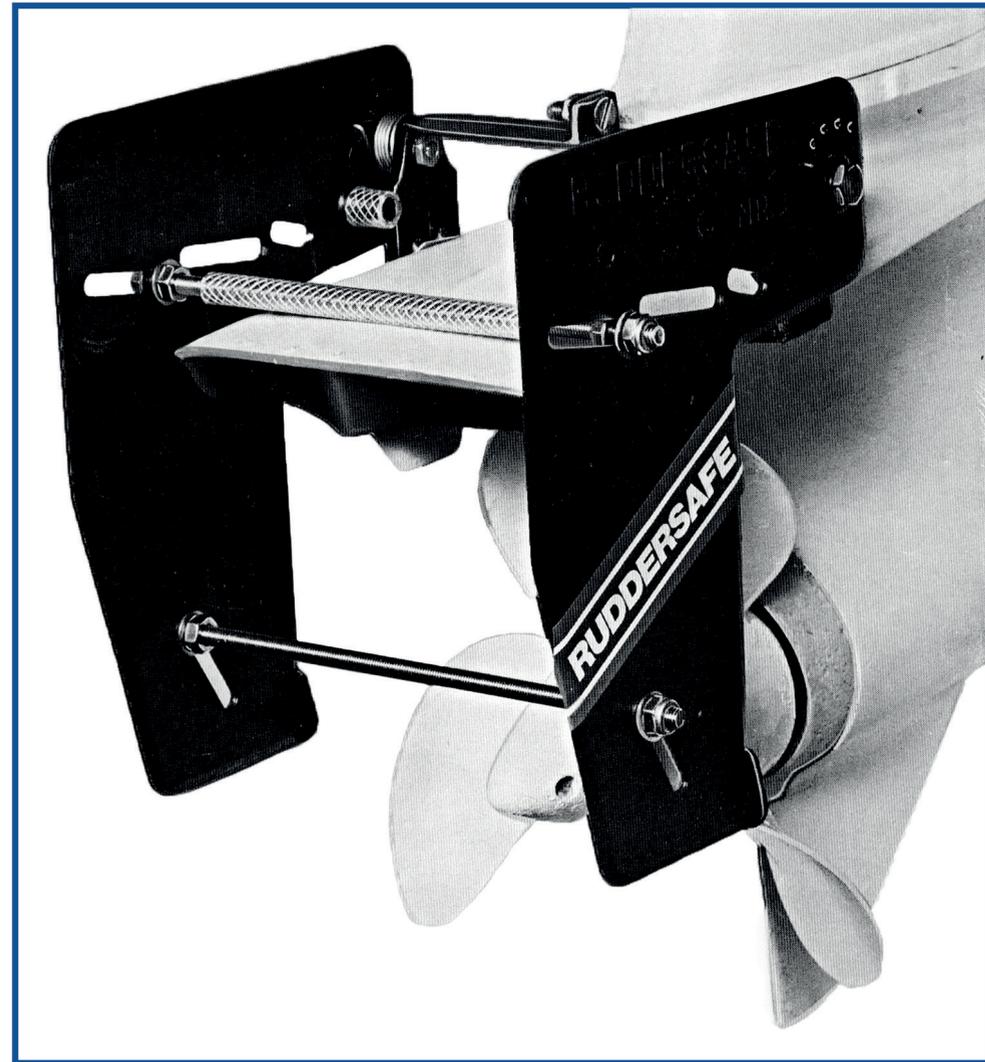


RUDDERSAFE®

VOLVO PENTA

By Haveco

THE DUAL RUDDER

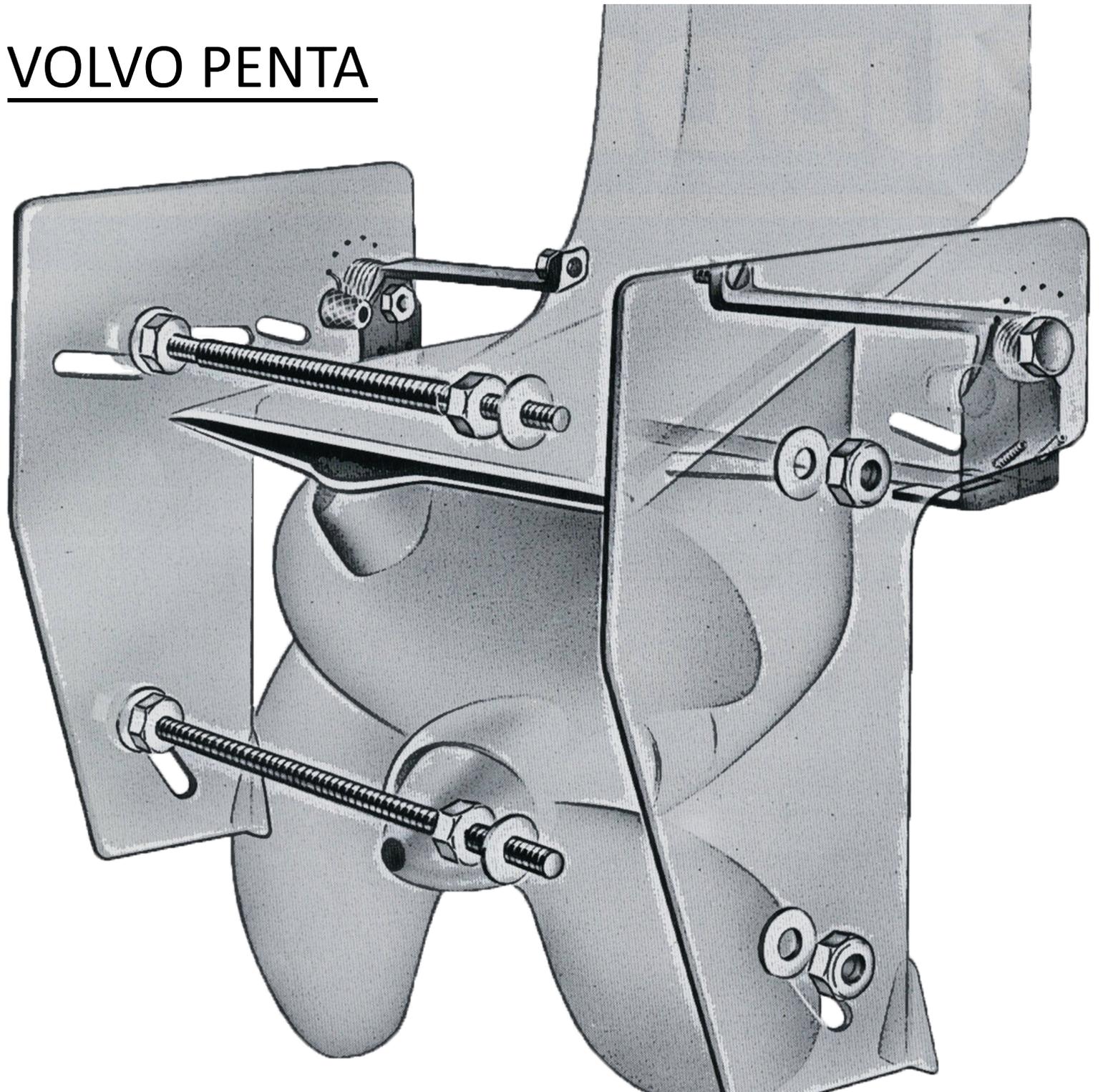


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RUDDERSAFE®

By Haveco

VOLVO PENTA



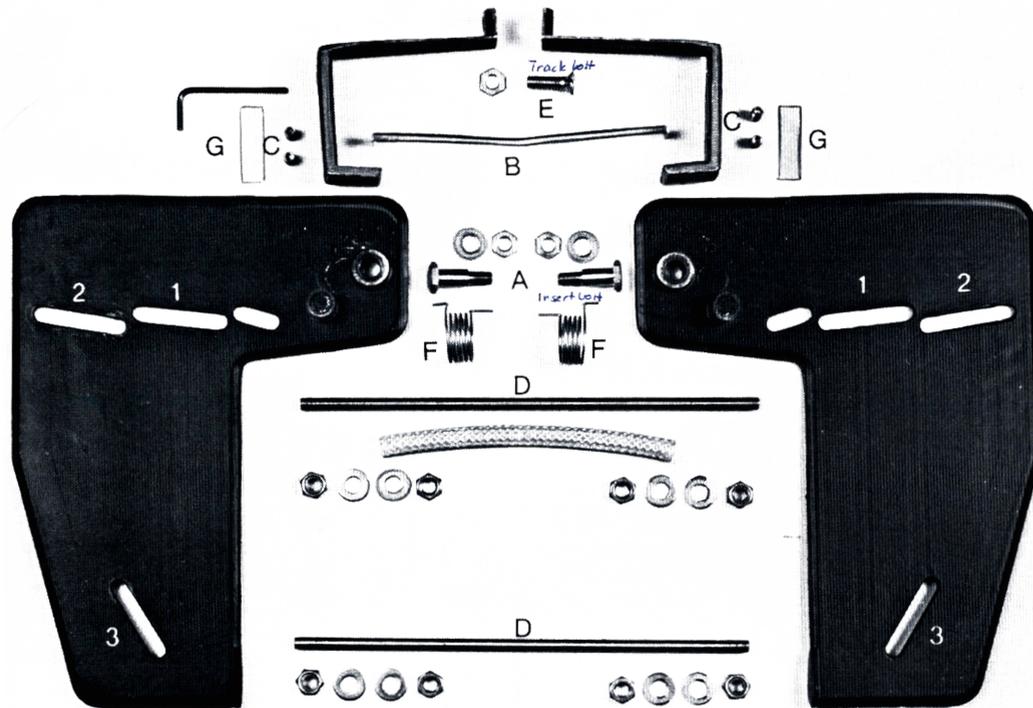
MORE INFORMATION

Visit us:

WWW.RUDDERSAFE.COM

WWW.HAVECO.NL

RUDDERSAFE - Parts (delivered with the Ruddersafe Volvo Penta Type):



Tools that are needed (NOT included):



MORE INFORMATION

Visit us:

WWW.RUDDERSAFE.COM
WWW.HAVECO.NL

If you are to derive full satisfaction from Ruddersafe it is important to take great care with the fitting. Check the contents of the box with the parts list (Figure 2). Study the "X-ray" picture (page 1) to make sure you understand how the parts are to be fitted together.

Fitting the brackets.



1. Screw the set screws (C) into the brackets, but do not screw them through the plate. Make sure that the screws engage properly in the slanted threaded holes. The latter should be lubricated with grease.



2. The spiral springs (F) are left-handed and right-handed. Spring marked in green is for R-H rudder blade, and red for L-H. Position the springs over the rudderblade bearing with the colour-marked leg of the spring in the rearmost adjustment hole (see arrow marking).

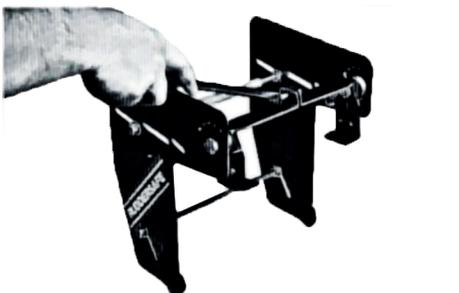
Fitting the rudderblades



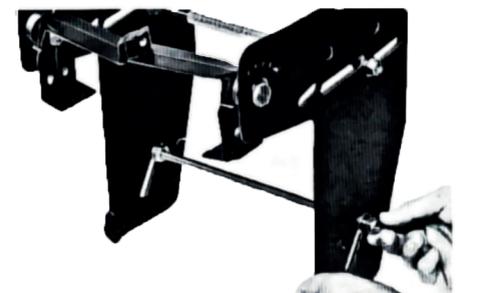
4. Tighten the bolt with a wrench and lock it by firmly tightening the shallow lock-nut to be put on the end of the bolt (see arrow).



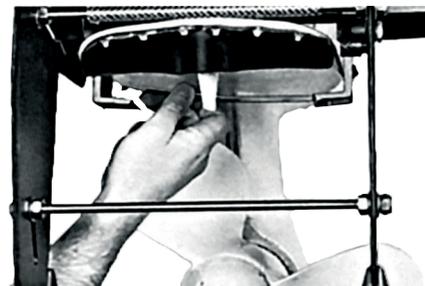
3. Insert bolt (A) into the rudderblade with the washer at the end, so that the bolt projects approx 5-6 mm on the inside of the rudderblade. Fit the appropriate half-bracket to the spring, the bevelled edge turned towards the leg of the spring (see arrow 1), so that the leg of the spring is at the front of the bracket (see arrow 2).
Screw the bolt (A) into the bracket by hand. Due to the tension of the spring some effort is necessary to hold the bracket in place. Make sure that the spring does not get caught between the bracket and the bearing. Move the bracket to make sure that it can move freely and is pushed back by the spring.



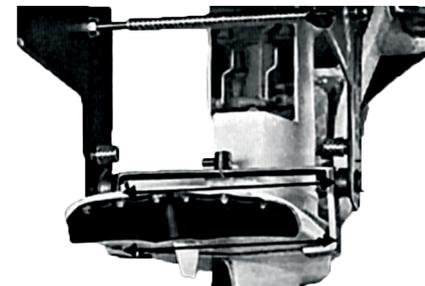
6. Screw the track-bolt (E) about 3-4 turns into the half-brackets. The rudder is now ready for insertion on to the cavitation plate.



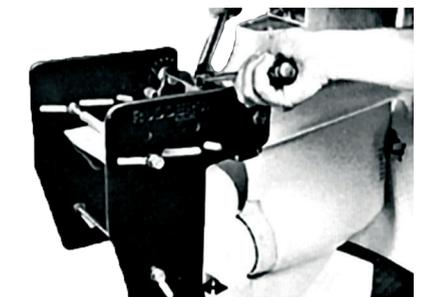
5. Bolt (D) with plastic sleeve is fitted to the rudder blade through hole No.2 (see fig. 2). Fix the other bolt (D) at the top of hole No.3. When using an engine with a steep propeller pitch, it may be necessary to place the top bolt in hole No.1.



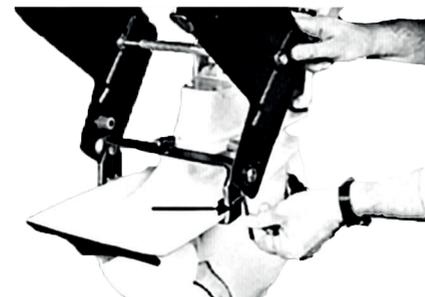
7. Bring the rudder in towards the cavitation plate until the top bolt (D) is up against the cavitation plate. Engage the top cross-stay (B) in the grooves in the bracket.



8. Lift the bracket up so that the cross-stay is close up against the underside of the cavitation plate. Press the rudder right up against the cavitation plate. Bring the half-brackets towards each other with the track-bolt (E), but no more than sufficient to keep the distance between the two half-brackets equal at the top and bottom (see arrow 1).



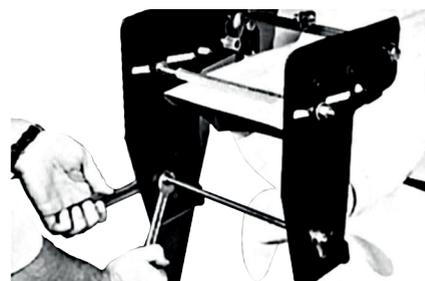
9. Make sure that the bracket is at right-angles to the cavitation plate. The clearance between the propeller and each rudder blade must be minimal 40mm. The clearance is adjusted by moving the top bolt (D) along the groove or by moving the bracket longitudinally. The lock-nut that has to be fitted on the end of the track-bolt (E) must be tightened hard. Check once more if the bracket is at right-angles to the cavitation plate.



10. Place the filler shims (G) on the cavitation plate (see arrow) and screw the set-screws (C) tight with the hex wrench supplied. Do not tighten the set screws too tightly.



11. The distance between the rudder blades must be the same at all points shown. Maximum tolerance 1 mm. If the gap is greater than this, i.e. if the blades are not parallel, then the rudder may move up and down sluggishly.



12. If the rudder blades are not parallel, adjust the nuts on one side. Tighten the nuts and check-tighten the other connections. Check that the rudder can be moved up and down normally, and that the propeller rotates freely.

In order to eliminate over-steer (heavy on the helm), Ruddersafe is designed so that the rudder gradually lifts itself out of the water and planes at the same time as the boat. The springs (F) are to prevent the rudder from lifting too soon. Test run the rudder with the springs in the middle adjustment hole. If necessary, move the spring legs until the boat regains directional stability.
Ruddersafe is made of corrosion-resistant materials and treated with heat-cured epoxy. For use in sea water all parts should be primed with anti-fouling. Rub the rudder down with sandpaper before applying anti-fouling.

After 5-10 hours running, all nut and bolt connections on the rudder should be tightened.