to car in an uncontrolled jibe.

Deadend

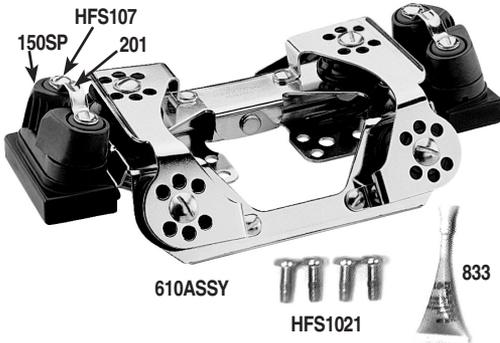


6:1 Control Lines — Use 3169 Big Boat End Controls

1. Deadend one end of line to lower post on 3169 end control.
2. Pass the other end of line to car, upwards between vertical sheave and post.
3. Continue reeving line through lower sheave at end control, around angled car sheave upwards around upper sheave on end control, around upper car sheave and out through cam cleat.
4. Tie a stop knot in the end of the control line, placed to prevent damage to car in an uncontrolled jibe.



3180 Windward Sheeting Adapter Kit for 3163, 3164, 3165, 3166 Big Boat CB (Contained Ball) Cars



KIT PARTS

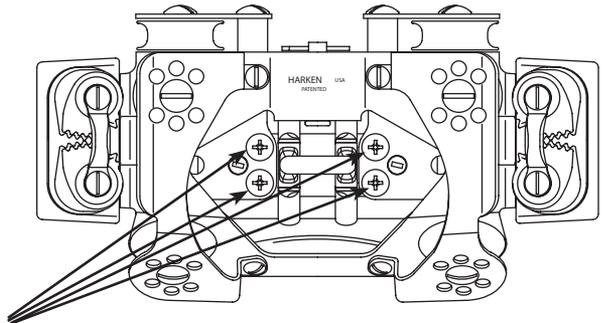
Part No	Qty	Description
610ASSY	1	Windward Sheeting Assembly
HFS1021	4	M6X1 12mm Screw
833	1	Blue Loctite®

REPLACEMENT PARTS

Part No	Qty	Description
150SP	2	Cam-Matic Cam Cleats
201	2	Eyestraps
HFS107	4	10-32 x 1.50 Cam Screws

Mounting 3180 Big Boat Adapter Kit

1. Remove screws holding swivel ears or control blocks on top of car. Save screws.
2. Place adapter kit on car so angled sheaves face forward.
3. Put a few drops of blue Loctite on 4 screws and install in corresponding holes in adapter kit. Tighten screws firmly.
4. Reeve line as instructed.

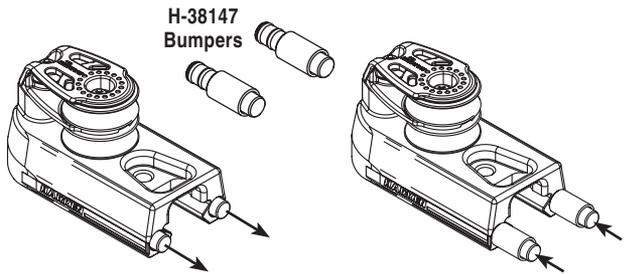


Install four (4)
HFS1021 screws and
tighten firmly.

Installing Bumper Extensions on 3169 End Controls

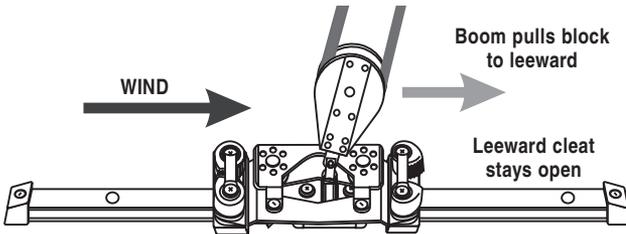
Use bumper extensions included with controls on 3160, 3163, 3176 and 3177 cars bodies to keep windward assembly from hitting end control blocks. Longer 77/16" cars (188mm) do not need them.

1. Use pliers to remove old bumpers from 3169 end controls.
2. Push in new bumper extensions.

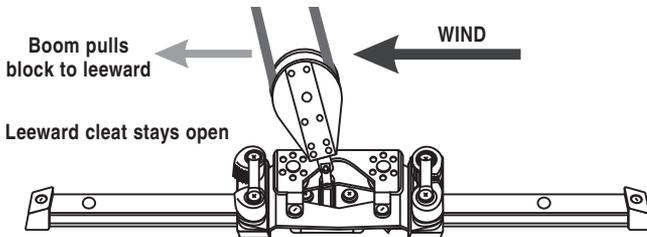
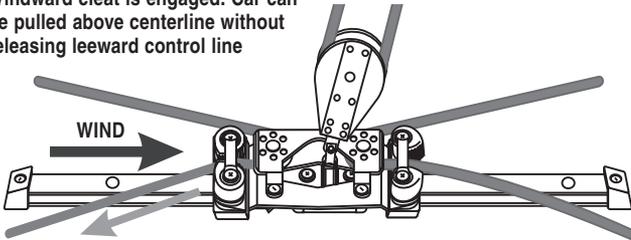


How to Use Your Harken Windward Sheeting Car

The windward sheeting traveler car is much easier to use than to describe.



Windward cleat is engaged. Car can be pulled above centerline without releasing leeward control line



1. Position car by pulling the windward traveler control line.
2. Don't release line from leeward cleat to pull car to windward
3. Tack and car will stay. Now pull car to windward on new tack without releasing leeward control line.
4. If car is pulled to windward and then dropped to centerline before a tack, there will be slack in leeward control line. The car will drop below centerline on new tack.

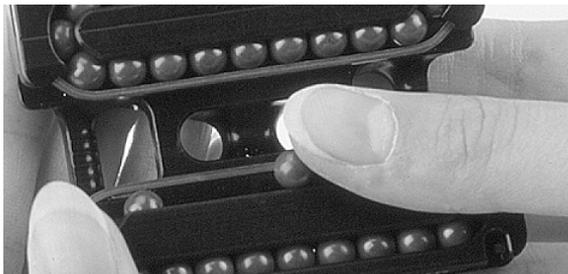
Don't Let the Windward Sheeting Car Slit in Light Air/Large Waves

For conditions where there is little wind and large waves, you may need to install override cleats on deck at outboard ends of track to stabilize car. Use Harken Cam-Matic® cam cleats.

Mooring/Motoring

Tie the windward sheeting car to one side while motoring or when moored. Otherwise car may work loose be damaged when it hits track ends.

Loading Ball Bearings into CB Cars



Position the car on edge with the retaining clip in place. Gently push one ball at a time into the car from the center of the clip.

Allow the balls to roll into the return race and insert the remaining balls.

Do not overfill the car!

Ball Replacement Chart

CB Car	Description	Balls/ Car	Balls	Order Part	Balls/ Set	Ball Ø
3163/3164/3176/3177	Big Boat 3000 Series	50	Delrin®	547	25	3/8" (10mm)
3165/3166/3178/3179	Big Boat 4500 Series	72	Torlon®	547	25	3/8" (10mm)

Removing Ball Bearings from CB Cars



Position the car on edge and gently push one ball at a time from the center of the retaining clip.

Do not remove the retaining clip from the car!

Maintenance

Keep traveler cars clean by frequently flushing with fresh water. Periodically clean cars by squirting a detergent/water solution into the car's center openings. Roll the car back and forth to distribute evenly and then flush bearings with fresh water. This maintenance is very important, particularly when the cars haven't been in use.

Do not use spray lubricants because ball bearings may skid instead of roll. If you use a light machine oil such as 3-in-1, use only a single drop in each ball race. Too much oil attracts dirt.

Clean track with detergent and water.

Frequently inspect shackles and control block fittings for signs of fatigue.

Make sure every installation includes Harken track end stops.

Arrange control tackle so cars do not hit end stops under load.

Warranty

See Harken catalog for full maintenance and warranty information.

HARKEN®

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