

# Steering Upgrade

*The steering tube is the Achilles' heel of a cable steering system but it's easy to protect.*

Story and photos by Jerry Jones

It started as a normal day. Two game wardens were patrolling a waterway in separate 22' (6.7m) patrol boats. These boats proceeded to overtake a slower-moving trawler, passing on each side. As one of the wardens steered across the trawler's wake, which was less than a foot high, his boat suddenly veered violently to the left and he was thrown overboard. When he hit the water, his lifejacket deployed. When he surfaced, he saw his boat running in circles.

He began swimming toward the shoreline, glancing back at his boat as he swam. To his horror, the circling boat was coming directly toward him. As it approached, he attempted to kick it away but the propeller struck his leg, slicing it badly. Bleeding heavily, he removed his dress belt, wrapped it around his injured leg and continued to try to get to the shoreline.

Meanwhile, the other warden cleared the bow of the slower vessel but he didn't see his partner on the other side as he expected. Looking back, he saw his partner's boat circling out of control. As he quickly turned his boat around, he saw his partner in the water. He sped over and pulled him from the water, adjusted the tourniquet and phoned EMS. A medical helicopter met them at the nearest harbor and transported the injured warden to a metropolitan hospital about 100 miles (161km) away.

Even with the excellent emergency medical care he received, it took months of physical therapy before he could walk again. Five years later, he still walks with a slight limp. Still, he is thankful that his fellow warden was there to pull him from the water and get help.

A snapped steering cable initiated the chain of events that led to this accident. When the cable failed, the outboard slammed to one side, turning the boat suddenly, throwing the operator out of the boat. Unseen corrosion had weakened the cable internally even though the boat was well maintained and its steering system had passed visual inspections. Basic preventive maintenance could have saved the day and the anguish of its consequences.

Insurance company claim reports contain accounts of boats running into trees, stumps, docks, bridges and other boats because of a steering failure. Thankfully, most of these accidents don't result in serious injury or death. When a steering cable assembly is sealed and lubricated, it can provide satisfactory service for the life of the craft. The trick is to keep the contaminants out and the lubrication in.

## Cable Design

A typical cable steering configuration has a shielded cable that connects the wheel at the helm to the tiller rod on the outboard. The aft end of the cable, called the steering rod, moves back and forth through the outboard



*Typical factory configuration on a 90-hp Mercury.*





*The Steersman Steering Guard replaces the factory nut on the port side of the outboard tilt tube. The steering rod, which is part of the cable assembly, passes through this nut as the boat is steered.*

tilt tube as you steer. When you turn to the right, the steering rod extends from the port side of the tilt tube. While it's extended, it's exposed to splashing water and all kinds of contamination. Turn left and the steering rod pulls back inside the tilt tube, along with the moisture and contaminants it picked up while working outside the tilt tube. When drawn back into the tube, these elements go to work to corrode and the internal carbon steel parts. In extreme cases, moisture is drawn up the cable sheath by capillary action and the cable begins to rust. This may cause steering performance to become sluggish or fail completely.

**Nut Replacement**

The Steersman Steering Guard, formerly known as the Widget, replaces the factory nut on the port side of the tilt tube. It includes a grease fitting and the all-important O-ring that wipes off the moisture and contaminants before they can get inside the tilt tube. Unlike the various "wipers" available, the O-ring causes the least amount of resistance to movement. The grease fitting allows for lubrication of steering parts. Very little grease is required but a bit of lubrication is very helpful any time you have the friction of a rod moving inside a pipe. Many boaters assume that the grease fitting found at the center of most tilt tube assemblies lubricates the steering; however, none of the grease from that fitting reaches steering parts. It only lubricates the tilt motion of the outboard.

Made in the U.S., there are two versions: a 300 series all stainless-steel model for freshwater or salt-water (US\$30); and an anodized aluminum model for freshwater only (US\$20). The standard 7/8" size fits all Honda, some Mercury, Nissan, OMC, Suzuki, Tohatsu and Yamaha motors. The larger 1" device fits Mariner and some Mercury motors. Check steersman.com for more information. Many boat dealers, boat-

yards or marinas sell the Steersman, as well as authorized American Honda and Yamaha dealers who offer it under their own brands.

The best time to install a Steersman is when the inside of the tilt tube is smooth and dry. If your steering is getting "sticky" and rust has already begun to take hold inside the tilt tube, clean it out using plumbers' pipe wire brushes or brake cylinder hones or gun-cleaning brushes or similar tools. T&R Marine (trmarine.com) sells a wire steering tube cleaning brush (part number TB-10) that fits into a power drill.

**Installation**

Depending on your boat and your skill level, installation could take anywhere from 5 minutes to an hour. The installation detailed below was done on a Mercury 90-hp outboard.

**Step 1** Remove the locknut holding the tiller rod to the steering rod. Typically this 3/8-24 UNF nylon lock nut is removed with a 9/16" wrench.

**Step 2** Lift the tiller rod and pivot it out of the way. If your steering has been stiff, this is a good time to diagnose the problem. If the steering is still stiff with the cable disconnected, the cable may need replacing. If it's smoother when disconnected, get out your engine manual and lubricate your engine pivot. A stiff pivot puts more pressure on the cable and hastens its demise.

**Step 3** Remove the factory nut. This nut can be as large as 1-1/2" so have a large crescent or open-end wrench available. It's not necessary to remove the factory nut if at least three threads are already exposed. The Steersman can be threaded onto



the tilt tube alongside the factory nut.

If when turning the factory nut the threaded tilt tube rotates, secure the tilt tube from the starboard side of the engine, where the cable is attached, to keep the cable from twisting. One good way is to tighten the two nuts on the cable side against each other and hold them with another wrench while the factory nut is removed. If your factory nut is welded on with rust, apply penetrating oil to release the grip of corrosion.

Visible thread length differs depending on the make. If more than 1/2" of the threads are exposed on the threaded tilt tube and the Steersman is tightened all the way to its shoulder, it will interfere with the flow of grease into the tilt tube. In many cases, you can adjust the length of exposed thread on the steering rod end of the tilt tube by turning the nuts on the cable side. This technique just slides the threaded tilt tube toward the starboard slightly. If this is not possible, washers may be used under the Steersman to keep the grease fitting clear.

**Step 4** Wipe the steering rod clean. You may see a bushing or wiper in the end of the threaded tilt tube. Remove it if possible. If there is any



wrench, tighten to a torque of 7 to 8 ft lb and then loosen the locknut 1/8 turn.

**Step 8** Grease using a hand pumped grease gun only containing a marine Moly EP or lithium-based grease. Do not over lubricate, as this can cause hydraulic lockup. One full shot, two maximum.

a freshwater bath after being used in saltwater. Whether your boat's steering cable is older or brand new, periodically, look at the outer jacket, which is typically black or red plastic. Early signs that a cable is deteriorating include a faded outer jacket, cracks and/or swelling. These indicate the cable needs replacing.

Maintaining your steering with the Steersman is very simple. Every four or five outings, just give it a shot or two of grease. You may never need to replace the O-ring, but if you begin to see streaking on your steering rod, it's time to replace the O-ring. Replacements are free for the life of your Steersman.

"wobble room" between the inside of this tube and the steering rod, you do not have to remove this bushing. If it is truly a wiper or O-ring, it will be necessary to remove it for the proper flow of grease.

**Step 5** Apply a small amount of grease to the O-ring and slide on the Steersman.

**Step 6** Tighten the Steersman securely. It may be necessary to tighten both steering/tilt tube nuts prior to tightening. Make sure the grease fitting is accessible.

**Step 7** Replace the tiller rod linkage nut and washer(s). Do not over tighten. Since this is a locknut, just tighten it gently until snug. It needs to be free to pivot. If you have a torque

**Maintenance**

As a general rule, a steering cable requires very little maintenance. If possible, when storing your boat, keep the cable out of direct sunlight as UV rays deteriorate the plastic outer jacket. Cables also benefit from

frozen, locked-up  
cable steering ...  
before it starts.



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