

CONVERSION VXA1 TO VXA2

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COMPATABILITY AND PARTS PROVIDED

This conversion is compatible for all VXA1 units – 1986 onward.

Worm Box casting #86 is supplied with the complete worm assembly including part #: 80, 81, 82 ,83, 85, 87, 88, 89. 90, 92 and 93.

Also supplied is #91 Remote Course Setting Line with Block and Bungee.

CONVERSION VXA1 TO VXA2

Removal of parts

1. Vane Locking Pin #60 out. Rudder Locking Pin #62 in. Course Clamp Knob #34 tight. Take Frame Case Cover #79 off.
2. Move Ratio Knob #21 to neutral/far right.
3. For pre-2010 units:
 - a. Remove Con-Rod Top #68 casting, Con-rod Bolt Set # 49 and pull the casting off the Con-rod by pulling/pushing balance weight.
4. For post 2009 units (Con Rod fits directly into the Bobbin):
 - a. Remove the Axles #47 holding the Bobbin #3 in place by slackening their Axle Set Screws #40.

- b. Those set screws are held in place with Loctite. The Loctite seal needs to be cracked loose. Best to use an impact 'driver' tool for that. When re-assembling be sure to use Loctite on the set screws.
5. Remove Collar Screw #51 and slacken Heading Knob #34.
6. Lift off top of unit, together with Heading Collar #16, from the Heading Tube #64.
7. Remove Heading Knob #34, Heading Clamp Spacer #13 and Heading Bolt Set #39. Typically, the Heading Bolt is frozen in place (although still functional for clamping). If the Bolt does not loosen it is wise to leave in place as further force might damage the casting. The alternative is to first screw on a washer and locking nuts or a nyloc nut (3/8 in. thread) then use a grinder to cut off the unneeded bolt end. Be sure the grinding occurs while the nuts are on because it is impossible to but on the nuts after grinding.
8. Remove Bottom Bearing Screw #59 and remove Bottom Bearing #15 upwards.

Add supplied Worm Box and assembly:

9. Insert Worm Wheel #85 upwards into the Top Mounting Casting #66 to replace Bottom Bearing #15. Ensure that Worm Wheel seats firmly onto bottom of Top Mounting casting #66.
10. Screw clamp bolt 89, with washer under head, through plain hole first and tighten lightly. Put on second washer and tighten lock nut – OR – you might already have in place the old Heading Bolt with its end cut off. Tighten it.
11. Worm Box casting #86 is supplied with the complete worm assembly which includes part #s 80, 81, 82, 83, 85, 87, 88, 89, 92 and 93. Slide onto the Heading Tube #64 in order
 - a. Worm Box casting assembly
 - b. 2 inch PTFE Bearing Washer # 90
 - c. Top Mounting assembly putting the WORM AND WORMWHEEL IN MESH.
 - d. Heading Collar #16
12. Insert and tighten collar screw 51. (a little Loctite on the thread might be wise)
13. With the Remote Line Fairleads pointing forwards or any preferred direction, tighten the clamping nut 88. **Helpful Tip:** BEFORE TIGHTENING NUT 88, LIFT CASTING 86 SO THAT THE TOP OF THE UNIT SITS ON THE 2 inch PTFE WASHER AND NOT HANGING ON THE COLLAR #16. NOTE ALSO THAT AFTER NUT #88 HAS BEEN TIGHTENED THERE MUST BE A SMALL BUT NOTICEABLE (0.01INCH/0.3MM) vertical clearance between the top of the wormwheel boss and the collar above. Check this by feeling that the top of the unit can be moved up and down slightly. Put another way, the Heading Collar #16 cannot touch the parts above or below it because that Collar is fixed to the tube, whereas the parts above and below rotate on the tube.
14. Re-connect the con-rod by reversing STEP 3.

Extend Con Rod

15. The con-rod will now have to be extended by approximately 1/8" (3mm). Using two spanners, ensure that the two Ball Screw nuts #57 at the bottom of the Con-rod are locked together. Wind out the ball screw by using a spanner on the upper nut. The con-rod is the correct length when, with the Vane Locking pin in and the Rudder Locking Pin out, and the Ratio Knob in the neutral position, the shaft will rotate freely using the Emergency Tiller. As well, the Ratio Rod #35, in the vertical position, should be centered above the top of the shaft.
16. Separate the nuts, run the top nut up tight onto the con-rod bottom washer and tighten the bottom nut onto the top one.

Final Adjustment Check

17. Carry out the final adjustment check: with both the Vane Locking Pin and the Rudder Locking Pin in, the Ratio Knob should move freely from neutral to the least rudder movement position. If not, slacken nut on Fork Bolt Set #58 and adjust the position of the Fork Arm casting #71.

Course Setting Line

18. Friction caused by the lines having to bend around obstacles is not problematic. But if you choose, you can position for smooth operation, so that the lines pass straight through the fairleads without any significant change in direction. Double blocks can then be used, if necessary, to lead the lines forward around any obstructions. The final anchorage for the line is made using the block, shock cord and hooks provided. It is intended that the course setting line be made into a continuous loop. See installation instructions for tips on doing a heat weld on the line.

