

HARKEN®

Harken Vang-Master

INSTALLATION MANUAL

Installation Manual – Intended for specialized personnel or expert users

5384 V1 03/21



Please read these instructions carefully before using or servicing the equipment.
This manual may be modified without notice. See: www.harken.com/manuals for updated versions.
PLEASE SAVE THESE INSTRUCTIONS

This manual gives technical information on installation and service. This information is for specialized personnel or expert users. Installation, disassembling, and reassembling by personnel who are not experts may cause serious damage to property or injury to users and those in the vicinity of the product. If you do not understand an instruction contact Harken.

The user must have appropriate training in order to use this product.

Harken accepts no responsibility for damage or harm caused by not observing the safety requirements and instructions in this manual. See limited warranty, general warnings, and instructions in www.harken.com/manuals.

Purpose

The Harken Vang-Master is designed to attach to the mast and boom on a sailboat as a mainsail control. Use of this product for other than normal sailboat applications is not covered by the limited warranty.

Safety Precautions



WARNING! This symbol alerts you to potential hazards that may kill or hurt you and others if you don't follow instructions. The message will tell you how to reduce the chance of injury.



CAUTION! This symbol alerts you to potential hazards that may hurt you and others if you do not follow instructions. The message will tell you how to reduce the chance of injury.



WARNING! Strictly follow all instructions to avoid potential hazards that may kill or hurt you and others. See www.harken.com/manuals for general warnings and instructions.

Parts Included and Ordered Separately

Vang assembly including:

Line and sheave to provide 2:1 primary purchase which is cascaded by a block and tackle (sold separately) for a 8:1 or 12:1 purchase. The VM7 and VM8 come with an additional lead ring and deadend for a cascaded 4:1 purchase which is further cascaded by the block and tackle for a 16:1 or 24:1 purchase.

Fork fittings with pins to attach to vang gooseneck on mast and boom lug.

VM1 through VM6
2:1 primary purchase



VM7 and VM8
4:1 cascaded purchase

Purchase separately

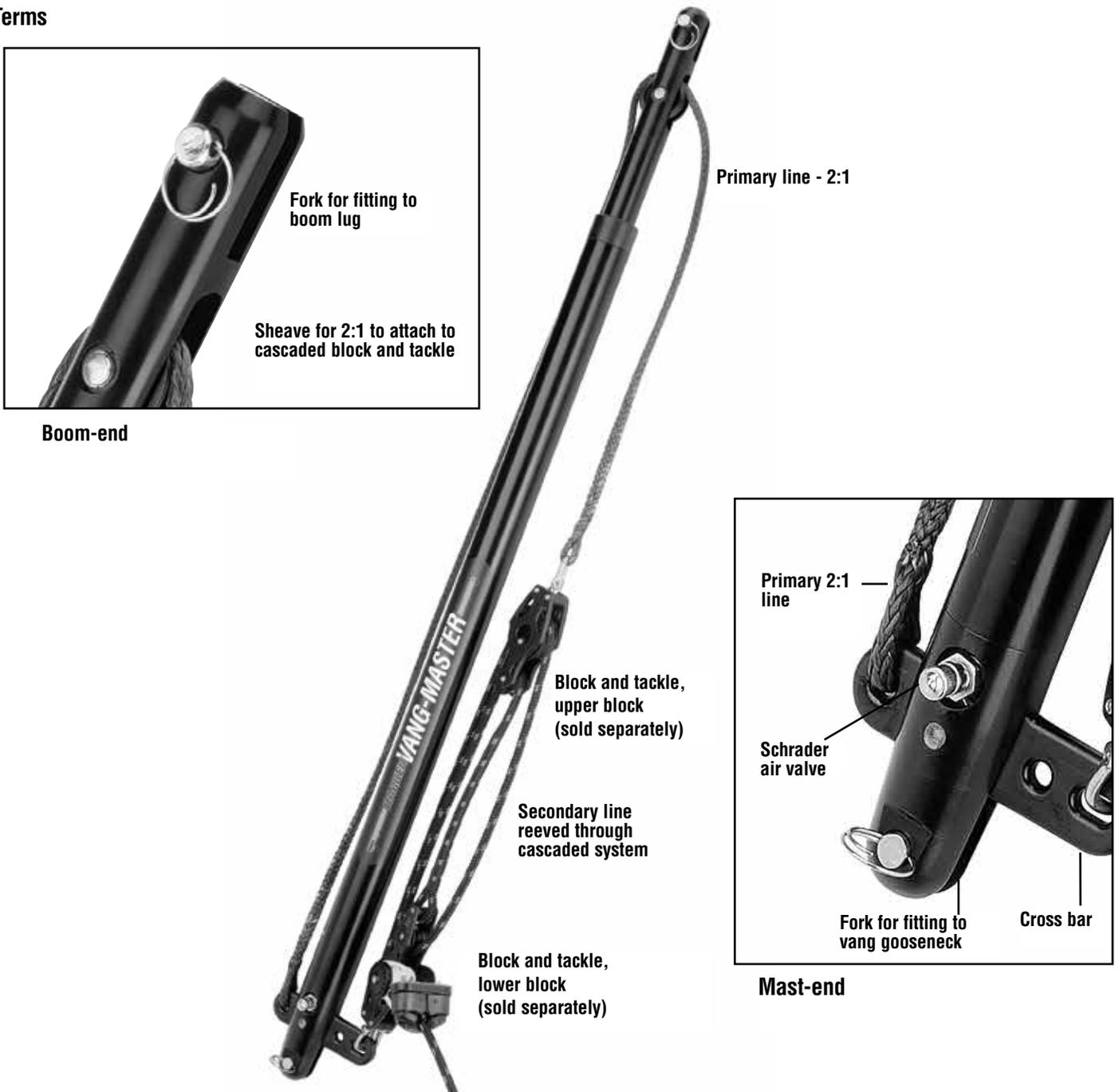
- Vang gooseneck and boom lug fittings if required
- 4:1 or 6:1 block and line kit -
 - Cascades the 2:1 purchase to 8:1 or 12:1 respectively
 - Cascades the 4:1 purchase to 16:1 or 24:1 respectively
- Cleats and accessories for double ended systems

Harken® Vang-Master(VM) rigid vang is mounted near the mast partners and to the boom at an approximate 45 degree angle. It provides downward pressure using a block and tackle and upward force using air pressure to hold the boom up when the mainsail is lowered and stowed. The VM also lifts the boom while sailing to open the leech to provide airflow in light air. Air pressure can be added with a bike pump or let out at any time in order to set the amount of lift to your boat. The VM uses a Schrader air valve.

The VM has an integral sheave with Dyneema line to provide a 2:1 primary purchase. The end of the line has a spliced loop. Attach a 4:1 or 6:1 Harken block and tackle to loop to create a cascaded purchase system that is either 8:1 or 12:1. The block and tackle can have an integral cleat or set up to be double-ended and led aft to cleats on the boat. The VM7 and VM8 come with an additional lead ring and deadend for a 4:1 cascaded purchase which is cascaded again for a 16:1 or 24:1 purchase.

Use existing vang gooseneck on mast and boom lug to fit fork style fittings located on the ends of the vang.
Use a high quality bicycle floor pump to provide air pressure. Pressure will typically be over 100 psi (690 kPa).

Terms



Vang-Master rigid vangs are available for boats with vang fittings on the boom and mast partner. If your boat is not equipped with vang fittings on mast and boom, or if fitting width or pin diameter will not fit jaw and pin sizes listed in the chart below, contact Harken for information.

Vang sizing

Vang-Master sizes are based on boat size and PCLC (pin center length closed).

PCLC - measure the distance between vang pins with boom pulled down.

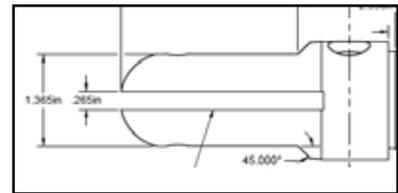
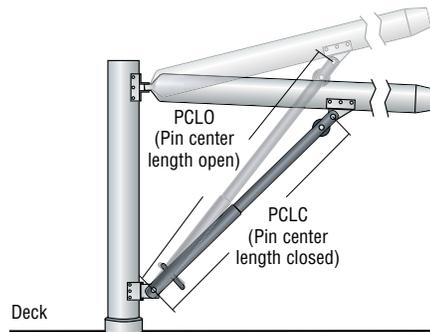
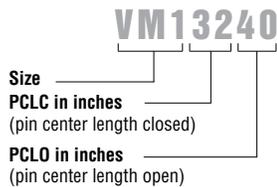
PCLC (pin center length open) - Push boom up to the maximum desired height and measure the distance between vang pins.

Select size that fits your range from chart below.

Standard Sizes - See next page for popular production boat applications.

Part No.	Description	Typical boat length		PCLC Pin center length closed		PCLC - Pin center length open		Stroke		Pin Ø		Mast/boom fitting thickness*	
		ft	m	in	mm	in	mm	in	mm	in	mm	in	mm
VM13240	Vang-Master 1	18 - 26	5.5 - 7.9	32	813	40	1016	8	203	3/8	10	1/4	6
VM24353	Vang-Master 2	18 - 26	5.5 - 7.9	43	1092	53	1346	10	254	3/8	10	1/4	6
VM33444	Vang-Master 3	25 - 36	7.6 - 11	34	864	44	1118	10	254	1/2	12.7	1/4	6
VM44656	Vang-Master 4	25 - 36	7.6 - 11	46	1168	56	1422	10	254	1/2	12.7	1/2	12
VM54860	Vang-Master 5	35 - 46	10.7 - 14	48	1219	60	1524	12	305	1/2	12.7	1/2	12
VM66274	Vang-Master 6	35 - 46	10.7 - 14	62	1575	74	1880	12	305	5/8	15.9	5/8	16
VM76274	Vang-Master 7	45 - 56	13.7 - 17.1	62	1575	74	1880	12	305	5/8	15.9	5/8	16
VM87385	Vang-Master 8	45 - 56	13.7 - 17.1	73	1854	85	2159	12	305	5/8	15.9	5/8	16

Part number code



*Mast/boom fitting thicknesses are listed. Vang fork ends will fit these tang widths.

Blocks and line for purchase systems

Blocks and line are sold separately. Order block and line kits to build 4:1 or 6:1 mechanical advantage in single- or double-ended configurations. These systems cascade the primary purchase to 8:1 or 12:1 in the VM1 through VM6 vangs and 16:1 or 24:1 in the VM7 and VM8 vangs.

See block and tackle reeving instructions on pages 8 to 11.



Part No.	Block kit description	Purchase	Includes	Use with
7500	4:1 Single-ended 40 mm Carbo	4:1	(1) 2655 fiddle, (1) 2658 fiddle, 6 mm line	VM1, VM2, VM3
7501	4:1 Double-ended 40 mm Carbo	4:1	(1) 2638 double, (3) 2636 single, 6 mm line	VM1, VM2, VM3
7502	6:1 Single-ended 40 mm Carbo	6:1	(1) 2640 triple, (1) 2613 triple, 6 mm line	VM1, VM2, VM3
7503	6:1 Double-ended 40 mm Carbo	6:1	(1) 2640 triple, (1) 2638 double, (2) 2636 single, 6 mm line	VM1, VM2, VM3
7504	4:1 Single-ended 57 mm Carbo	4:1	(1) 2621 fiddle, (1) 2676 fiddle, 8 mm line	VM4, VM5, VM6
7505	4:1 Double-ended 57 mm Carbo	4:1	(1) 2602 double, (3) 2600 single, 8 mm line	VM4, VM5, VM6
7506	6:1 Single-ended 57 mm Carbo	6:1	(1) 2604 triple, (1) 2630 triple, 8 mm line	VM4, VM5, VM6
7507	6:1 Double-ended 57 mm Carbo	6:1	(1) 2604 triple, (1) 2602 double, (2) 2600 single, 8 mm line	VM4, VM5, VM6
7508	4:1 Single-ended 75 mm Carbo	4:1	(1) 2690 fiddle, (1) 2697 fiddle, 10 mm line	VM7, VM8
7509	4:1 Double-ended 75 mm Carbo	4:1	(1) 2662 double, (3) 2660 single, 10 mm line	VM7, VM8
7510	6:1 Single-ended 75 mm Carbo	6:1	(1) 2664 triple, (1) 2686 triple, 10 mm line	VM7, VM8
7511	6:1 Double-ended 75 mm Carbo	6:1	(1) 2664 triple, (1) 2662 double, (2) 2660 single, 10 mm line	VM7, VM8

Existing Applications

Vang-Masters sized for production models are detailed below. **Note:** There may be rigging variation due to Class rule changes or equipment replacement.

VM-1	VM-2	VM-3	VM-4	VM-5	VM-5 continued	VM-6	VM-7	VM-8
Moore 24	J/80	Cal 29	Catalina 34	Erickson 35	Farr 40	Catalina 400	Catalina 47	Jeanneau 57
Hot Foot 2	Cal 25	Catalina 27	Cal 28	Santana 35	Farr 400	Catalina 42	Santa Cruz 50	Santa Cruz 52
Ultimate 20	Ultimate 24	Erickson 27	Cal 27	Hunter 34	Kirby 25	Cal 40	Lidgard 45	Santa Cruz 70
Santana 20	B-25	Catalina 30	Islander Bahama 30	Hans Christian 33	Summit King 40	Cal 39	Morris 46	Andrews 70
	Capri- 25	J/27	J/29	C & C 38	Farr Mumm 36	J/122	Tp- 52	
	J/24	Olson 30	J/30	Catalina 38	Summit 35	J/46	X- Yacht 512	
	Merit 25	Santana 3030	Evelyn 32	Catalina 36	Soto 40	X- Yacht 45	Swan 48	
	Melges 24		J/105	J/35	Benetau First 36.7	J/120	Swan 46	
			J/100	J/111		X- Yacht 38	Passport 54	
			J/133	J/40		Swan 44	Columbia 50	
			J/33	J/37		Swan 43	Dufour 520	
			Pearson 30	J/109		Cabr Rico 42	Hylas 54	
			Hunter 28	Express 37		Passport 42	Andrews 56	
			Tartan 10	Tartan 35		Moody 46		
			Cal 31	Valiant 42		Dufour 45		
			Ranger 33	Peterson 44		Hylas 42		
			Pearson 34	Benetau First 38		Chey Lee Offshore 48		
			Sabre 30	Bristol 35		Bristol 47		
			Hobbie 33	Grand Soleil 39		Wauquiex 46		
			Isladner 36	Island Packet 35		J/125		
			Antrim 27	Hinckley Breveda 40		Dk 46		
			Soverel 33	Hallberg Rassy 42		Sydney 40		
			Flying Tiger F-10	Cabo Rico 38		Benetau First 40.7		
			J/99	Passport 40				
			Henderson 30	Sabere 42				
			Farr Mumm 30	Antrim 40				
			Melges 32	Cf 40				

Ordering Custom Length Vang-Master Rigid Vangs

1. Boat Information

Boat type or model: _____

Spar builder: _____

2. Vang Size

Boom details:

Length overall: _____

E dimension: _____

Boom material and dimensions: _____

Is there a slot in the bottom of the boom? Yes No

Boom height from bottom of boom to deck at mastbase (H): _____

Is there a vang fitting at mastbase? Yes No

If yes, is it articulating? Yes No

What is the pin size? _____

Is there a vang fitting on boom? Yes No

If yes, what is the pin size? _____

PCLC (Pin center length closed): _____

PCLO (Pin center length open): _____

Mainsail details:

Sail area: _____

Does it have full battens? Yes No

Sail material: _____

3. Purchase System

See Harken catalog for standard purchase systems or order blocks separately to build your own system.



Installation

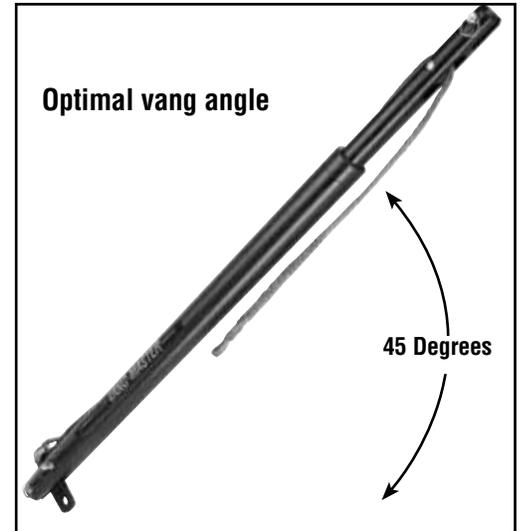
Planning Installation and Installing

The optimal angle of the vang is 45 degrees. The lower the vang mast fitting can be on the mast, the less load on the fittings and spars.

IMPORTANT! Vang angles that are more or less than 45 degrees will reduce the effectiveness of the vang and load fittings.

Use the main halyard to hold the boom horizontal and check the length and locations. Refer to the stroke length and plan on setting the vang up so the sailing length is midway or little less than half way. Hold the Vang-Master in place at half stroke and check the angle to see if it is close to 45 degrees. If it is not, you may need a shorter or longer vang. With boom parallel with the waterline, the vang should be set as close to a 45 degree angle as possible to give the best performance through its range of motion.

If you have existing fittings, check the fit of the Vang-Master fork fittings and also check for good rotation.



Installation

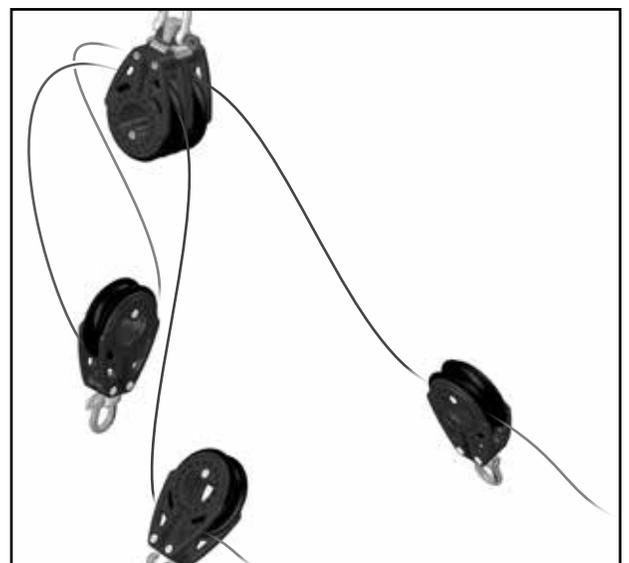
Use the main halyard to hold the boom horizontal.

Installing new mast fitting - Check fit of vang gooseneck to be sure it seats flat on the aft sides of the mast. Be sure to mount the fitting right side up. If using an existing vang gooseneck, check to make sure the vang can angle into position and rotate correctly.

Mark holes and use a center punch. Mount fitting using SS rivets or drill and tap method.

Installing new boom fitting - Check to see if the boom fitting has a fore-aft orientation; be sure to mount the fitting correctly. If using an existing mast fitting, check to make sure the vang can angle into position and rotate correctly. Hold the boom up so that it is at about mid-stroke or a little less. Check the vang angle to make sure it is about 45 degrees. Hold or clamp the fitting in place and mark and center punch.

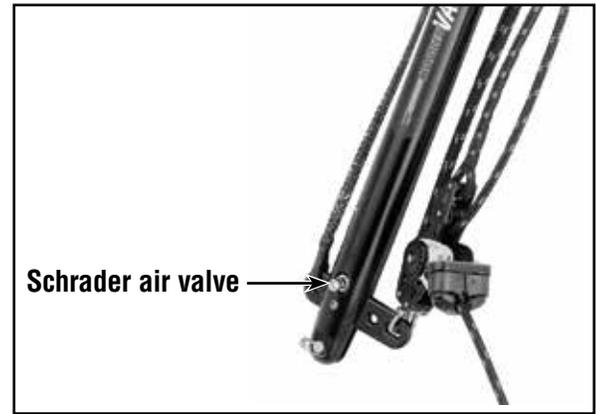
Reeving block and tackle - See following pages for how to reeve block and tackle (sold separately).



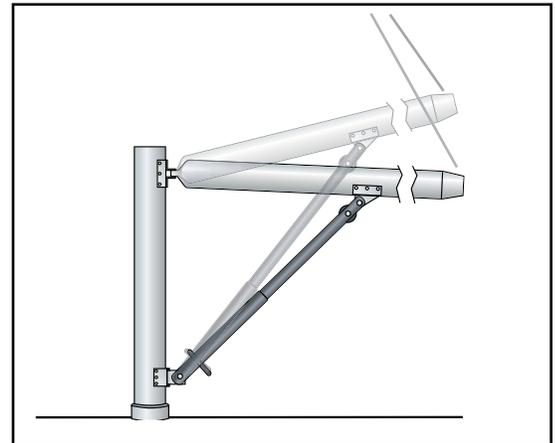
See reeving pages

Commissioning

Attach the vang to mast and boom fittings. Add air pressure using a high quality bicycle pump with Schrader valve fitting. Remove cap and use a pump capable of pumping more than 100 psi (690 kPa). The amount of pressure will determine the boom angle and the return rate.



Tip: To make it easier to add air, use the main halyard to hold the boom up about 10 degrees from the sailing position. When you think you have enough pressure, ease off on the main halyard to check the boom angle. Pull down on the end of the boom and check the return rate. If boom is on the soft side, add more pressure. If there is too much pressure, use a small screwdriver to press on the valve post to let air out.



Use halyard to lift boom while pumping air.

Decommissioning

When removing the boom for winter storage or transport, DEPRESSURIZE the cylinder before removing or disconnecting the vang. Remove cap and use a small screwdriver to press the center valve post to let air out.

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.

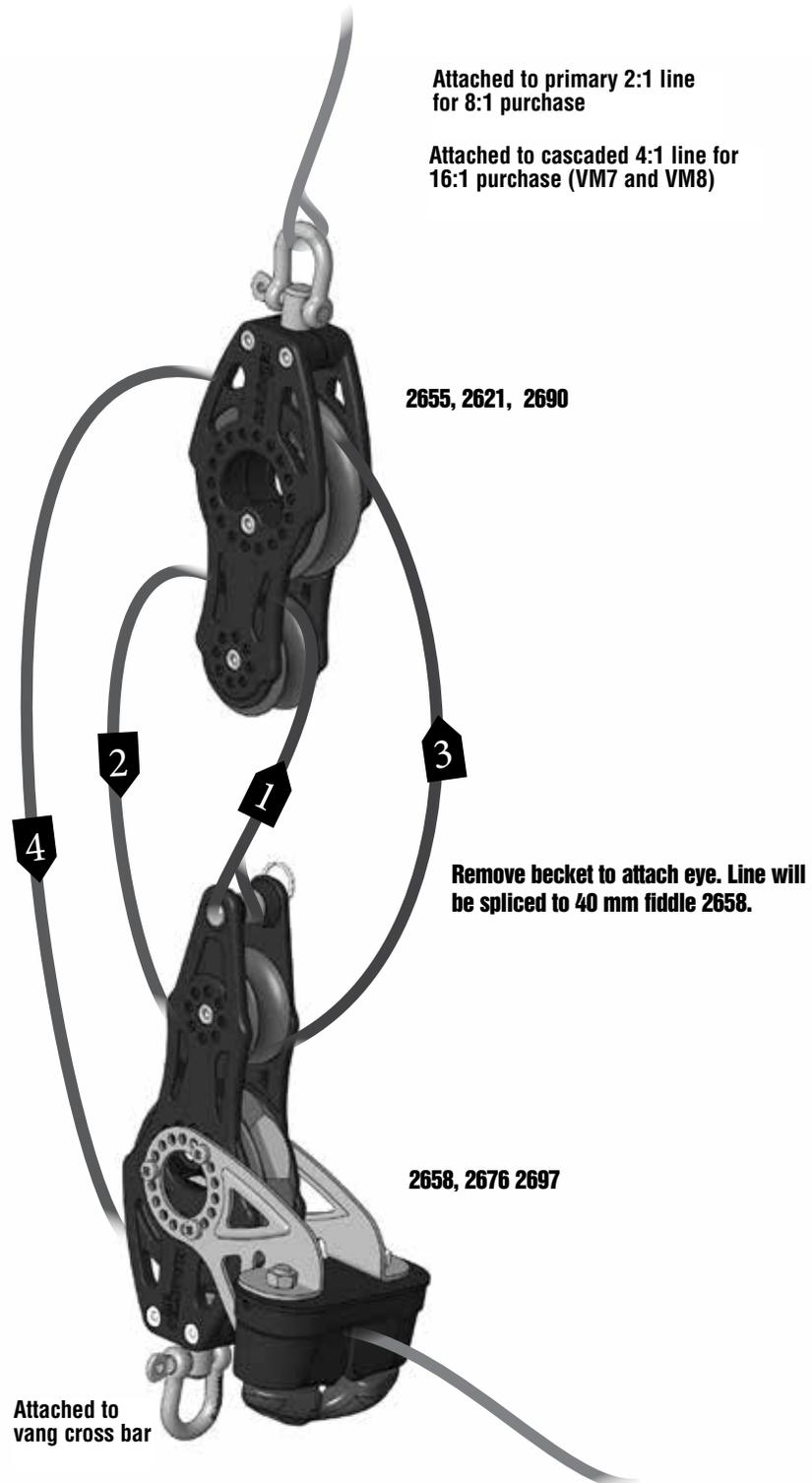
The VM should not need rebuilding even over long periods. If it is not operational contact Vang-Master or Harken to discuss possible rebuilding.

WARNING! The Vang-Master contains compressed air and may cause injury if service is attempted by non-specialized personnel. Do not disassemble the Vang-Master unless you are an authorized Harken service center.

IMPORTANT! Exposure to some teak cleaners and other caustic solutions can result in discoloration of part and is not covered under the Harken warranty. See www.harken.com/manuals or the Harken catalog.

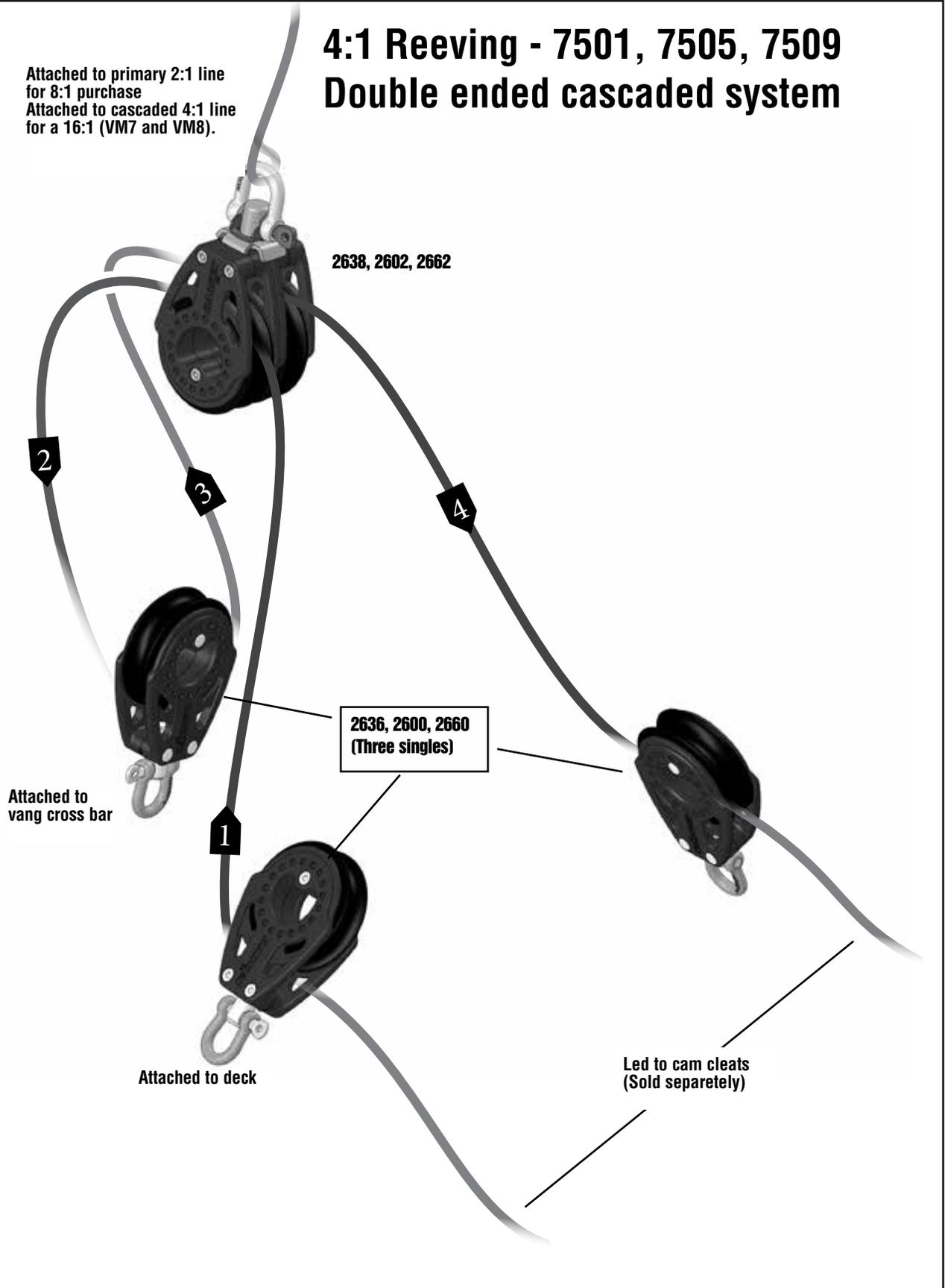
4:1 Reeving - 7500, 7504, 7508

Single ended cascaded system



4:1 Reeving - 7501, 7505, 7509 Double ended cascaded system

Attached to primary 2:1 line
for 8:1 purchase
Attached to cascaded 4:1 line
for a 16:1 (VM7 and VM8).



2638, 2602, 2662

2636, 2600, 2660
(Three singles)

Attached to
vang cross bar

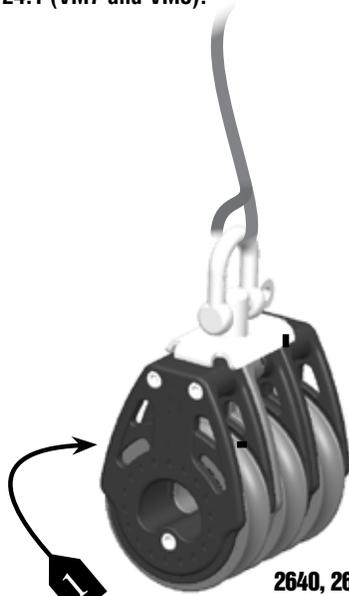
Attached to deck

Led to cam cleats
(Sold separately)

6:1 Reeving - 7502, 7506, 7510 Single ended cascaded system

Attached to primary 2:1 line
for 12:1 purchase
Attached to cascaded 4:1 line
for a 24:1 (VM7 and VM8).

Reeving diagram shown without block structure for clarity.



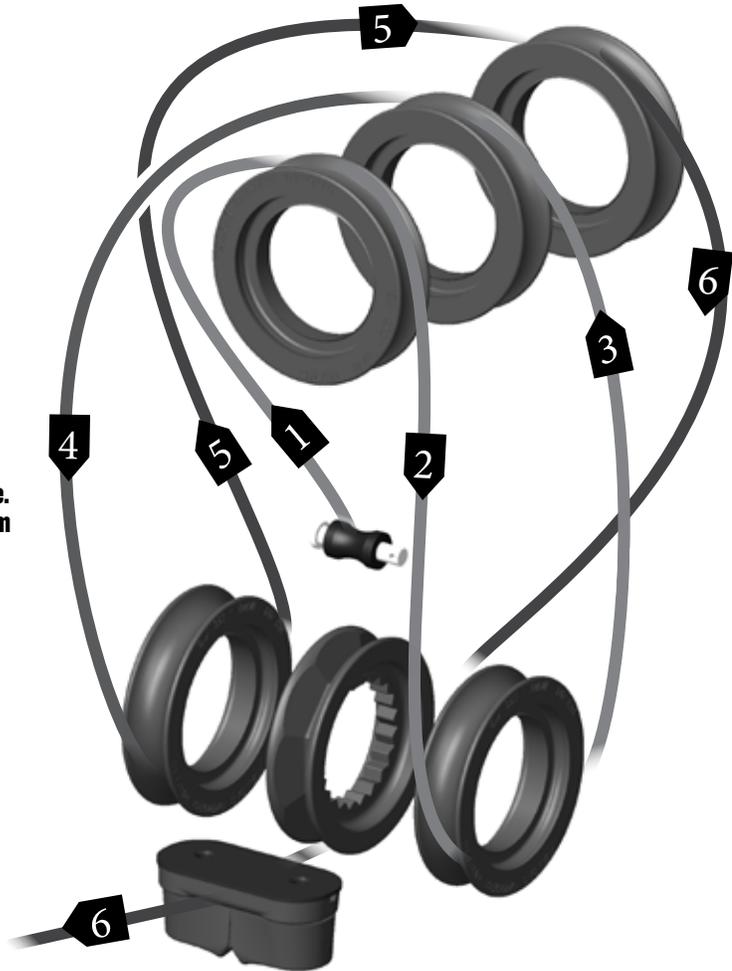
2640, 2604, 2664

Remove becket to attach eye.
Line will be spliced to 40 mm
triple 2640.



2642, 2630, 2686

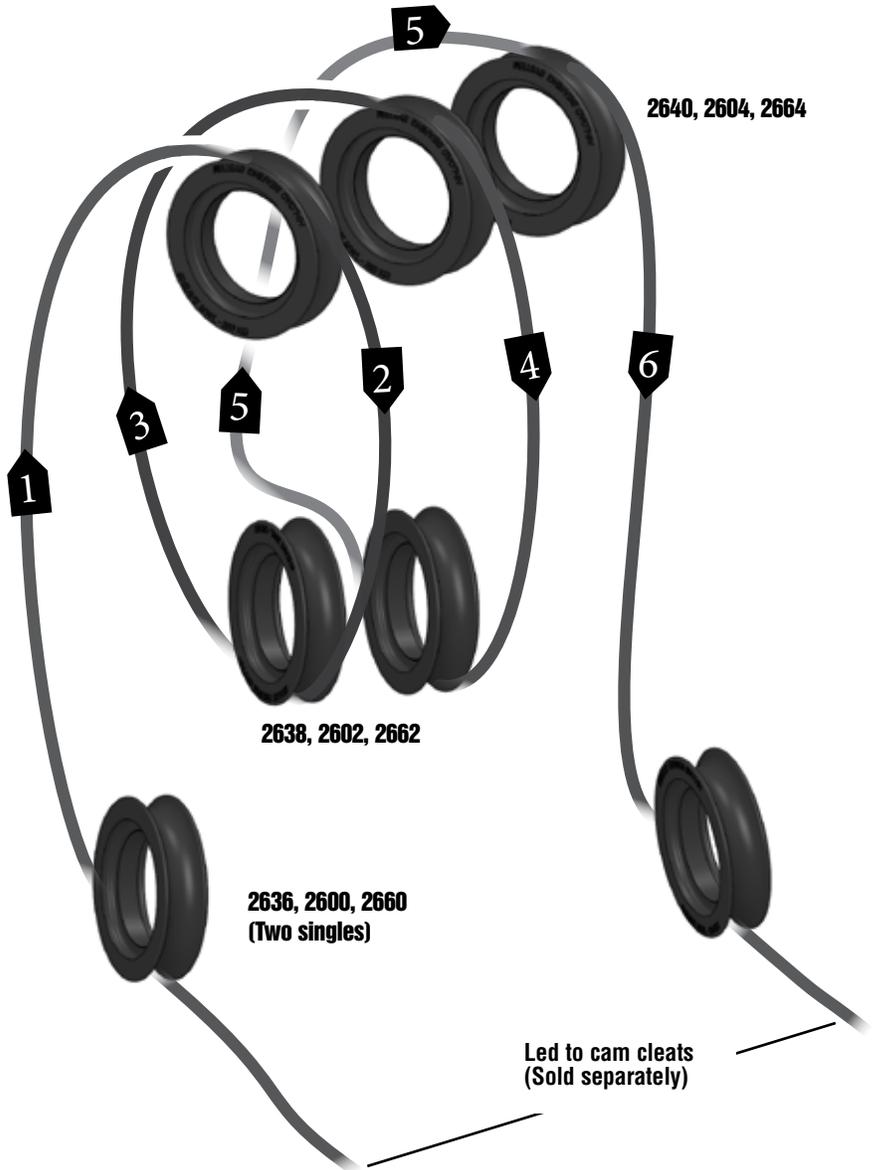
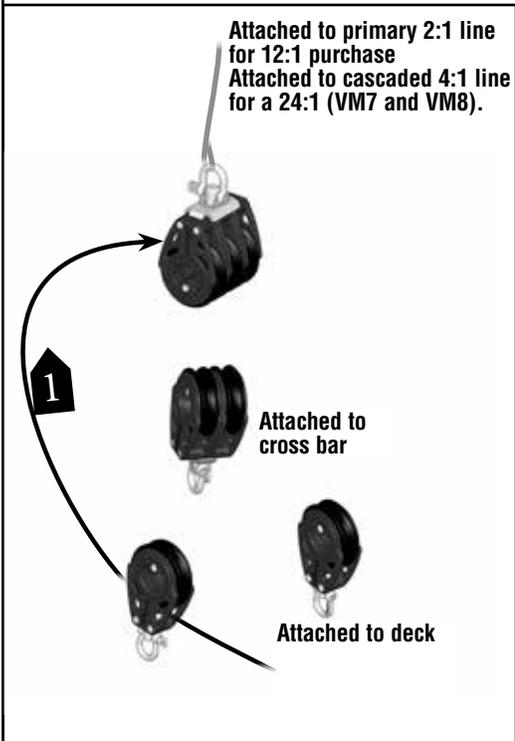
Attached to
cross bar



6:1 Reeving - 7503, 7507, 7511

Double ended cascaded system

Reeving diagram shown without block structure for clarity.



Warranty

Harken warrants that each Harken product, when properly used and maintained, will be free from defects in material and workmanship from the date of receipt of the product by the final customer. Harken products are covered by two different kinds of warranties, on the basis of the purchaser and use made of them.

For complete warranty or for information relating to a specific warranty concern, please refer to the following:

Harken Catalog, www.harken.com/manuals
Call or Email the Nearest Harken Distributor or
Harken Corporate Headquarters (Telephone/Email Addresses Below)

HARKEN[®]

Corporate Headquarters

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