

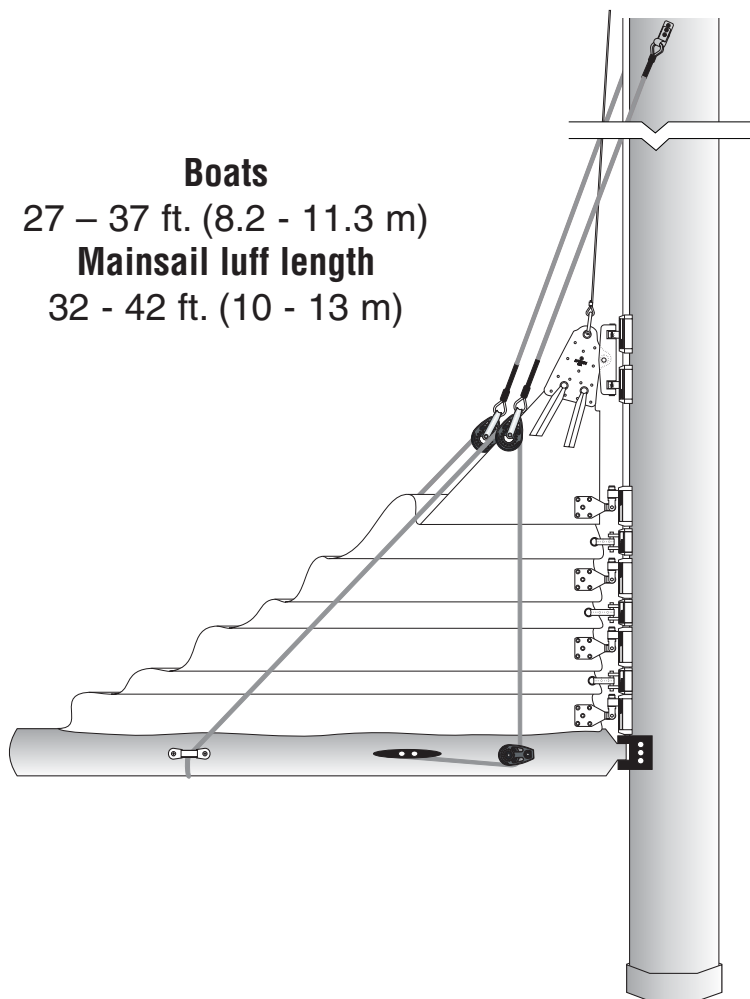
# **HARKEN®**

## **LAZY JACK KIT**

### **253**

**Installation Manual – Intended for specialized personnel or expert users**

4059 12/13



**Please read these instructions carefully before installing, servicing, or operating the equipment. This manual may be modified without notice.**

**See: [www.harken.com/manuals](http://www.harken.com/manuals) for updated versions.**

**PLEASE SAVE THESE INSTRUCTIONS**

## Parts List

- 2 Wire assemblies including blocks and mast tangs
- 1 62' (19 m) length of 5/16" (8 mm) line with eye splice
- 3 Stainless steel eyestraps
- 1 Carbo cheek block
- 1 4" (101 mm) aluminum cleat
- 15 10-32 x 3/8" (10 mm) truss head machine screws (includes 3 extra)
- 15 3/16" (4.76 mm) stainless steel rivets (includes 3 extra)
- 3 #10 x 1 1/4" (32 mm) self-tapping screws (includes 1 extra)
- 3 10-32 x 3/4" (19 mm) trusshead machine screws (includes 1 extra)
- 3 #10 x 3/4" (19 mm) trusshead self-tapping screws (includes 1 extra)

## Tools Required

- |                         |  |
|-------------------------|--|
| <b>Marker or pencil</b> | <b>5/32" (4 mm) drill bit</b>                            |
| <b>Center punch</b>     | <b>Phillips/slotted screwdriver</b>                      |
| <b>Hammer</b>           | <b>Tape measure</b> (long enough to measure luff length) |
| <b>Electric drill</b>   | <b>Pliers or vice grips</b>                              |

### Drill, Tap and Screw Method:

- 1 – slotted screwdriver
- 1 – 10-32 tap and handle
- 1 – 5/32" (4 mm) drill bit

**Rivet Gun Method:** Stainless steel rivets require a heavy-duty rivet gun.

- It may be necessary to rent a rivet gun if you do not have a heavy-duty model.
- 1 – 13/64" (5 mm) drill bit

## Topping Lift

To avoid snagging the mainsail on the Lazy Jacks when raising sail, the boat must be equipped with a topping lift or vang that holds boom lifted.

## Altering Sail Cover

Take your sail cover to a sailmaker to have slits cut in the cover for the Lazy Jacks. Slits should have Velcro or snap closures to make it easy to cover the mainsail. Mark your cover after installation so the slots can be positioned correctly.

## Determining the Location of Mast Tang

Measure the mainsail luff length or find the "P" dimension of the mast. Find this measurement in the left column below and circle the number in the right column. See drawing, page 3.

Chart A If the mainsail luff length or "P" dimension measures:	The tang location measured from the top of boom is:	Chart A If the mainsail luff length or "P" dimension measures:	The tang location measured from the top of boom is:
31'7" to 32'	9.47 - 9.61 m	22'6" 6.85 m	37'1" to 37'6" 11.12 - 11.26 m
32'1" to 32'6"	9.62 - 9.76 m	22'9" 6.93 m	37'7" to 38'
32'7" to 33'	9.77 - 9.91 m	23'1" 7.03 m	38'1" to 38'6"
33'1" to 33'6"	9.92 - 10.06 m	23'5" 7.13 m	38'7" to 39'
33'7" to 34'	10.07 - 10.21 m	23'10" 7.26 m	39'1" to 39'6"
34'1" to 34'6"	10.22 - 10.36 m	24'2" 7.36 m	40'1" to 40'6"
34'7" to 35'	10.37 - 10.51 m	24'6" 7.46 m	40'1" to 40'6"
35'1" to 35'6"	10.52 - 10.66 m	24'10" 7.56 m	40'7" to 41'
35'7" to 36'	10.67 - 10.81 m	25'2" 7.66 m	41'1" to 41'6"
36'1" to 36'6"	10.82 - 10.96 m	25'7" 7.79 m	41'7" to 42'
36'7" to 37'	10.97 - 11.11 m	25'11" 7.89 m	— —

## Installing Mast Tang and Wire Assembly

If you are installing the system with the mast up, you will need to take up the following parts in the bosun's chair or send them up with a messenger line. (Follow all precautions to insure the safety of the person aloft. Make sure no one is standing where they could be hit with dropped tools.)

**WARNING! When drilling through mast, do not let drill bit contact the halyard that is holding you aloft! This may cause the halyard to fail. Limit depth.**

Tape measure

Port and starboard templates (attached to pg. 3)

Tape for template

Tang assembly including wires and blocks

Hammer

Center punch

### Screw Method

Drill with  $\frac{5}{32}$ " (4 mm) drill bit

#10-32 Tap and handle

Slotted screw driver

10-32 x  $\frac{3}{8}$ " (10 mm) Trusshead machine screws

### Rivet Method

Drill with  $\frac{13}{64}$ " (5 mm) drill bit

Rivet gun and rivets

**Note: before going up the mast, insert the middle screw or rivet into the tang.**

Squeeze the top and bottom of the tang together to insert the screw or rivet. It may be necessary to use a pliers or vice grips.

Measure up from the top of the boom to the height from chart A (page 2).

Moveable Gooseneck - If the gooseneck is capable of moving up and down, measure from the top of the boom when the boom is positioned in its normal sailing position.

Mark the mast at this point.

Tape the template to the side of the mast so the middle hole is even with your mark.

Line the template up so the vertical line is parallel to the side of the mast. See drawing below.

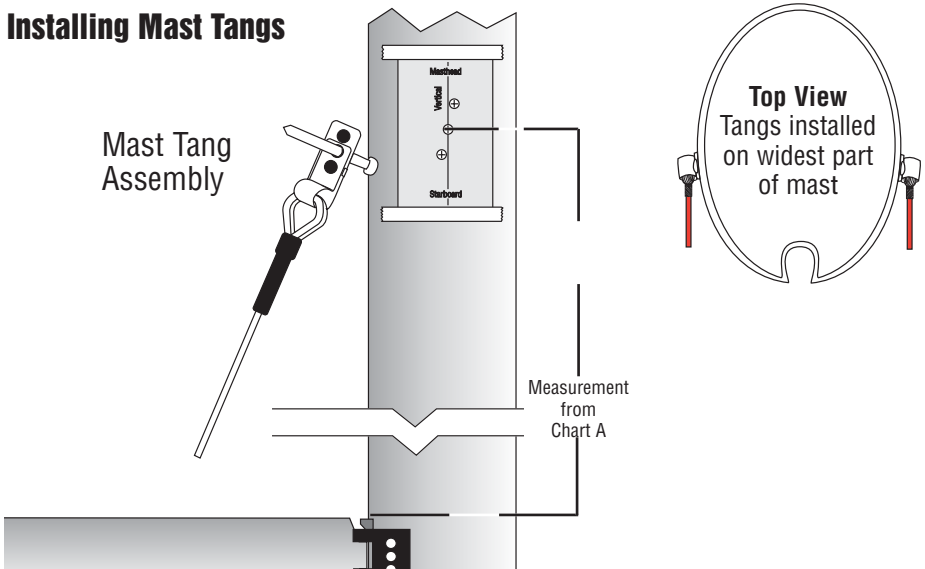
Use a center punch to mark three tang holes. Remove template and drill three holes:

**Screws**  $\frac{5}{32}$ " (4 mm) and **Tap** #10-32

**Rivets**  $\frac{13}{64}$ " (5 mm).

Attach tang starting from center hole.

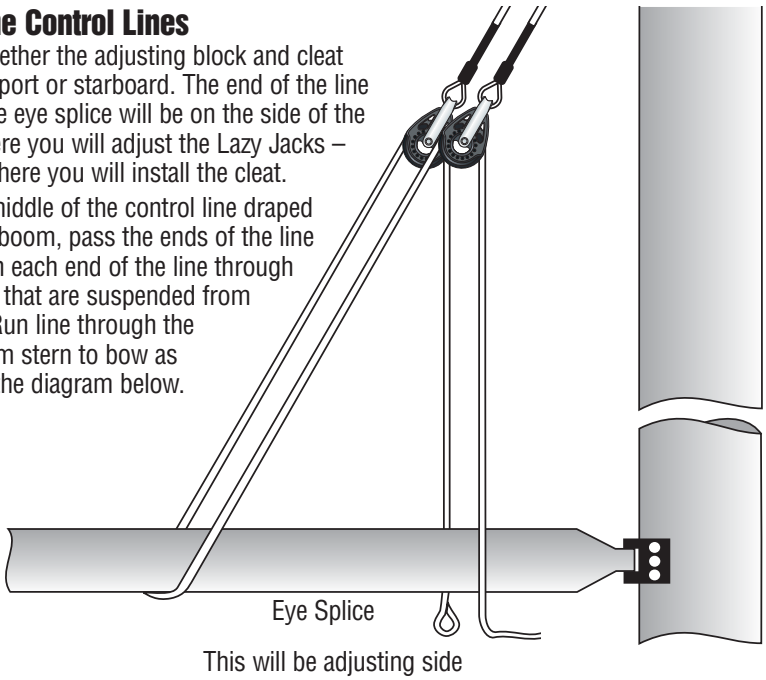
## Installing Mast Tangs



## Stringing the Control Lines

Decide whether the adjusting block and cleat will be on port or starboard. The end of the line without the eye splice will be on the side of the boom where you will adjust the Lazy Jacks – the side where you will install the cleat.

With the middle of the control line draped under the boom, pass the ends of the line up and run each end of the line through the blocks that are suspended from the wire. Run line through the blocks from stern to bow as shown in the diagram below.



## Determining the Location of Boom Hardware

Measure the mainsail foot length or find the E dimension of the mast. Find this measurement in the left column below and circle the corresponding numbers in the right column. Put a mark on each side of the boom at each measurement. See drawing, page 5.

**Chart B – Location of Boom Hardware\***

"E" Dimension or Sail Foot Length		Cheek Block and Deadend Location	Boom Cradle Strap Location
8'7" to 9'	2.57 - 2.71 m	1'11" (584 mm)	5'6" (1.676 m)
9'1" to 9'6"	2.72 - 2.86 m	2'1" (635 mm)	5'10" (1.778 m)
9'7" to 10'	2.87 - 3.01 m	2'2" (660 mm)	6'2" (1.880 m)
10'1" to 10'6"	3.02 - 3.16 m	2'3" (686 mm)	6'6" (1.981 m)
10'7" to 11'	3.17 - 3.31 m	2'4" (711 mm)	6'10" (2.083 m)
11'1" to 11'6"	3.32 - 3.46 m	2'6" (762 mm)	7'1" (2.159 m)
11'7" to 12'	3.47 - 3.61 m	2'7" (787 mm)	7'5" (2.261 m)
12'1" to 12'6"	3.62 - 3.76 m	2'8" (813 mm)	7'9" (2.362 m)
12'7" to 13'	3.77 - 3.91 m	2'10" (864 mm)	8'1" (2.464 m)
13'1" to 13'6"	3.92 - 4.06 m	2'11" (889 mm)	8'4" (2.540 m)
13'7" to 14'	4.07 - 4.21 m	3' (914 mm)	8'8" (2.642 m)
14'1" to 14'6"	4.22 - 4.36 m	3'2" (965 mm)	9' (2.743 m)
14'7" to 15'	4.37 - 4.51 m	3'3" (991 mm)	9'4" (2.845 m)
15'1" to 15'6"	4.52 - 4.66 m	3'4" (1.016 m)	9'8" (2.946 m)
15'7" to 16'	4.67 - 4.81 m	3'6" (1.067 m)	9'11" (3.023 m)

\*Note: You may want to check sail containment before drilling holes in the boom. To do this, put sail on, tape the boom hardware in place, reeve lines through system and lower sail. Move if necessary.

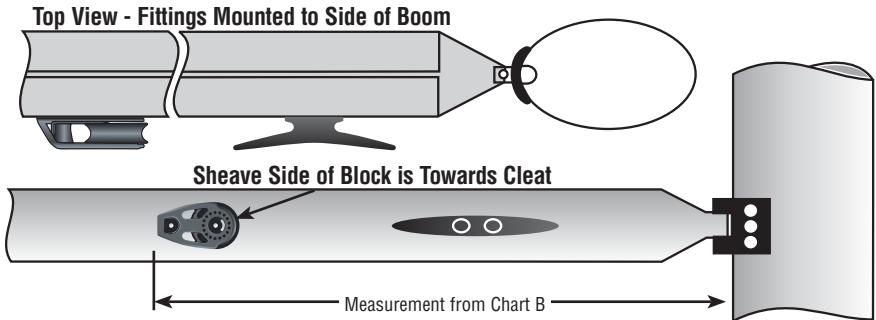
## Installing Cheek Block

Hold cheek block on the side of the boom so aft end of block is even with forward mark. Use cheek block as a template to mark holes and use center punch to start holes. Use  $\frac{3}{4}$ " (19 mm) long trusshead machine screws or self-tapping screws.

**Do not drill holes for rivets.**

**DRILL HOLES: Machine Screws  $\frac{5}{32}$ " (4 mm) and Tap #10-32;  
Self-Tapping Screws  $\frac{5}{32}$ " (4 mm)**

Note: Position cheek block so sheave side of block is towards cleat. Refer to the two diagrams on page 6. In most cases cleat will be mounted forward of cheek block near forward end of boom. If there is other hardware in the way, mount cleat aft of block. Screw block to boom.



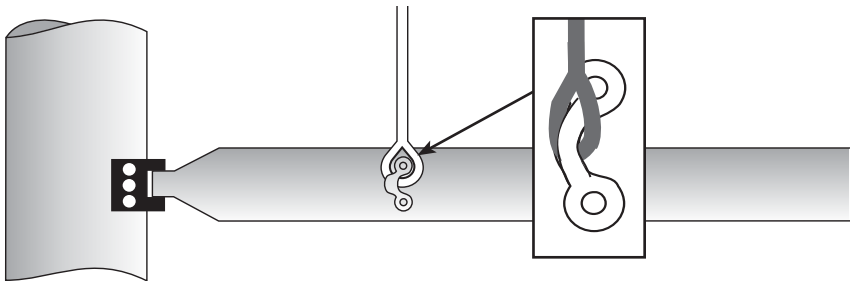
## Installing Dead End Eyestrapp

Use the eyestrapp as a template to mark holes and start holes using a center punch.

**DRILL HOLES: Screws  $\frac{5}{32}$ " (4 mm) and Tap #10-32      Rivets  $\frac{13}{64}$ " (5 mm)**

Important: Put eyestrapp through line eye splice before fastening to mast.

Use  $\frac{3}{8}$ " (10 mm) long screws or rivet eyestrapp and line to boom.



## Mounting Adjusting Cleat

Mount cleat near forward end of boom so Lazy Jacks may be easily adjusted. Before mounting cleat, swing boom out as far forward as it will go to make sure cleat does not hit mast. If you have a single line reefing or other obstruction forward of block, mount cleat aft of block as pictured on page 6. Use cleat as a template to mark holes and use center punch. **Do not drill holes for rivets!**

**Drill size for screws -  $\frac{5}{32}$ " (4 mm)**

**Use supplied flat head self-tapping sheet metal screws.**

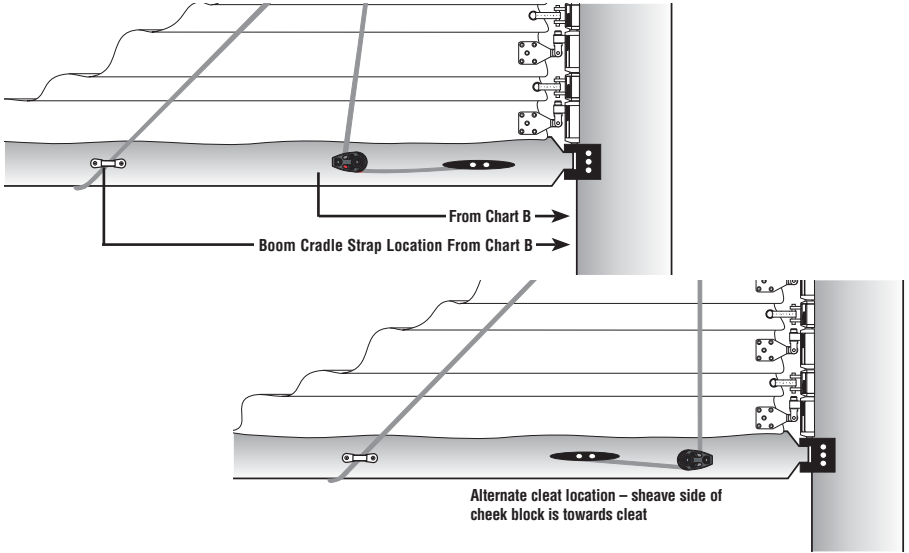
Note: If you have internal boom control lines, cut off the ends of the self tapping screws and round off tip to avoid snagging internal lines. **First** drive screws into boom to cut threads.

## Mounting Cradle Straps (Make sure you've checked sail containment before mounting eyestraps.)

Pull aft line towards end of boom until line intersects with mark you have made as indicated in chart B. The eyestrap will be located aft of mark. See below.

**DRILL HOLES: Screws**  $\frac{5}{32}$ " (4 mm) and **Tap #10-32**      **Rivets**  $\frac{13}{64}$ " (5 mm)

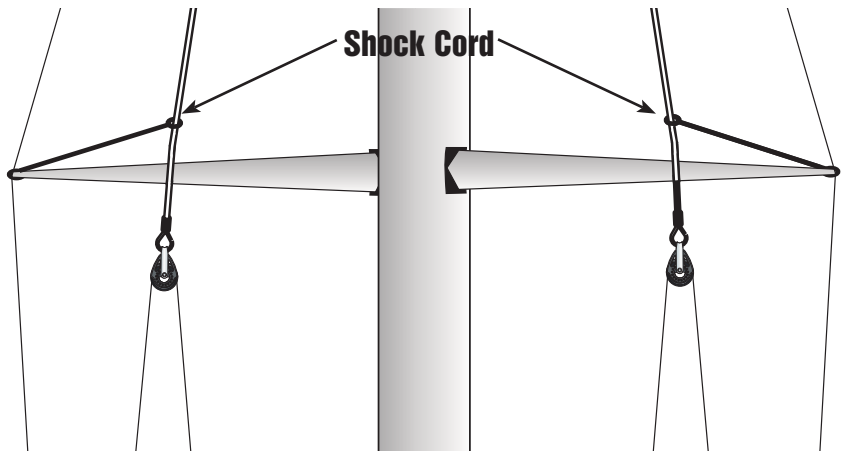
Make sure line is inside eyestrap before riveting. Use  $\frac{3}{8}$ " (10 mm) long screws or rivet eyestrap in place.



## Using Shock Cord to Pull Lazy Jacks Outward

We recommend shock cord to hold Lazy Jacks open to make it easier to raise sail.

1. Attach shock cord to the end of the lower spreaders. Hog rings work well for this purpose. Use rigging tape over hog rings.
2. Temporarily tie other end of shock cord to Lazy Jacks at a length that holds Lazy Jacks out, yet will not be too short and damage spreaders when boom is swung out.
3. Test length by swinging boom all the way out. If necessary, lengthen shock cord before permanently attaching to Lazy Jacks.



## **Conventional Sail Slugs**

If using conventional sail slugs, make sure slugs are free to move below the gate. Use mast gate plates so sail slugs stay in the mast groove. Contact your rigger.

## **Adjusting Lazy Jacks**

The Lazy Jack may be set to proper tension at dock. Raise mainsail and make sure adjusting line is uncleated at boom. Tighten mainsheet as tight as it will go to find maximum distance that boom will be lowered while under sail. Next tighten adjusting line and slack it off 2" (50 mm). The system should be set at a reasonable tension so it will not interfere with sail shape, yet will contain the sail when lowered onto the boom. Some further adjustment may be necessary.

## **Using Your Lazy Jacks - Precautions**

Before sailing, make sure Lazy Jacks will not catch on spreaders. While at dock, swing boom out so sail is against spreader tips. Try lifting boom and shaking to see if Lazy Jack lines are apt to swing behind spreaders. When first sailing with Lazy Jacks, look aloft while sailing downwind to see if Lazy Jacks catch behind spreaders. If they get snagged while sailing, release snagged Lazy Jacks from behind spreader before bringing mainsail in towards center. If this is not done, you risk breaking spreaders as mainsheet is tensioned and mainsail moves toward the centerline.

If Lazy jacks are prone to snagging spreader tips, there are 2 solutions. The easiest is to rig shock cords to pull Lazy Jacks forward out of way of spreader tips. Rig a length of shock cord on each side of sail. Dead end shock cord at or near gooseneck and run it up to blocks which are suspended from wires.

If this does not help, you will need to reposition Mast Tangs so they are lower on mast and do not interfere with spreader tips.

## **Raising Sail**

When hoisting sail, check to make sure the sail does not get caught in the Lazy Jacks. The headboard or battens may catch between the mast and the Lazy Jacks or jam in the angle between the lines. If the halyard is forced, this could result in a broken batten, ripped sail or damaged Lazy Jack. To avoid this, look aloft as you raise the mainsail and stop if the sail gets caught. Also, make sure the boat is facing head-to-wind. The sail is less apt to catch on the Lazy Jacks if the topping lift is used and the Lazy Jacks are somewhat loose. This way they will deflect out of the way easier when the sail makes contact with them.

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