



Congratulations!

In just a couple of hours, you'll be sailing your Martin 16, turbo style!

All the parts you'll need are here in your turbo kit. As well, you'll need the following simple tools and supplies:

- *Power drill and drill index with sharp bits up to 1/4"*
- *small screw drivers – slot and phillips*
- *pliers; needle nose and standard*
- *sharp utility knife and lighter to burn rope-ends*
- *7/16" and 3/8" deep socket wrench and drive (1/4" is best)*
- *(good) rivet gun with tips for 1/8" and 3/16" MONEL rivets*
- *a small tube of bedding compound (Sikkens SEA-L or equivalent)*
- *and a cell phone, if you need to call me (403-870-7210)*



Here's what the pole rig looks like when you're done – and it's easy to install on any Martin 16! These instructions will walk you through the installation step-by-step. TAKE THE TIME TO READ THEM - it's tough to fill those holes once they're drilled!

DON'T CUT ANY EXCESS OFF THE LINES UNTIL YOU HAVE HAD THE SPINNAKER UP AND DRAWING AND FULLY FUNCTIONING AND ADJUSTED!

Call me when you're done - or before if you need to...

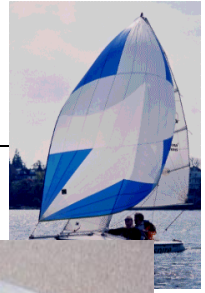
Steve Alvey 403-870-7210



I. Identify and sort the parts by task

Verify that you have all of the parts in the following list, sorted by task

Task	Part #	Name	Quan	Description	Location
II	111	Spinnaker halyard	48	5mm Spectra with jacket	mast halyard - external
II	117	spin halyard mast block	1	Swivel bullet block	mast - top, halyard
II	122	spin halyard halyard eyestraps	2	Ronstan - small eyestraps	mast - hounds/spreaders
II	123	spin halyard block eyestraps	1	Ronstan - large eyestraps	mast - tip, halyard
II	130	fasteners for small eyestraps	4	1/8"D x 1/2" monel rivets	mast - spreaders/hounds
II	131	fasteners for large eyestraps	2	3/16"D x 1/2" monel rivets	mast - top, halyard
III	100	Spinnaker pole	1	1 1/4" Sched 40 anodized ALU pipe; 58 1/2" long	pole
IV	102	pole bushing - front	1	delrin bushing block - fabricated	foredeck bushing
IV,V	104	bearing U-bolt	2	1/4" x 2 1/8" U Bolt; washers;	foredeck bushing
IV,V	105	bearing U-bolt nuts	4	1/4" nylok nuts	foredeck bushing
IV	121	pole stop on deck	1	Ronstan bullseye fairlead	deck - mast plinth
IV	129	fasteners pole stop	2	# 10 x 1-1/4" RHMS	splashdeck
V	103	pole bushing - rear	1	delrin bushing block - fabricated	foredeck bushing
II,VI	116	pole launch deck blocks	3	Cheek block	mastbase/deck
II,VI	125	fasteners for foredeck cheek block, and mast cheek block	4	# 10 x 3/4" RHMS	foredeck , mast base
VI	107	pole retriever	6	6mm shock cord	pole - internal
VI	108	tack line	15	3mm (1/8") Spectra	pole - internal
VI	109	tack line dead end	7	3mm (1/8") Spectra	pole - external
VI	110	pole out line	6	3mm (1/8") Spectra	foredeck
VI	113	halyard cleat	1	Holt Allen swivel cleat with bullseye fairlead	splashdeck - rail
VI	120	Shock cord/tack line eyestraps	1	Ronstan - large eyestraps	splashdeck - rail
VI	126	fasteners for cheek block and dead-end eyestraps on splashdeck	3	10 - 24 x 1" RHMS; washers; nylok nuts	Splashdeck
VI	127	fasteners halyard cleat	3	10 - 24 x 1" FHMS; washers; nylok nuts	splashdeck - rail
VII	114	spin sheet cleats	2	Ronstan small cam cleat	cockpit sidetank walls
VII	115	spin sheet blocks & pole launch	3	Bullet block	sidedecks, foredeck
VII	128	fasteners sheet cleats	4	# 8 x 1-1/4" RHMS	cockpit walls
VIII	106	cowcatcher	2	3mm shock cord	pole - internal
IX	112	Spinnaker sheet	37	4mm (3/16") Marlow Ultralite	spin
IX	201	Quantum Spinnaker	1	18' x 12' x 12' asymmetrical spinnaker	spin
IX	202	Spinnaker bag	1	bag for spinnaker	spin



II. Rig mast for Spinnaker halyard

1. Install the “big eyestay” on the front face of the mast, just below the tip, oriented up-and-down. Place the eyestay slightly to starboard of Centerline so that your holes will not be drilled through the weld. Using a 3/16” bit, drill and rivet the eyestay to the mast with the 3/16” (large) MONEL rivets.. Fasten the swivel bullet block to the eyestay.
2. Install a “small eyestay” on the front face of the mast, just below the exit block for the jib halyard (at the hounds), oriented horizontally across the mast face. Place the eyestay slightly to starboard of Centerline so that the spinnaker halyard will be led clear of the jib halyard and forestay. You will have to reshape the eyestay to follow the radius of the mast. Using a 1/8” bit, drill and rivet the eyestay to the mast with the 1/8” (small) MONEL rivets.
3. Install the second “small eyestay” on the front face of the mast, just above the spreader bracket, again, oriented horizontally across the mast face. Place the eyestay slightly to starboard of Centerline. You will have to deform the eyestay to follow the radius of the mast. Using a 1/8” bit, drill and rivet the eyestay to the mast with the 1/8” (small) MONEL rivets
4. Install a cheek block at the (starboard) base of the mast, oriented vertically and in a plane about 30 degrees to the boat centerline, so that the halyard will lead away from the base of the mast, towards the splash rail (IT IS CRITICAL THAT THE HALYARD LEAD AWAY FROM THE MAST DIRECTLY TOWARDS THE TURNING BLOCK, see overall installation photo). You will mount this cheek block as low as you can, with one fastener screwed into the mast step casting and the other into the mast section. Use a x/32” bit for the # 10 x 3/4” PHST screws
5. Lead the spinnaker halyard through swivel block, down through both eyestays on front of mast, and through cheek block at mast base, from front-to-back. Keep both ends of halyard at base of mast when stepping mast. Tie a stopper knot in the “hoist” end of halyard about 14” from the end. This will limit the hoist of the spinnaker halyard, leaving room for the sail to “pivot” at the top of the mast.
6. **Step the mast.**





III. Install spinnaker pole bearings



The pole is supported by two Delrin bearings, U-bolted to the deck. Here's what they look like when they're installed. When sailing, the pole extends and retracts, fitting nicely under the jib boom.

To install the pole bearing, you have to locate and drill four 1/4" holes for the bearing U-bolts. **THIS IS THE MOST CRITICAL**

PART OF THE INSTALLATION, so take your time.

Read, plan and check the installation before you drill!

8. The pole should come with both bearings installed on it, in the correct orientation. Note: the **FRONT BEARING ARE NOT THE SAME**: the **FRONT BEARING** has a small hole drilled in top of it for the "cowcatcher" line.



9. **THE LOCATION OF THE FIRST HOLE FOR THE FRONT BEARING U-BOLT IS CRITICAL.** Once you get this hole drilled, you can easily locate the other three mounting holes.

10. First, identify the **NON-SKID PATTERN** at the bow of the boat (the location of the non-skid is consistent from boat to boat). By sighting across the jib boom pad-eye and the mast step, make a mark to locate the **CENTERLINE** at the bow of the boat, right on the edge of the non-skid pattern.



11. Measure 1/4" to **STARBOARD** of the Centerline, 1/8" **BACK** from the edge on to the non-skid to locate the first hole. When located correctly, the entire 1/4" hole should be located on the **NON-SKID PATTERN**. Drill this 1/4" hole, AND ONLY THIS HOLE FOR NOW.

12. Look under the bow flange: If it is in the correct location, it will be "centered" in the roll of the flange, and 1/4" to starboard of centerline. It's a tight fit, but you can get a deep 7/16" socket in here to tighten the U-bolt nuts.



IV. Install front bearing

13. Now place the pole and both bearings on the starboard foredeck. Locate the groove in the FRONT BEARING to STARBOARD of the FIRST HOLE that you drilled. Position the pole so that it is fully retracted, projecting only 1/4" beyond the front face of the front bearing.
14. Temporarily place the REAR BEARING about 6" from the back end of the pole, so it is supported well. Now locate the rear end of the pole so that it 3 1/2" starboard of the Centerline of the boat.
CAUTION: THIS MEASUREMENT IS CRITICAL.
15. With the pole located correctly, drill and install the POLE STOP (bullseye fairlead) so that it is on the centerline of the pole and flush with the rear pole end (i.e. so that it will limit the retraction of the pole) Using a x/32" bit, pre-drill and fasten with #10 x 1 1/4" PHST fasteners.
16. Keeping the pole in exactly the same position, align the front bearing with the FIRST HOLE and mark the SECOND HOLE for the U-bolt. Make sure that the bearing is "square" (90 degrees) to the Centerline of the pole. Drill this 1/4" hole and the "dry-fit the U-bolt over the bearing to make sure that it slides in easily.
CAUTION: DO NOT POUND U-BOLT WITH HAMMER. This will deform it.
17. Install the U-bolt with a dab of Sikkens SEA L or equivalent marine bedding compound. Use flat washers and 1/4" nylok nuts and tighten these just beyond hand tight. Take your time – these are awkward to get on!! Use a deep 7/16" socket to tighten them. A 1/4" drive works best (it's the smallest you can get)
CAUTION: DO NOT OVERTIGHTEN, AS THIS WILL DEFORM THE BEARING. When you are done, if the pole does not move freely in bearing, start over.





V. Install rear bearing

18. Now relocate the REAR BEARING to it's final location, 16 1/2" (C.L. to C.L.) back from the FRONT BEARING.

CHECK: that the pole is aligned with POLE STOP

CHECK: that the bearing is "square" to the Centerline of the pole. Now mark and drill 1/4" holes for the U-bolt.

19. Install the U-bolt with a dab of Sikkens SEA L or equivalent marine bedding compound. Use flat washers and 1/4" nylok nuts and tighten these just beyond hand tight.

CAUTION: DO NOT OVERTIGHTEN. THIS WILL DEFORM THE BEARING.

20. **CHECK:** When the bearings are installed and tightened, check that the pole slides freely in the bearings. You may wish to use some spray lubricant on the pole/bearings.

CHECK: When retracted, does it center against the pole stop?

21. Install the 2' length of 1/8" shock cord for "cow catcher" into the 1/8" (small) hole at the top of the FRONT BEARING. You may need a thin wire to coax this shock cord through the bearing. Tie an overhand knot tight against the end of the shock cord and draw it back to the face of the bearing. The knot will face FORWARD.



If you're this far - and the pole still slides freely - take a short refreshment break. The worst of it is over!



VI. Install pole control lines



Now you are going to install the pole control lines, including the tack line, shock cord pole retriever, pole-out line, and spinnaker halyard. Here's what they'll look like when you're done.

To install the pole control lines, your boat must be rigged, mast up, all lines in their normal locations. The spinnaker halyard should be installed on the mast.

22. Measuring out from the forward center point of the splash rail, you will now position the following fittings:

SHOCK CORD/ TACK LINE EYESTRAP (6" out);

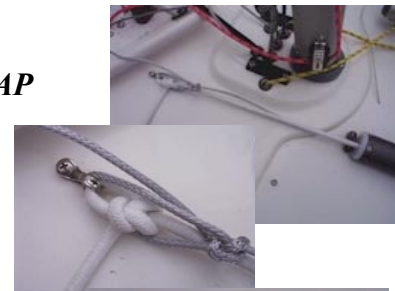
HALYARD TURNING BLOCK (10" out)

HALYARD CLEAT (16" out)

These three fittings are all positioned about 1 1/2" forward of the splash rail. Next, you will install these three fittings.



23. Install the **SHOCK CORD/TACK LINE EYESTRAP** positioned as described above. Using a x/32" bit, drill holes and fasten with a 10-24 PHMS machine screws with washer and nylok nut.



24. Install **HALYARD TURNING BLOCK**

positioned as described in **L.** above. The block fasteners are aligned fore-and-aft. Using a x/32" bit, drill holes and fasten with 10 - 24 PHMS machine screws with washer and nylok nut)



25. Finally, install the **HALYARD CLEAT** positioned as described in **L.** above. Using a x/32" bit, drill holes and fasten with a 10-24 PHMS machine screws with washer and nylok nut. Make sure that the cleat will swivel through 360 degrees without hitting the splashrail.





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26. **RETRACT** the pole to the pole stop. Lead the shock cord from the end of the pole, outside the pole stop through the **SHOCK CORD/TACK LINE EYESTRAP**. To set the shock cord to the correct length: with the pole retracted fully, pull the slack out of the pole retriever shock cord and continue to pull about 8" of tension on the cord. Tie the shock cord off using two half hitches and an overhand stopper knot (this is a test). Don't cut the end of the shock cord until you are sure that it works!



27. Next, lead the tack line "dead end" from the end of the pole, outside the pole stop through the **SHOCK CORD/TACK LINE EYESTRAP** (The tack-line is the line out of the end of the pole that moves). Next, set the correct length of the **TACK LINE DEAD END** as follows:



- 1) **EXTEND** the pole all the way out manually and hold it in the fully extended position with a temporary lashing line.
- 2) At the eyestrap, pull back the slack on the **TACK LINE DEAD END** line until it stops. (NOTE: the tack line must be free to be "sucked" into the forward end of the pole)
- 3) Allow about 2 - 3" of slack in the **TACK LINE DEAD END**, and tie it off to the eyestrap (bowline). When you're done, **THE TACK LINE DEAD END SHOULD BE SOMEWHAT SLACK WHEN THE POLE IS FULLY EXTENDED.**
- 4) With the pole still fully extended, and the **TACK LINE DEAD END** tied off, tie a stopper knot in the forward "sail-end" of the tack line to indicate the "out" position.



28. Rig the **POLE OUT LINE**:

Locate the cheek block on the foredeck, half way between the rear bearing and the hatch cover. Align the cheek block so that the **POLE OUT** line leads freely through the bearing hole, around the **CHEEK BLOCK** and then back along the deck towards the **HALYARD SWIVEL CLEAT**. Use a x/32" bit to drill a pilot bore for the # 10 x 3/4" PHST screws.



RETRACT THE POLE all the way to polestop. Lead the **POLE OUT LINE** from the back end of the pole forward and feed it through the starboard hole in the base of the rear bearing, then feed it through the **POLE OUT** cheek block.





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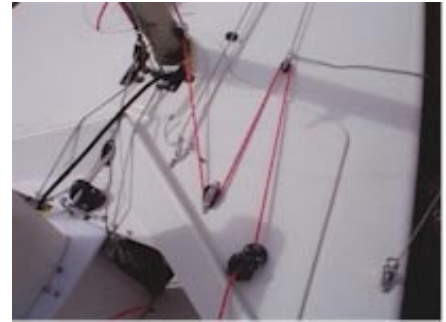


29. (Pole retracted) Tie a floating BULLET BLOCK to the end of the POLE OUT LINE, with about 4" – 6" of length between the bullet block and the cheek block.

To test, grasp the floating bullet block and pull it aft towards the spinnaker halyard cleat a few times. THE POLE OUT LINE SHOULD RUN FREELY, EXTENDING AND RETRACTING THE POLE.

30. Rig the HALYARD:

Take the "sail-end" of the halyard and temporarily tie it off to the port chainplate U-bolt. Next, lead the other end of the halyard AFT from the cheek block at the base of the mast through the HALYARD TURNING BLOCK, FORWARD to the floating block on the POLE OUT LINE and then AFT to the HALYARD CLEAT. Tie a figure eight knot in the end of the halyard.



31. **TEST:** with the "sail-end" of the halyard still tied to the chainplate U-bolt, PULL on the halyard just aft of the halyard cleat until the pole is fully extended. Then RELEASE the halyard and confirm that the pole retracts fully. You may have to adjust the tension on the shock cord.

VII. Install the Sheet Blocks/Cleats

32. The sheet blocks are mounted on a loop of 1/8" Spectra line. The height of this line can be adjusted by moving the stopper knots.

1) Drill 3/16" holes at 30" and 31" aft of the shroud chainplates (about abreast of the helmsperson). Countersink these holes top and bottom so that they will not chafe the Spectra line.

2) Insert about a 7" loop of 1/8" Spectra through the block, through the holes and tie stopper knots.



33. Install SHEET CLEATS:

Locate the sheet cleat about 1 1/2" down from the deck, on the vertical wall of the sidetanks, about 34" aft of the shroud chainplates (4" aft of block). Use a x/32" bit to drill a pilot bore for the # 8 x 1 1/4" PHST screws



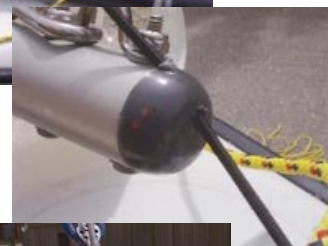


VIII. Install Cowcatcher:

33. The spinnaker sheet has to be restrained from getting caught under the jib boom when you gybe. This is done by rigging a 1/8" shock cord line that keeps the sheet on top of the jib boom. This is called the COWCATCHER.



34. Drill a 3/16" hole on a 45 degree angle from the center towards the top of the end cap on the front of the jib boom. Clean up the entry and exit of this hole with a utility knife so that it will not chafe the shock cord.



35. Feed the cowcatcher through this hole and up to the forestay. Tie the cowcatcher through the eye on the forestay. The other end of the Cowcatcher cord is passed through the small hole in the top of the forward pole bearing and tied off with an overhand knot. The length of the cowcatcher should be adjusted so there is a slight amount of tension with the jib boom out past 45 degrees.



36. Zo? Does it all look like it's supposed to? Look at your watch: did it take more than two hours?



Let's go *turbo* sailing!!!





IX. Test the Spinnaker rigging

Test the Pole:

When you've completed the rigging of the pole and lines, tie off the "spinnaker" end of the halyard (to the shroud chainplate) and test the 'one-line' system operation. If possible, have someone hold on to the TACK LINE and pull it back to the cockpit (where the sail would be when lowered).

1) pull on the SPINNAKER HALYARD. As you pull, the POLE OUT LINE will extend the pole and, at the same time, the TACK LINE will be pulled forward and into the front of the pole (the person holding it will have to walk forward with it).

2) When you release the halyard, the pole will retract and the tack line will release, allowing the sail to come back into the cockpit (the person holding it will have to walk back with it).

THE POLE SHOULD RUN FREELY, EXTENDING AND RETRACTING ALL THE WAY. THERE SHOULD BE PLENTY OF TACK LINE TO COME ALL THE WAY BACK INTO THE COCKPIT.

Rig the Tack line to the Spinnaker:

When you first rig the spinnaker, it is easiest if you bundle it loosely, with the three corners available and place it OUTSIDE AND BESIDE THE PORT SIDE OF THE BOAT, on the ground or a table beside the boat. Place the HEAD away from the boat; TACK forward; CLEW facing back. It is easier to get the lines rigged correctly in this position.

1) EXTEND THE POLE all the way.

2) pull ALL OF THE SLACK out of the tack line at the front of the pole.

3) Take a black marker pen and visibly mark the tack line 12" beyond the pole end (beyond your "stopper knot" if you tied one). This is where you will tie the TACK of the sail, and this mark will make it easy to get the right length when the pole is retracted.

4) release the halyard and retract the pole.

5) Tie the TACK of the spinnaker (bowline) so that it is at the black mark on the TACK LINE.

Rig the Halyard to the Spinnaker:

1) If you have not already done so, tie a "stopper knot" about 14" from the "hoist" end of the spinnaker halyard. This will limit the hoist of the spinnaker halyard, leaving room for the sail to "pivot" at the top of the mast.

2) tie the spinnaker to the halyard, using a bowline. The spinnaker should be about six – eight inches from the stopper knot.



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Rig the Sheets to the Spinnaker:

Your spinnaker sheet is supplied as a single line, and is generally rigged this way – as a continuous sheet (if you prefer, you can cut the sheet into two separate sheets, but try the single sheet first).

- 1) make sure that the sheet has no knots and tangles and lay it loosely on the ground beside the spinnaker
- 2) tie one end of the sheet to the CLEW
- 3) lead the free end of the sheet through the PORT spinnaker block from front-to-back
- 4) go across the cockpit and lead it through the STARBOARD spinnaker block from back-to-front
- 5) pull the sheet slack through the blocks and then walk forward (STARBOARD side of the boat) and around the forestay with the sheet.
- 6) go over TOP OF THE POLE COWCATCHER, keeping the sheet INSIDE the TACK LINE, tie the free end of the Spinnaker sheet to the CLEW using a bowline.

When you're done, there are TWO SHEETS tied to the CLEW of the Spinnaker (An asymmetrical spinnaker is rigged and flown like a "jib" rather than a traditional spinnaker).

Test the Spinnaker on land:

When you're ready, you should have four lines tied to your spinnaker, ready to hoist. To test it for the first time (if there is wind present) orient the boat and trailer so that it is on a BROAD REACH ON STARBOARD TACK. Have someone pick up the spinnaker and hold it outside the boat on the PORT side.

Pull the halyard to raise the spinnaker. The sail should go up first, then the pole will extend and pull the TACK out to the tip of the pole, with about 12" of slack in the tack line. When spinnaker is raised, **grab the PORT SHEET and trim the spinnaker.**

Checklist:

- Did the halyard run freely and hoist all the way?
- Is the pole fully extended?
- Are the lines all clear and running freely?
- Is the spinnaker TACK located about 12" off the end of the pole?
- Is the head of the spinnaker about 6 – 8" off the tip of the mast?
- Is the spinnaker SHEET running across the cockpit and forward from the Starboard bullet block and around the forestay to the CLEW? Would it still be clear if you gybed the spinnaker to the other tack?





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Lower and stow the Spinnaker:

When you get everything rigged correctly, you **can lower the spinnaker** by

1) release the halyard about 8'. The spinnaker will drop about 12", and the pole will retract a couple of feet, freeing the TACK LINE.

2) Gather the foot of the spinnaker, pulling on the TACK LINE. When you have the foot of the spinnaker bunched up, continue to release the halyard and gather the spinnaker into the cockpit, stowing it loosely behind the seat back. Under most sailing conditions, there is no need to use a spinnaker bag. The spinnaker will stay in the cockpit, loosely stowed behind the seat back.

If you're single-handing, the procedure is the same, except that you launch and bring the spinnaker into the cockpit in front of you, and stow it by your feet, under the spray deck. So,

*...now it must be time
to go **turbo** sailing!!*

