Comparing Slip and Line Chafe

To evaluate rope clutch performance, *Practical Sailor* built a jig that led a 19-foot length of New England Ropes' Sta-set 7/16-inch polyester braid on a zig-zag route through turning blocks between a strain gauge and a hefty Ideal vertical anchor windlass capstan. The electric windlass allowed testers to precisely control line tension and measure line slippage, as well as check holding ability over a long period.

The safest approach to releasing a clutched line under load is to take a few turns on a winch, tension the line, and then open the clutch lever, with the load securely held by the winch. However, in an emergency, you may have to release the clutch while it is fully loaded without any help from a winch.

Testers used a fish scale to measure the amount of effort required to release each clutch under various loads. All of the clutches were able to release a line loaded to 1,000 pounds, but the amount of required pull varied greatly. The effort required to release each clutch was measured twice: once while the line was tensioned to 400 pounds and again with the line under no load. Results appear in the Value Guide on page 12.

Equally important is a clutch's ability to hold a loaded line without allowing it to slip or creep. Each manufacturer uses a proprietary design to squeeze the double-braid line, and some worked better than others. Testers found that the Sta-set stretched 3.5 inches when tensioned to 800 pounds.

The Value Guide shows the length of line slippage at 800 pounds, and the amount of load lost when the line was tensioned to 400 pounds. In both tests, the clutch remained closed as the line was tensioned and the load was transferred from the winch to the clutch. (Opening and then locking down the clutch can sometimes improve grip and reduce slippage.) Testers also noted the amount of effort required to pull an unloaded line through the closed clutch and the amount of abrasion after repeating the line slip test 25 times.

Testers disassembled and inspected the clutches, noting the design of the rope-locking mechanism, the metals used in the unit's construction, and the ease of repair in the field.

The test jig (above) was used to apply up to 1,000 pounds of tension. Each line was checked for signs of core slip and chafe (right).