

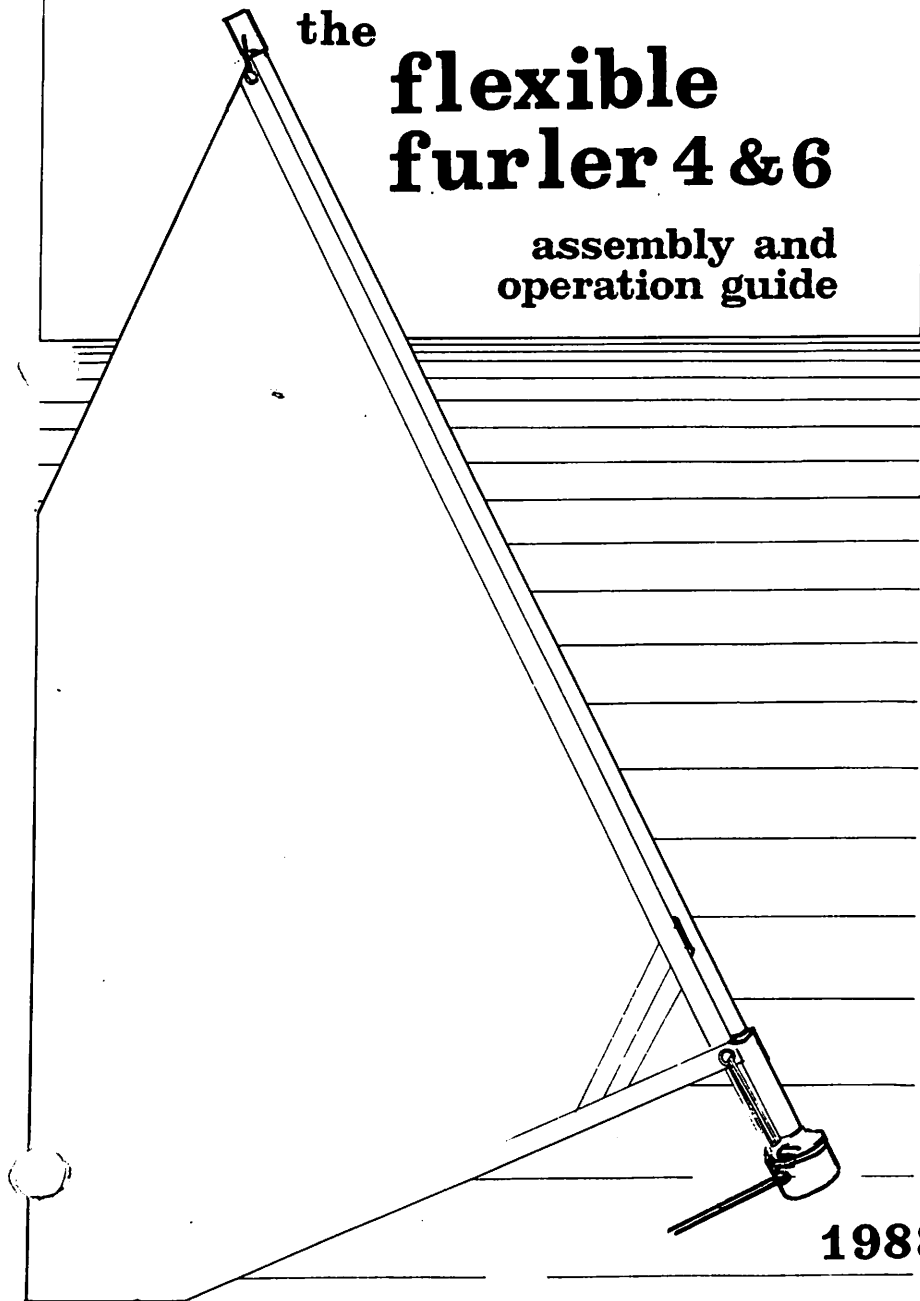
**CRUISING DESIGN, INC.**

PO BOX 151 PEABODY, MASSACHUSETTS 01960 617/532-2712

the

# flexible furler 4 & 6

assembly and  
operation guide



**1988**

## INDEX

Specifications  
Drawing  
Parts List  
Assembly  
Operating Instructions  
Sailmakers Instructions  
Warnings  
Warranty

### Specifications

Extrusion length; #4 33 feet, #6 39 feet

Wire size; 3/16 "

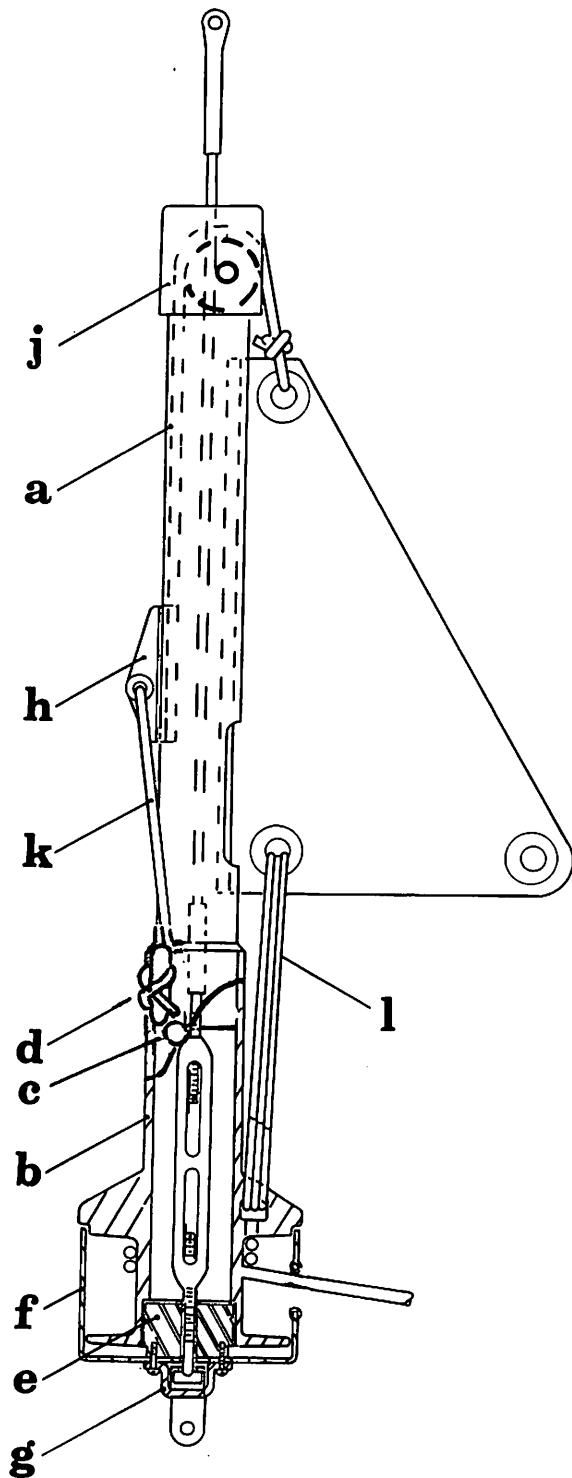
Turnbuckle; Must be open body Merriman type with 3/8" threads.  
Extrusion will pass #6 stud

Mounting; Must be below turnbuckle

Sail Area Max; Reef 300 sq ft  
Furl 400 sq ft

Furling line; 1/4 ". 30 turns average 30 feet of line and reef 16 feet of sail. Total length should be twice the boat length plus 10 %.

To convert forestay pin to pin measurement to extrusion length, subtract 17 ". this provides 3" vertical clearance from halyard top fitting to swage eye.



Description	Qty	#4	#6
<b>a</b> luff	1	1037	1038
<b>b</b> spool	1	1039	
<b>c</b> clevis pin $\frac{1}{4}$ x $1\frac{1}{2}$	1	1045	
retainer ring	1	11319	
<b>d</b> cleat	2	9000	
flat head screw 8-32 x $\frac{3}{4}$	4	1011	
<b>e</b> main bearing	1	1040	
machine screw 10-32 x $\frac{3}{4}$	2	1042	
<b>f</b> cup	1	1043	
<b>g</b> antirotation eye strap	1	1036	
washer $\frac{3}{8}$	1	6220	
<b>h</b> halyard assembly	1	12142	12140
<b>j</b> halyard top fitting	1	1041	
sheave	1	6860	
pin	1	1046	
retaining screw #10	1	1047	
<b>k</b> halyard tension line	1	12513	
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## INDEX

## Specifications

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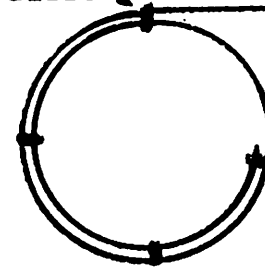
To convert forestay pin to pin measurement to extrusion length, subtract 17 ". this provides 3" vertical clearance from halyard top fitting to swage eye.

## Before you start

If you recieved the luff coiled, be careful in cutting the tape that holds the luff coiled. Starting at the end nearest the outside coil, cut the band of tape while restraining the outer wrap so it can gently uncoil to the next band of tape. Repeat til the coil has been freed.

Never cut the bands towards the inner end first, as the coil will leap when the band near the outer end is cut.

cut this band first



cut this band last

The luff will still have a coiled shape To straighten it, coil it in the opposite sense . The luff need not be very straight for installation. Tensioning the forestay will straighten it nicely.

Assembly is easiest with the mast down. Lay the extrusion alongside the forestay, cut it to length, then slide the forestay thru it.

With the mast up you will need to measure the forestay by hoisting a tape. Being long and slender, the luff will topple over unless it is helped up the forestay by a ships halyard tied to the halyard traveller.

Tools required are a saw, a screwdriver and whatever wrenches etc. are needed to disassemble the turnbuckle and a tape measure.

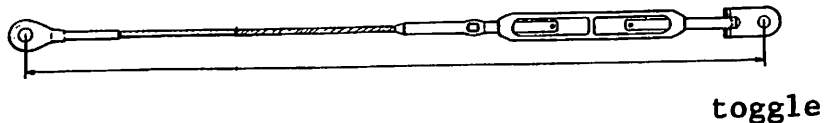
Stay requirements are;

- a) toggle at both ends
- b) open body Merriman style turnbuckle of size called out in Specifications

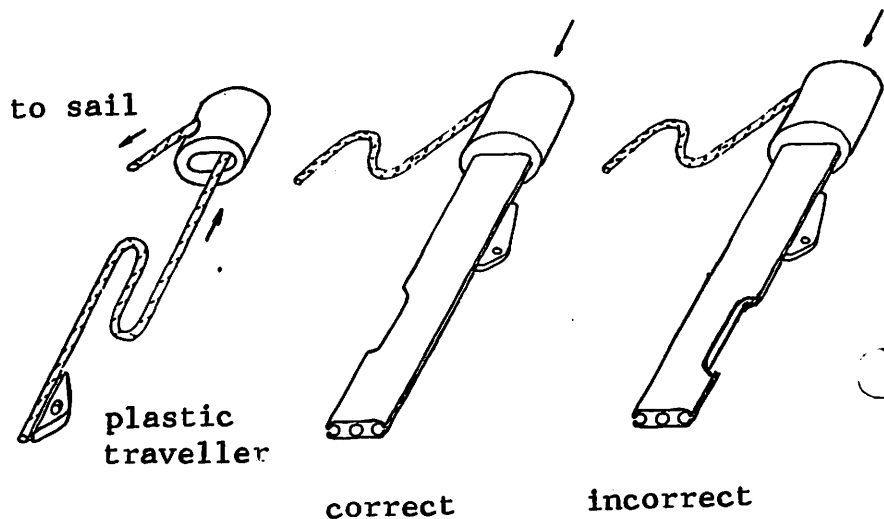
For other sizes consult factory.

## ASSEMBLY

- 1 Cut top end of plastic extrusion so that total extrusion length is seventeen inches less than the pin to pin measurement of the forestay.



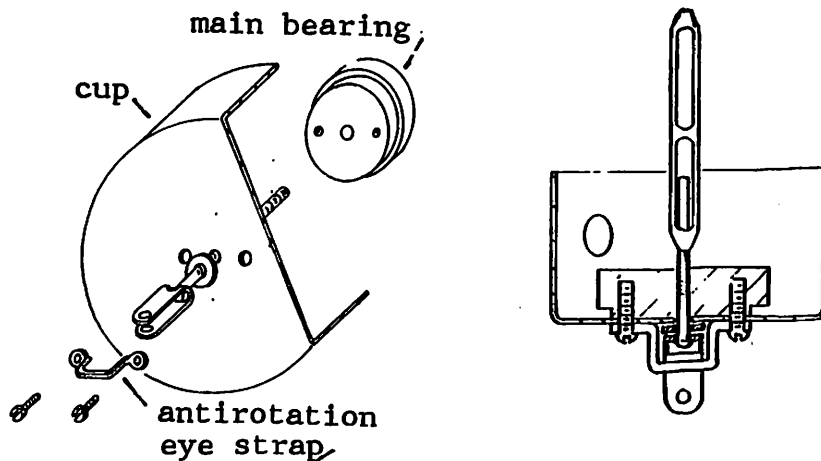
- 2 Push cut end of halyard thru the halyard top fitting, so that cut end exits the side of the halyard top fitting. Pull halyard til molded plastic traveller is close to the halyard top fitting.
- 3 Insert molded halyard traveller into groove in plastic extrusion which does not have the feed slot for the sail. Sail does not attach to traveller.



- 4 Push plastic extrusion up into recess in the halyard top fitting. Make sure halyard isn't pinched and runs freely. Tie a light messenger line to the traveller so you can hoist the sail after assembly.

Lock halyard top fitting to plastic luff by screwing home self tapping screw thru predrilled hole into luff.

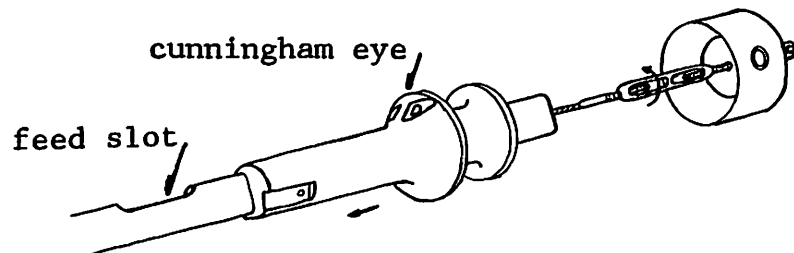
- 5 Completely unscrew stud and T bolt from turnbuckle.
  - a Drop washer over T bolt
  - b Push T bolt thru center hole in cup and main bearing
  - c Screw turnbuckle body onto T bolt til main bearing and cup are held together. Align holes in cup with tapped holes in main bearing
  - d Place eye strap over T bolt and between the two sides of the toggle. Screw home two small (10-32) screws securing the cup, main bearing and eye strap.



6 Slide the luff extrusion up the forestay so that the feed slot is down. If done with the mast stepped, the luff must be helped up with a ship's halyard. Attach the halyard to the traveller so you can retrieve the ship's halyard afterwards.

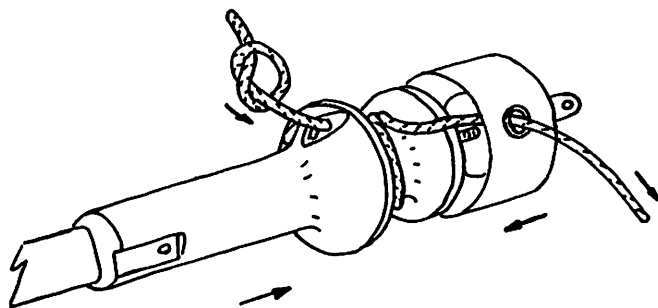
7 Slide the spool body up the luff extrusion, feed slot in extrusion over the cunningham eye in spool body.

8 Screw turnbuckle together until it is approximately where it was before you took it apart. Replace both cotter pins in stud and T bolt.



9 Pass furling line thru hole in side of cup, then up thru vertical hole in spool flange. Tie a knot to prevent it from coming out.

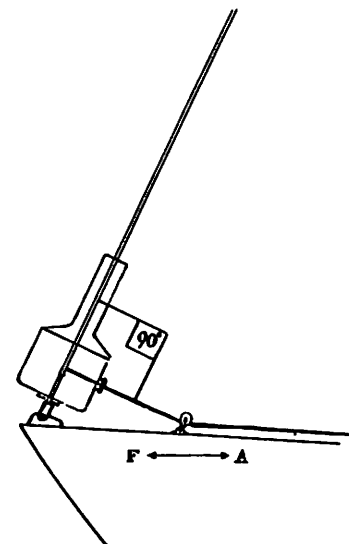
Optional; wind 30 turns on spool.



10 Slide spool body down the extrusion into the cup and over the main bearing.

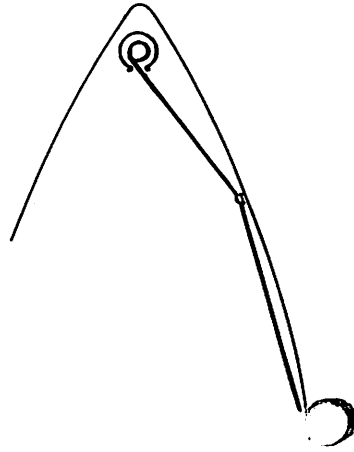
11 To hold extrusion up, insert clevis pin thru throat in spool body. Extrusion rests on the pin.

12 Mount the deck hardware. First Fairlead MUST be positioned so that the furling line is at 90 degrees to the forestay and does not bind on the hole in the cup. Improper positioning of the first fairlead will not allow the system to work, will cause the furling line to chafe thru and will damage the cup.



Fore and aft: First block must be placed so furling line is 90 degrees to stay.

Athwartships:  
Determine required direction to furl sail, then lead furling line from edge of spool thru cup to fairlead.



## OPERATING INSTRUCTIONS

### Hoisting Sails

- 1 Tie cut end of halyard to sail.
- 2 Using a light messenger line, pull molded plastic traveller down while feeding sail into feed slot.
- 3 When sail is hoisted, tie a short tension line from traveller to cleat located on side of throat.
4. Tension luff of sail by running 3 or 4 parts of a light 1/8" line between the tack cringle and the molded eye on the spool flange (like a sailboard sail).

### Lowering Sails

- 1 Tie a messenger line to the molded plastic traveller on the halyard.
- 2 Cast off the short tension line holding the traveller down.
- 3 Pull the sail down.

### Trailing

- 1 Furl sail.
- 2 Pull furling line out of deck blocks.
- 3 Lower mast as usual. Plastic luff can bend without damage.
- 4 Use furling line to lash sail and luff to mast.

### Reefing

Ease and reliability of reefing is proportional to the care taken when unfurling the sail. As you pull out the sail, snub the furling line with 10 to 20 lbs of pull to pack the line smoothly on the drum. When sailing without a reef, always keep the furling line cleated with 10 to 20 lbs tension so when you luff during a tack the furling line doesn't snarl.

Be aware that reefing in heavy air uses more turns than furling at dock-side in zephyrs, owing to the sail wrapping more tightly on the extrusion. You should have 6 extra turns on the drum. If the drum is overfull, remove the core from the first 30 feet of furling line so the spool drum can accommodate more line.

### To Reef

Slack the sheet, then pull on the furling line. You may pull up to 200 lbs without damaging the reef. 100 lbs will reef a 300 sq ft jib in 25 mph of wind, so forces over 100 lbs indicate a jammed jib sheet, or a ship's halyard caught aloft. If you winch against these obstructions something will break. Back off and investigate. In extreme cases bear off, blanket the jib with the main, then reef.

## Shaking out a Reef

To let out a reef, slowly pay out the furling line and always keep tension on it. Never let the drum overspeed by not snubbing the furling line. You will have subsequent problems and have to go forward to clear them.

## Adjusting Turnbuckle

- 1 Roll out sail.
- 2 Pull out  $\frac{1}{4}$ " clevis pin from throat of spool.
- 3 Slide spool up extrusion to reveal turnbuckle.

## Maintenance

None required

## Sailmakers Instructions

Luff tape #6,7 or 8 and  $\frac{1}{4}$ " bolt rope  
Luff deduction 22"

The plastic luff will wind up 1 to 2 revs when reefing in winds over 20 mph with jibs over 300 sq ft. Most of the windup is in the lower  $\frac{1}{3}$  of the sail. Being gradual the effect is barely noticeable but does make the jib slightly (5-10") shorter on the foot

With the sail completely furled, the luff tension will cause the luff extrusion to accordion on the forestay. This will disappear as soon as the sail fills due to wind pressure.

## WARNING

Improper installation of the Reefer, or improper reinstallation of the forestay can cause failure of the forestay, resulting in injury or death if the mast falls.

### Before installation:

- a) Check that toggles are used at both ends of forestay, or your forestay may fail at swage joints from fatigue due to bending stresses.

### After installation:

- a) Check that any forestay clevis pin removed is replaced and properly cotter pinned.
- b) Make sure that turnbuckle threads have full engagement and are properly cotter pinned.
- c) Check for free rotation of unit, paying particular attention that the bottom extrusion does not touch the turnbuckle body, or furling may unscrew the turnbuckle.
- d) Make sure that a jammed bearing will not transmit furling loads to the forestay which could unlay it.
- e) Check that at least 3" side and top clearance exists between halyard top fittings and mast or mast head to prevent halyard tangles or mechanical jams.

### During operation:

- a) Never winch the system without checking for a jam due to ship's halyards being caught in the halyard top fitting. Winching with any force against a caught halyard will sever the forestay at the masthead.
- b) Keep ship's halyards flipped aft of the spreaders and under tension when using Reefer to prevent tangles.
- c) If the system becomes hard to furl, investigate the cause. Cruising Design Reefers do not become hard to furl because of wear or lack of lubrication in the bushings. Increase in reefing force is due to damage, and/or poor adjustment (extrusion riding on turnbuckle, loose forestay, bent stud, etc.) If your reefing system is hard to furl, do not use it in that condition. Fix it, or you risk parting or damaging your forestay.

While the flexible furler may not be damaged by coiling or bending, be aware that in the coiled or bent state it can snap back with considerable violence. If you have winched the furler against an obstruction, it will wind up and can snap back. Snub the furling line to ease the pressure.

**Colie Sailmakers, Inc.**  
 1649 Bay Avenue  
 Point Pleasant, NJ 08742  
 LOCAL: 908-892-4344  
 TOLL FREE: 800-481-4349  
 FAX: 908-899-8965



Name: Robert Seymour  
 .....  
 .....  
 Residence Phone: .....  
 Office Phone: .....

Date: 8/6/99  
 Boat Name: Oday  
 Boat Location: .....  
 .....  
 .....

<u>DESCRIPTION</u>	<u>LIST PRICE</u>	<u>AMOUNT</u>
1 Harken Unit 1 #800	\$1,979.00	
1 Harken Lead Block Kit #266	144.70	
1 Installation		325.00
<u>ADDITIONAL EXPENSES:</u>		
1 Halyard Restrainer, if necessary	37.25	
1 New Headstay, if necessary		
1 Head Toggle, if necessary		
1 Set of Link Plates for plow anchor clearance, if desired		

Subtotal.....  
 NJ Sales Tax.....  
 Total.....  
 Deposit.....  
 Balance Due.....

**Terms of Business:**  
 A 50% deposit is required with all orders. Balance is due upon notice of completion.



# CRUISING DESIGN, INC.

P.O. BOX 151 PEABODY, MASSACHUSETTS 01960 617/532-2712

## PRICES

EFFECTIVE 21 JANUARY 1988

### REEFER I

Size	Boat Length (in ft.)	Boat Displace. (in lbs.)	Headstay Wire Size	Turnbuckle Stud Size	No. Supplied Extrusions	Max. Headstay Length (in ft.)	Reefer I Spool	Reefer I Continuous
#2	16-22	3,000	3/32", 1/8"	1/4" 5/16"	4	29	\$ 300	NA
#4	22-25	8,000	5/32"	1/4" 5/16"	5	33	\$ 600	\$ 675
#6	25-29	8,000	3/16", 7/32"	5/16", 3/8"	6	39	\$ 650	\$ 725
#8	30-33	20,000	1/4", 9/32"	3/8", 1/2"	6	43	\$ 925	\$ 1100
#9	33-37	20,000	1/4", 9/32"	3/8", 1/2"	7	50	\$ 990	\$ 1165
#10	35-42	37,500	5/16", 3/8"	1/2", 5/8"	7	50	\$1125	\$ 1300
#12	40-48	37,500	5/16", 3/8"	1/2", 5/8"	8	57	\$1200	\$ 1375

### FLEXIBLE FURLER

Size	Boat Length (in ft.)	Boat Displace. (in lbs.)	Headstay Wire Size	Turnbuckle Stud Size	Max Headstay Length (in ft.)	
#1	16-22	3,000	3/32", 1/8" 5/32"	1/4"	21	\$ 355
#2	16-22	3,000	3/32", 1/8" 5/32"	1/4"	28	\$ 385
#4	22-25	8,000	3/16"	3/8"	33	\$ 657
#6	25-27	8,000	3/16"	3/8"	39	\$ 707

\*INDIVIDUALLY COILED AND BOXED

### DECK HARDWARE

#### FURLING KITS

Size	
#2	\$ 73
#4	\$ 79
#6	\$115
#7	\$187
#8	\$210
#9	\$214
#10	\$241
#12	\$257

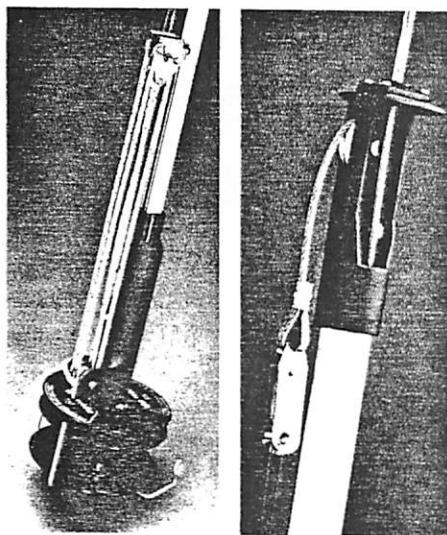
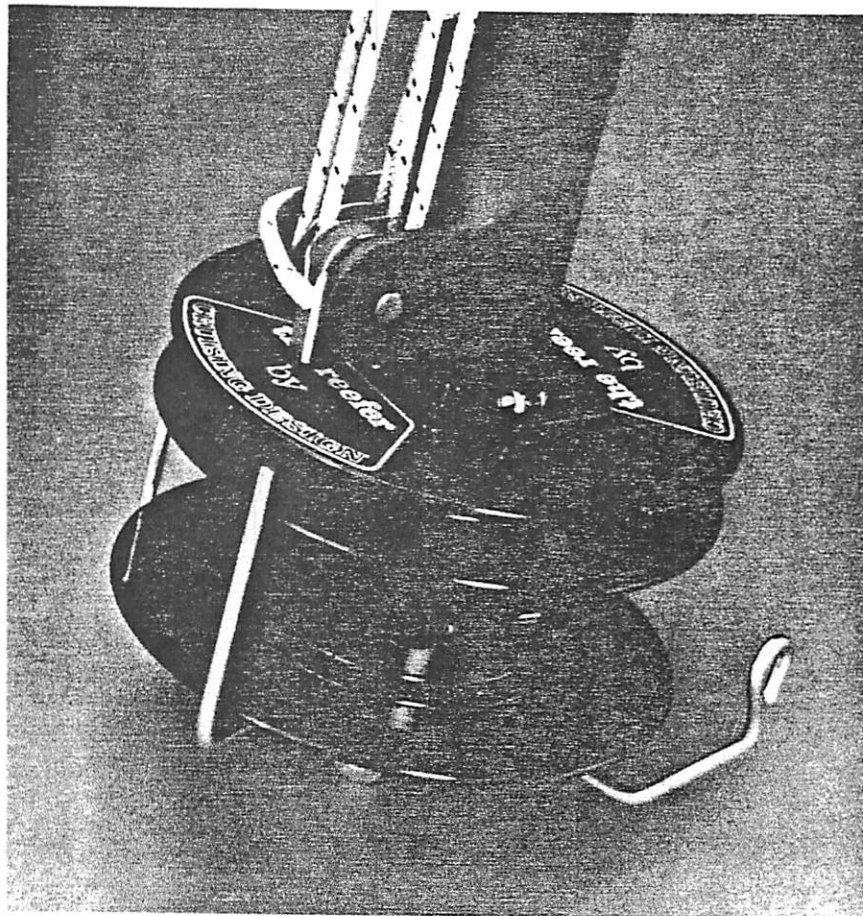
### MAIN REEFER

#4 MainReefer	\$1650
#6 MainReefer	\$1800
#9 MainReefer	\$2600
#12 MainReefer	\$3200

# The Reeper I™ Spool

## Spooling makes cruising easy.

The Reeper I with single line spool drive is the world's most popular roller furling system for cruising sailboats. Simplicity of design, rugged construction and internal halyards make the **Original Reeper I** the most dependable system for furling as well as reefing almost any type headsail. A large capacity, high torque single line drum drive assures ease of operation by lightly crewed boats or single handers while allowing maximum sail area and performance. Compare the features of the **Reeper I** and you'll see why it is the safest and most reliable furling system.



### Features:

- Installs easily without modifying or changing spars or rigging on most boats.
- Easily adjusted – the turnbuckle remains on the headstay.
- Fits around stay to prevent sag and increase sail efficiency.
- Unique halyard fitting eliminates halyard swivel, reduces load on unit.
- Made entirely of non-corrosive materials – no rust prone bearings.
- No winches or cleats on mast, no halyard load.
- Retains integrity of the existing rig.
- Easily transported (7 ft. sections).
- Easy sail conversion.
- Two-year warranty.
- Luff tension with multi-part downhaul.

### The Reeper I Selection Guide

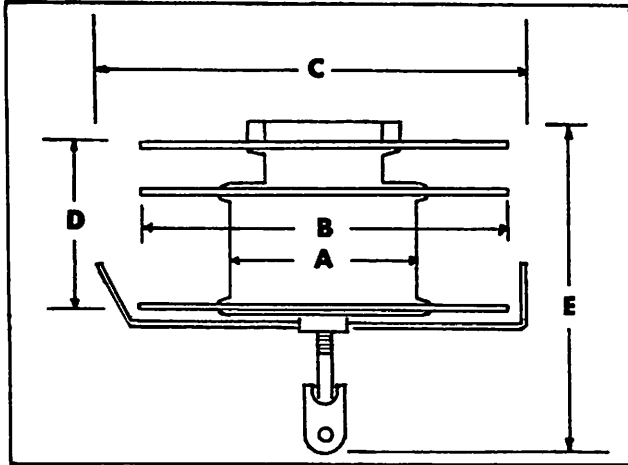
Model No.	Size	Boat Length (in ft.)	Boat Displace. (in lbs.)	Headstay Wire Size	Turnbuckle Stud Size	No. Supplied Extrusions	Max. Headstay Length (in ft.)	Sailmakers Luff Deductions S'l'd./Navtec
2004S	#4	22-25	8,000	5/32"	5/16"	5	33	15/21
2006S	#6	25-29	8,000	3/16", 7/32"	5/16", 3/8"	6	39	15/21
2008S	#8	30-33	20,000	1/4", 9/32"	3/8", 1/2"	6	43	22/28
2009S	#9	33-37	20,000	1/4", 9/32"	3/8", 1/2"	7	50	22/28
2010S	#10	35-42	37,500	5/16", 3/8"	1/2", 5/8"	7	50	22/28
2012S	#12	40-48	37,500	5/16", 3/8"	1/2", 5/8"	8	57	22/28
2016S	#16	48-60	65,000	7/16"	5/8", 3/4"	9 10	64 71	22/28
2018S	#18	52-70	75,000	7/16", 1/2", 5/8"	3/4"-1"	10 11	71 78	27/33

## CRUISING DESIGN, INC.

Advanced Equipment to Simplify Cruising & Racing  
 Box 151, Peabody, Massachusetts 01960  
 (617) 532-2712

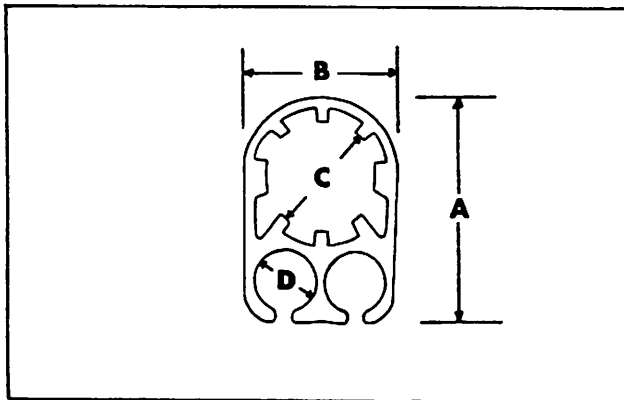
# The Reefer I™ Spool – Technical Information

## Drum Data – Spool

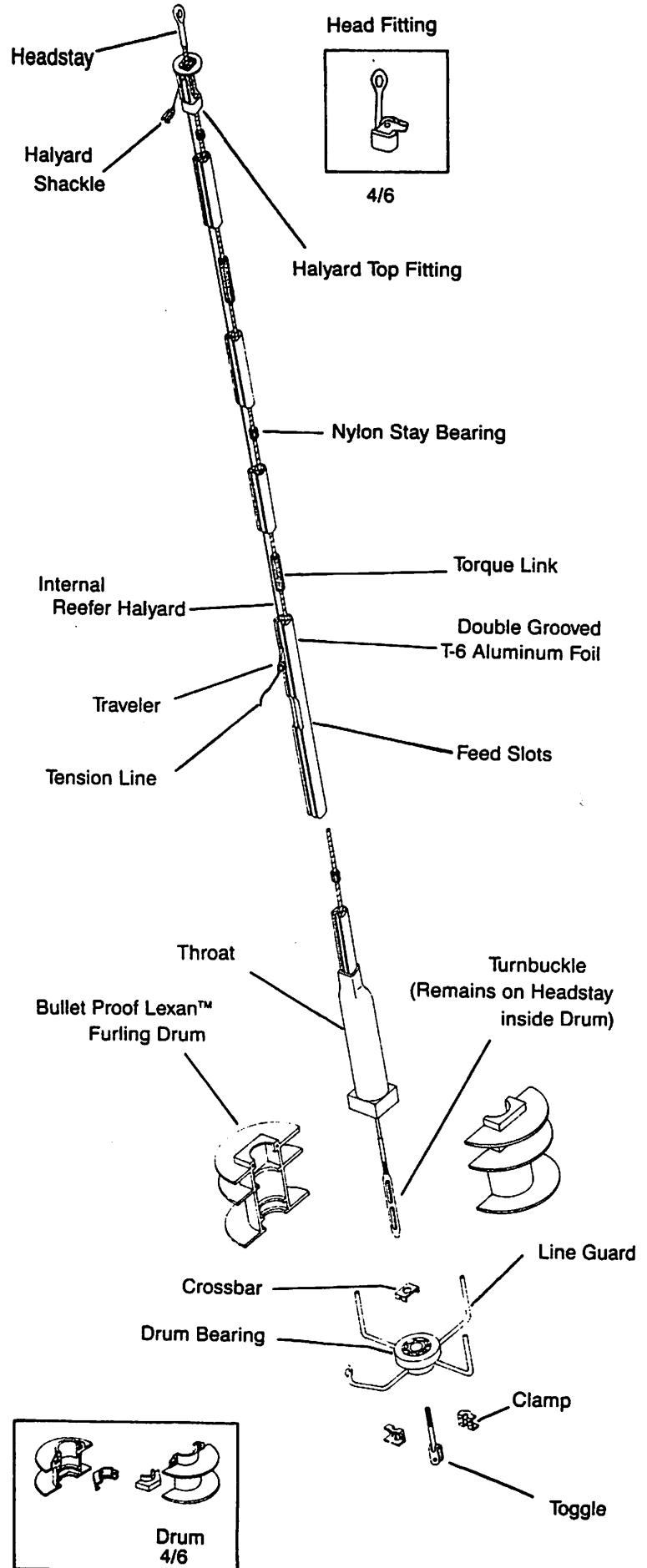


	4/6	8/9	10/12	16/18
A Drum I.D.	2¾"	4¼"	4¼"	5"
B Drum O.D.	5"	8¾"	8¾"	11½"
C Line Guard	5¼"	9½"	9½"	12"
D Drum Ht.	2½"	4¼"	4¼"	5¼"
E Toggle/Tack	7"	12½"	12½"	7"
Line Size	¼"	⅜"	⅜"	7/16"/3/16" Wire
Drum Capacity	60 ft.	110 ft.	110 ft.	130 ft.
Clamp	1/4"/1/4", 3/8"	3/8", 1/2"	1/2", 5/8"	Custom

## Extrusion Data



	4/6	8/9	10/12	16/18
A Fore/Aft Dm.	1⅞"	1⅜"	1½"	2¾"
B Port/Strb'd Dm.	1⅝"	1"	1"	2⅞"
C Max. Stud Dia. (excl. flats)	.490"	.643"	.782"	1.125"
D Sail Tape Size	#6	#6	#6	#9
Wt./ft.	.38/ft.	.53/ft.	.56/ft.	.93/ft.
Max. Stay Size	¼"	9/32"	⅜"	5/8"



# THE FLEXIBLE FURLER

Furling and reefing jibs and Genoas from the cockpit is undeniably one of the most convenient additions to any boat. The smaller the boat, the trickier the foredeck. Hence, an increased need for this safety and convenience feature.

With our Flexible Furler we've eliminated your biggest headaches: poor performance when sailing to windward has been replaced with a taut, straight, leading edge to your jib. Our exclusive plastic one-piece luff groove guarantees better upwind performance than from a luff wire type furler.

The second headache we've eliminated is breakage. Rigid metal luff groove extrusions are often irreparably damaged when the mast is stepped or unstepped. Our new flexible extrusion bends sideways and can even be temporarily coiled. We do not recommend prolonged coiling as the plastic has a "memory" and may not return to a complete straight edge.

## SPECIFICATIONS

- Mounts on lower T bolt of open body (Merriman-type) turnbuckle.
- Reefs rated sail area in 25 MPH wind.
- 2 year warranty.
- Single groove continuous rigid PVC luff accepts #6 luff tape.
- No maintenance. No rinse. No lube.
- 1 hour owner installation. Removable in 15 minutes. 1 minute to uncover turnbuckle for inspection/adjustment.
- Install over bottom stud of open body turnbuckle.

## FLEXIBLE FURLER SELECTION

SIZE	BOAT SIZE	MAX SAIL AREA TO REEF SQ. FT.	MAX WIRE SIZE INCHES	REQ'D TBUCKLE STUD DIAMETER INCHES	MAX HEADSTAY LENGTH FEET	STUD HOLE DIAMETER IN FURLER DRUM
1	To 22'	100	5/32"	1/4"	21'	.265
2	To 22'	100	5/32"	1/4"	28'	.265
4	To 25'	300	3/16"	3/8"	33'	.390
6	To 27'	300	3/16"	3/8"	39'	.390

# CRUISING DESIGN, INC.

P.O. BOX 151 PEABODY, MASSACHUSETTS 01960 617/532-2712

# IN THIS HI-TECH AGE, IT'S A RELIEF TO FIND SOMETHING TRULY SIMPLE.

Our name tells a good deal about our company philosophy: Cruising Design is a company that designs, engineers and builds sensible, practical, and comparatively inexpensive products to meet the real needs of the majority of boat owners.

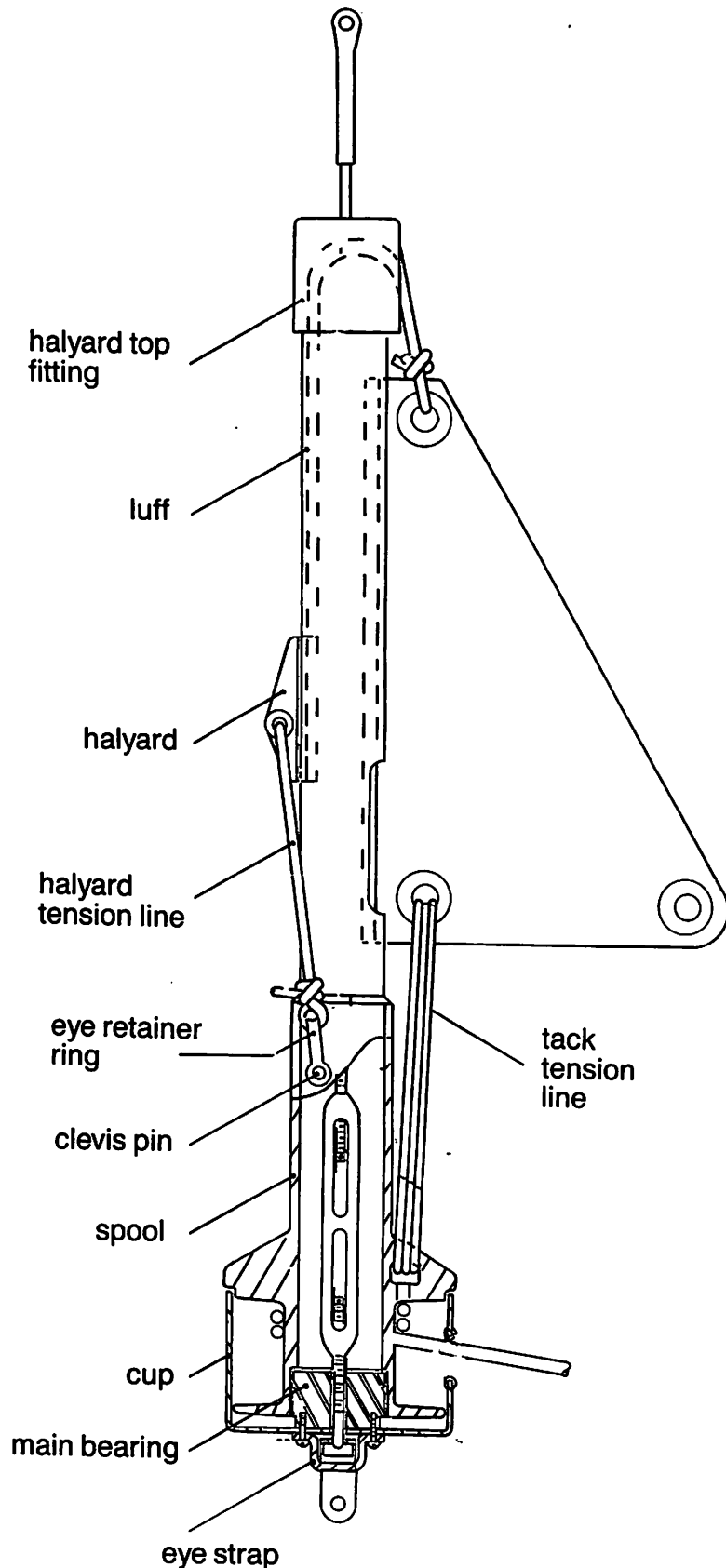
Our Flexible Furler is designed for the sailor with a small inventory of jibs. The Flexible Furler is not designed to accommodate racing headsail changes. It is for the boat and sailor where time and money are both major considerations. You'll get more use out of your boat because it becomes a little easier to sail when you outfit it with a reefer/furler. It won't cost you the great outdoors to fit a Flexible Furler to your boat, because we've designed this piece of equipment to be as simple as possible and still work well.

The plastic luff groove extrusion is more durable than any of the non-flexing metal ones which must be sectioned for shipment. With metal extrusions, the weak link is the joint between sections. The Flexible Furler is a one piece extrusion. Joints and weak points are eliminated. A halyard follower brings your sail aloft, where it will most likely stay all season. The tack fitting is a simple lashing that won't fall overboard (unlike a pin or shackle).

Only the Flexible Furler is totally maintenance-free. Once the sail is up, leave it there. There are no balls to fail or bearings to flush.

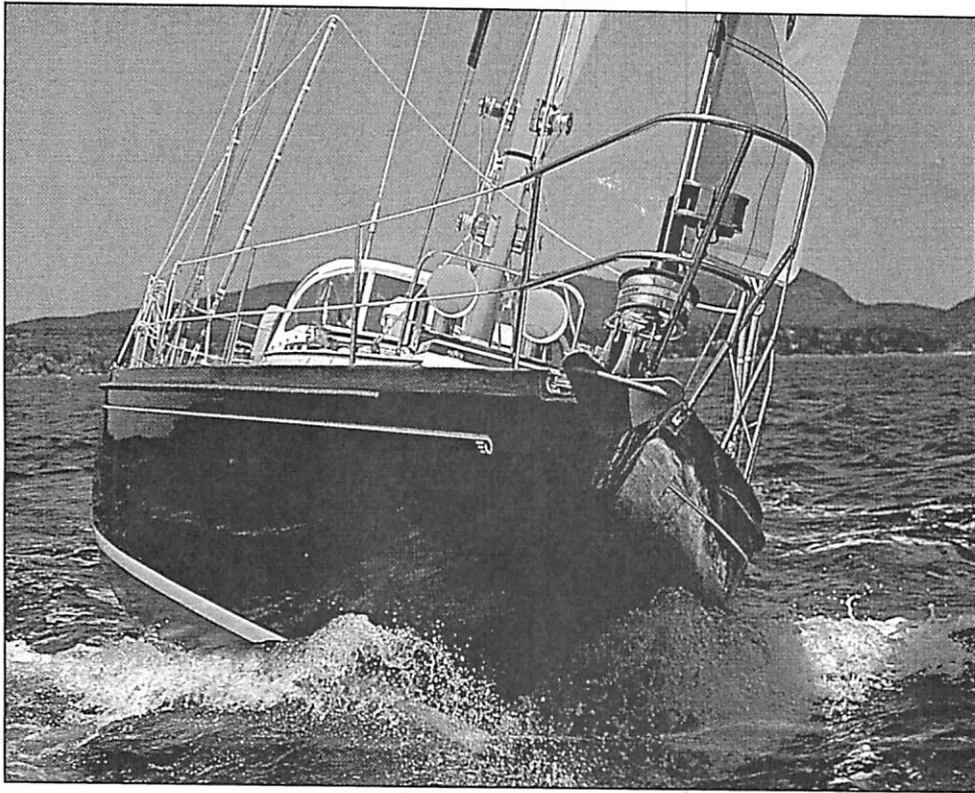
The Flexible Furler is also a "reefer." In a 25 knot wind it will hold a partially rolled (reefed) sail of up to its rated area. In winds of over 25 it will fully furl a larger sail but, at that time, you'd do best to take shelter.

The Flexible Furler is an inexpensive and effective way to get more use and enjoyment from your boat. Enjoy it, and Happy Sailing!



# CRUISING DESIGN, INC.

P.O. BOX 151 PEABODY, MASSACHUSETTS 01960 617/532-2712



Margherita Botini Photo

# ***Jib Reefing and Furling Systems***

# **HARKEN**

# Harken Jib Reefing and Furling Systems

are the ultimate headsail handling systems. They incorporate innovative design features, quality materials, and state-of-the-art manufacturing techniques that no other units can match.

The single-handed BOC around-the-world race is the ultimate test of jib reefing and furling systems. Harken systems led the fleet across the line when *Group Sceta* finished first and *Volcano* won the Corinthian class.

BOC skippers have very simple criteria when choosing a furling system – it has to be completely reliable, as light as possible, and aerodynamically correct. Their lives and the race depend on the right gear. In all, eight boats in the 1991 BOC used Harken furling, and of those, *Allied Bank*, *Group Sceta*, *Jarkan*, and *Duracell* removed other brands to put Harken aboard.

We don't expect many of our customers to sail alone around the world, but you should base your choice of a furling system on the same criteria. Your ability to sail safely in all kinds of weather with a small crew and to stay off the foredeck depends on a superb reefing and furling system. Choose the system the real experts prefer – Harken.

*Nickel-plated silicon bronze turnbuckle body insures gall proof operation.*

*Properly designed furling turnbuckle allows easy headstay adjustment while preventing fatigue failure caused by side loading.*

*Feeders are carefully shaped and finished to allow quick single-handed hoisting and efficient racing sail changes.*

*Reliable Torlon® ball bearings require no lubrication and minimal maintenance.*

*Swage, Norseman, Sta-Lok, or rod fittings may be used with any size Harken system.*

*Our scientific testing program has resulted in an exceptionally free running swivel design.*

*Multiple races of Torlon bearings distribute load to all balls.*

*Unidirectional bearing system, handles loads from all directions.*

*Main components are machined from solid 6061-T6 aluminum which is Hardkote anodized with Teflon™ impregnation for years of service.*

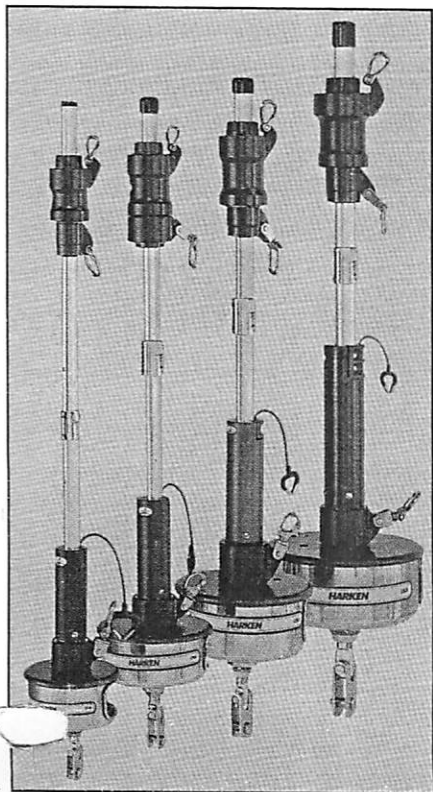
*Aft facing double groove foil is aerodynamically correct.*



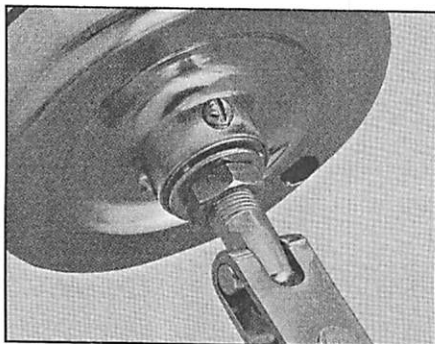
**Easy to Assemble** – Designed for easy installation, these units can be preassembled by distributors. The seven foot long foils remain disassembled for shipping ease while the headstay is completely assembled and swaged. Installation requires simple hand tools and takes one hour. The picture book instruction manual makes assembly a snap.

**Adaptable to Swage, Rod and Norseman or Sta-Lok Fittings** – This versatility allows you to choose the type of rigging and terminals you prefer. Our extra long swage fitting permits reuse of your existing headstay. Low stretch, corrosion resistant rod headstays simply require an adapter. Norseman and Sta-Lok fittings, often preferred in tropical waters, may also be used.

**Wide Range of Units** – There is a Harken unit for any boat between 22 and 90 feet. They share the same unique features of Harken systems but each is specifically



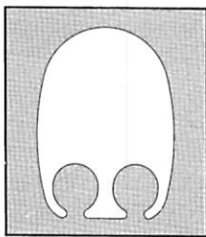
designed for the requirements of furling on boats of that size.



**Easy Length Adjustment** – A built-in turnbuckle simplifies installation, corrects minor measurement errors, compensates for wire stretch and allows mast rake adjustment, all while keeping the tack low for better sailing performance. Our turnbuckle is designed specifically for furling and is capable of handling side loads, which a standard turnbuckle cannot carry. It also incorporates unique locking devices.

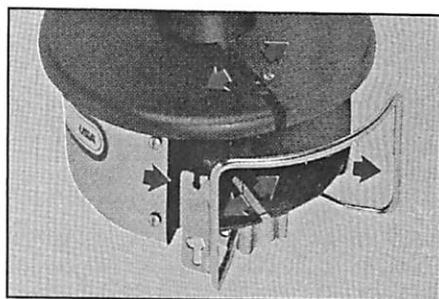
**Uses Existing Headstay** – The foils ride over your headstay. Your existing wire or rod can be reused, saving the expense of a new stay. Because the headstay carries the load, the structural integrity of your rig is maintained and bearings carry only the relatively low sail loads.

**Clean Aerodynamic Foils** – Our aerodynamically correct aft facing double-grooved foils won't offend your sense of aesthetics or spoil air flow across your genoa. The headstay is positioned at the exact center of the foil for smooth, even rotation. Proper engineering gives our foils superior strength without offensive bulk.



**Easy Racing Conversion** – Unlike other systems where the halyard swivel must be disassembled to drop past the feeder, the hinged Harken Feeder is easily removed

to permit the swivel to pass. Remove a few more screws and the entire drum slips off the headstay. An optional split drum can be removed without removing the headstay clevis pin. You're left with a clean system with the double luff grooves ready for quick sail



changes. Sails tack at the deck so full hoist racing genoas may be used.

**Free Rolling, Low Maintenance Bearings** – Torlon ball bearings in patent pending stacked races distribute radial and thrust loads evenly on all of the balls to allow the system to rotate with exceptional ease. These bearings require no lubrication and no maintenance other than an occasional freshwater rinse. These are the same bearings used in our famous big boat blocks which carry thousands of pounds of load. They're so reliable that they're covered by our seven year warranty.

**Finest Materials and Construction** – All of the load bearing components, including the drum, are machined, spun or extruded from 6061-T6 aluminum, silicon bronze or stainless steel for years of reliable service. Castings are only used on non-load bearing assemblies with intricate shapes such as the feeder. All aluminum structural components are Hardkote anodized with Teflon™ impregnation for maximum corrosion resistance. These excellent materials and construction methods add up to years of reliable service and a fine looking system for your yacht.



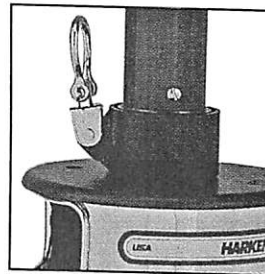
# Superb Reefing, Not Just Furling

The Harken system is a superior reefing system as opposed to just a furling system for three important reasons:

Our independent tack and head swivels allow the center of the sail to furl before the ends which reduces draft and gives better shape. Use your existing sails, specially designed reefing sails or sails with foam shaping devices.

Foils are extremely strong sections joined with a triple interlock connection to withstand years of abuse from reefing loads. The connectors serve as bearings on the headstay where their Teflon impregnated surface provides a tough, low friction interface with the headstay.

A unique drum lock allows you to secure your unit in a reefed position. This eliminates the possibility that the furling line will be accidentally released in a heavy wind. It also permits positive locking of the unit while moored for extra peace of mind when you're away from the boat.



## Easy to Change and Shape Sails

As good as reefing is, there are times when you may want to change sails. Every Harken unit has a built-in prefeeder and a superbly shaped feeder to make sail changes simple. Optional snap shackles are available. Sails are raised on your halyard making changes easy and allowing shape adjustments through halyard tension changes. Just because you cruise doesn't mean you don't enjoy sailing fast.

**Warranty** - A seven year limited warranty covers the Harken Jib Reefing and Furling System and includes the bearings.

**Worldwide Service** - Harken's network of distributors and service facilities insures that no matter where your cruise may take you, expert service and parts will always be close. Our commitment to service is legendary in the industry and is shared by all members of our worldwide distribution network.

# HARKEN

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