

HARKEN®

INSTRUCTIONS

T2™ Ratchamatic® Blocks 2159, 2160, 2167, 2170

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WARNING! Strictly follow all instructions to avoid an accident, damage to your vessel, personal injury or death. See www.harken.com/manuals for additional safety information.

Features

Soft attach block can be lashed or spliced.

Glass-filled nylon sideplates: load-carrying curved bearing races.

Machined hardkote-anodized aluminum sheaves: strength and corrosion resistance.

Fast trim: Free-running ball bearings.

Hand-hold and release loaded line: Faceted aluminum sheave grips line securely. Ratchets provide mechanical advantage.

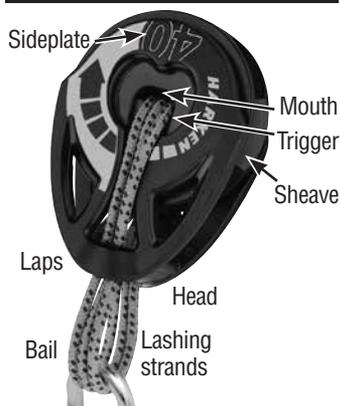
Multi-faceted Power3 sheaves: very aggressive holding power

Load-sensing ratchet block: rolls freely in both directions under low loads and automatically engages ratchet as loads increase.

Ratchet engagement adjustable: adjustable to ratchet at higher/lower load to match sailor's strength and sailing style.

Common uses: Main/jib/spinnaker sheets on dinghies and sportboats; control lines on boats of all sizes.

Terms



Specifications

Part No.	Description	Sheave Ø	Max line Ø		Maximum working load		Breaking load	
			in	mm	lb	kg	lb	kg
2159	40 mm	40 mm	3/8	10	300	136	1000	454
2160, 2167, 2170	57 mm	57 mm	3/8	10	500	227	2000	907

Replacement Line

Part No.	Description	Sheave Ø	Replacement loops / lines	Replacement line Ø		Line length before making loop		Line type
				in	mm	ft	m	
2159	40 mm	40 mm	HCP1419	3/32	2.5	4	1.22	Maxibraid
2160, 2167, 2170	57 mm	57 mm	HCP392	1/8	3	4	1.22	Maxibraid

Important information on choosing line, knots and splices.

Go to www.harken.com/knots

Contents

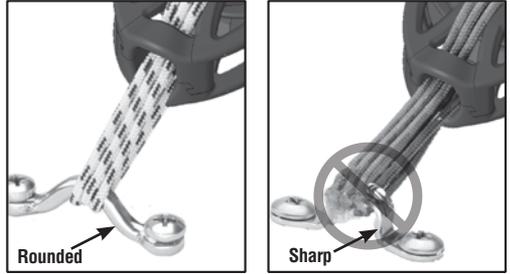
	Page No.
Planning installation	2
Using T2 Ratchamatic® blocks; holding power	3
Choosing knots and splices	4
Lashing to boom	4
Lashing to bail using Harken supplied line	5
Using alternate line knots and splices	5, 6
Inspection and maintenance	6
Warranty reference	6

Planning Installation



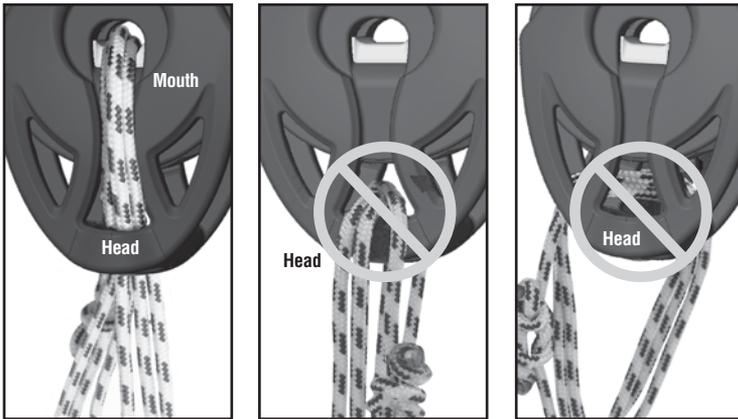
WARNING! Lashing to objects with sharp edges can cause line to chafe and break when load is applied.

1. Lash only to objects with rounded edges.
Avoid sharp corners.



WARNING! Lashing to objects with sharp edges can cause line to chafe and break when load is applied.

2. Always lash to mouth of the block. Head is not strong enough to secure block. Ratchet mechanism will only work with lashing line on trigger.



Do not lash through block head.

Do not lash through block head.

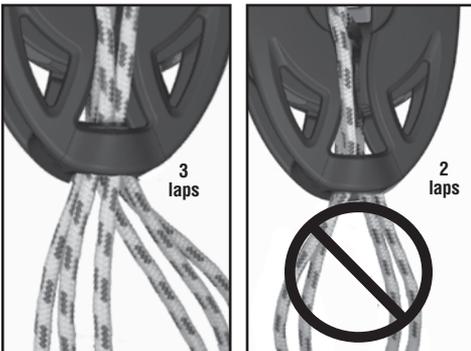


WARNING! Lashing to head of block seriously weakens the block. This causes the block to break when load is applied. Always lash to mouth.

3. Use three laps of line to create six strands to match the maximum working load of the block.



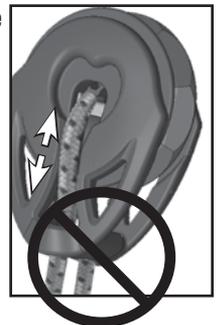
WARNING! Using fewer laps weakens block, causing it to break when load is applied. Use three laps of line.



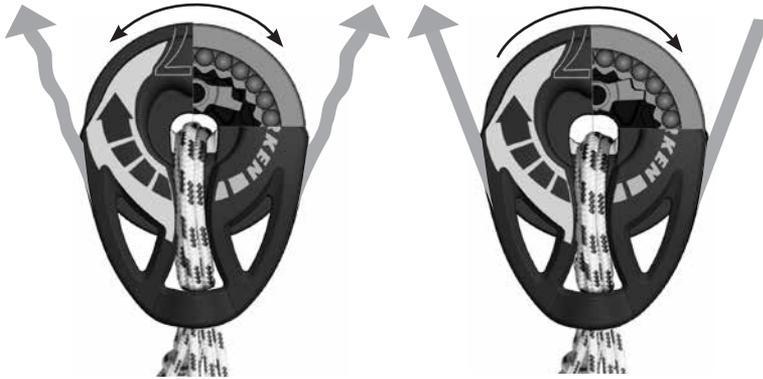
3 laps, 6 strands are required for proper strength.

2 laps, 4 strands of supplied line are not strong enough.

4. **IMPORTANT!** Do not use mouth as an adjustable block. Carbo surface and/or line will wear under load if used as a 2:1 adjustable block.



Using T2 Ratchamatic® Block

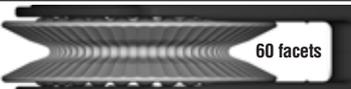
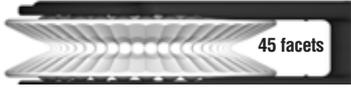


Ratchamatic® blocks allow sailors to hand-hold loaded lines and offer balance between holding power and controlled easing. Ratchamatic blocks spin freely in both directions under low load. At higher load, ratchet engages, and sheave facets provide holding power. As the load decreases, the ratchet shifts into light air mode and free spins. Unloaded main and jib sheets run out freely during mark roundings and asymmetrical spinnakers run freely during jibes.

Ratchet direction: Arrow on side of block shows direction sheave will spin in ratchet mode. Refer to arrow when reeving block.

Power3 Ratchamatic® Blocks - Holding Power

Power3 57 mm Ratchamatic® blocks offer three options of faceted holding power to best take advantage of the day's wind and wave conditions.

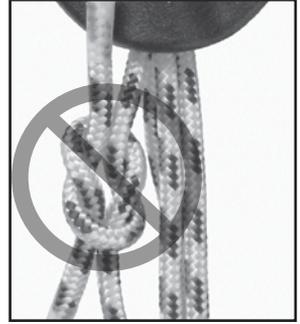
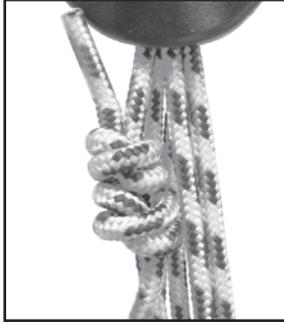
57 mm block no.	Sheave color	Holding power*	Sheave image and facet count**
2665	Black	10:1	 8 facets Example: Block holds 45 kg (100 lb) load with 4.5 kg (10 lb) of effort
2168	Titanium (tan)	15:1	 60 facets Example: Block holds 67.5 kg (150 lb) load with 4.5 kg (10 lb) of effort
2170	Silver	20:1	 45 facets Example: Block holds 90 kg (200 lb) load with 4.5 kg (10 lb) of effort

*Holding power ratios are determined using a 180° wrap angle and can vary according to line type, and line condition. Depending on line composition and cover texture, the more aggressive sheave facets can increase line wear.

**The 2770 block sheave has fewer facets than the 2168 and gains more holding power by having more prominent ridges.

Choosing Knots and Splices

Use a double fisherman's knot or other secure knot.
See www.harken.com/knots



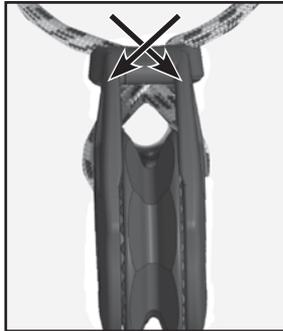
WARNING! Failure to inspect and correct knots can cause the line to slip when load is applied.

Replacement Line

Part No.	Description	Sheave Ø	Replacement loops /lines	Replacement line Ø		Line length before making loop		Line type
				in	mm	ft	m	
2159	40 mm	40 mm	HCP1419	3/32	2.5	4	1.22	Maxibraid
2160								
2167	57 mm	57 mm	HCP392	1/8	3	4	1.22	Maxibraid
2170								

Lashing to Boom

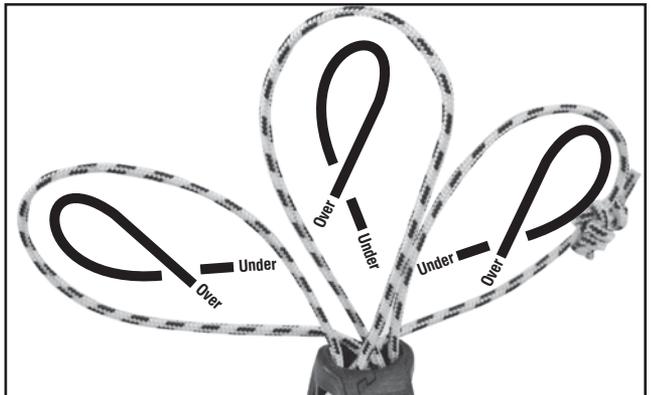
When lashing to a large object such as a boom, cross each line to prevent sides of head from pushing out. See next page.



Lines can pull block head apart.



If you have access to end of boom, twist each lap. Secure using double fisherman's knot or other secure knot. See "Lashing to Bail Using Harken Supplied Line" below.



Lashing to Bail Using Harken-Supplied Line

Note sheave direction of rotation when block is under load in ratchet mode. Make sure the block is facing the correct way before lashing. Use three laps to create six strands. Tie ends using double fisherman's knot or other secure knot. Knot can also be located on side of block. Photos are not intended to teach this knot. See www.harken.com/knots or consult a knot-tying book. **IMPORTANT!** If you are not comfortable tying this or any other knot, get help from a professional rigger.



Lashing 90°

To lash block at 90°, cross lines each pass similar to lashing to boom.

Using Alternate Line, Knots and Splices

Harken is not liable or responsible for use of line used to secure blocks. Go to Harken Limited Warranty at www.harken.com for complete details. It is your responsibility to choose the correct line for the block. **When choosing line, use a breaking load that exceeds the block's breaking load to account for strength loss from:**

1. Knots slipping or breaking under load much lower than line's breaking load. Spectra® or Dyneema® type lines require specialized knots.
2. Splices slipping or failing due to incorrect splice or execution.
3. Increasing UV damage
4. Chafing

If you are not comfortable choosing line, work with a qualified rigger. Go to www.harken.com/knots for additional information.

IMPORTANT! Fewer lashing strands require line with higher breaking load.



Six (6) strands

Lashing line minimum breaking load

Strands	lb	kg
1	2000	907
2	1000	454
3	667	302
4	500	227
5	400	181
6	333	151
7	286	130
8	250	113
9	222	101
10	200	91

Notes

A breaking load of 2000 lb (900 kg) can be achieved by using:

Fewer strands of higher-strength line
OR
More strands of lower-strength line

Check fit of lashing line in block mouth

See next page. Read important information on choosing line, knots and splices at: www.harken.com/knots.

Using Alternate Line, Knots and Splices (continued)

Read important information on choosing line, knots and splices at: www.harken.com/knots.



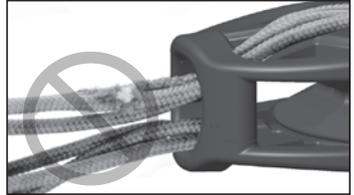
WARNING! Failure to account for loss of strength due to chafe or UV damage when choosing line can result in line breaking when load is applied.



WARNING! Improper knots or splices can weaken the block installation, causing it to break when load is applied.

Inspect Line Every Time You Sail

Inspect lashing line for chafe or UV-damage every time you sail. **Replace damaged line immediately. Replace line with no visible damage every two years.** Use Harken replacement line. If using own line, see “Using Alternate Line, Knots and Splices” and chart on back page for important information to help you select the correct line.

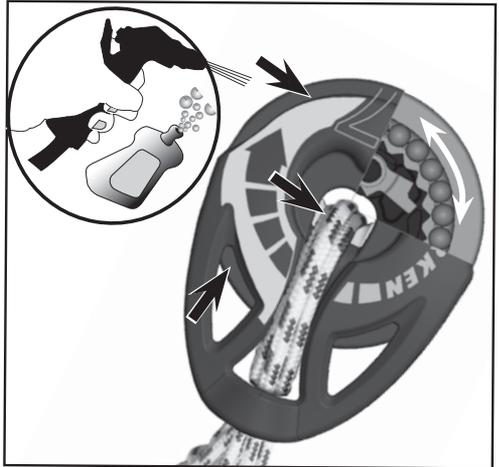
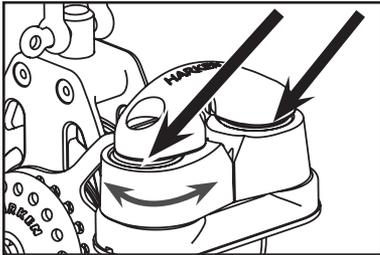


WARNING! Failure to inspect and replace UV-damaged, worn or frayed line can cause the line to break when load is applied.

Maintenance

Flush block and attachments frequently with detergent and fresh water. Clean bearings by flushing areas shown while rotating sheave.

If block has cam cleat, flush balls in cam cleats while rotating pawls.



General Maintenance

Harken equipment is designed for minimal maintenance. However, some upkeep is required to give the best service and comply with the Harken limited warranty.

Keep your equipment clean and free-running by frequently flushing with fresh water. Periodically clean with mild detergent and water solution. Spin sheaves to distribute soap solution evenly. Flush with fresh water.

IMPORTANT! Exposure to some teak cleaners and other caustic solutions can result in discoloration of part and is not covered under the Harken warranty.

Warranty

For additional safety, maintenance and warranty information see www.harken.com/manuals or the Harken catalog.