

Capstan Installation

Kit contents:

- Two small 0.146" pins
- Phenolic driver (1/2" cylinder with large hole in one end and small hole in the other end)
- Chamfering bit
- Pilot point drill bit
- One set of capstans

Determine new capstan location

1. Remove sample capstans (1 & 88).
2. Determine the best location for new capstans (via touchweight & regulation).
 - a. Make a capstan "boat" to measure the effects of different capstan locations
 - i. Wood piece ~ 1/8" thick x 1/2" wide x 1" long
 - ii. Drill for capstan in center of boat
 - iii. Cut capstan to total length of ~ 3/8" to 5/8"
 - iv. Screw capstan into boat (sliver of sandpaper on bottom to prevent sliding)
 - v. Several boats with capstans of different heights and angles are useful
3. Mark sides of 1 & 88 for best location.

Prepare keys for installation

4. Remove all capstans.
5. If the holes go all the way through the keys, use duct tape to cover one end to contain the epoxy. Fill holes with West Systems epoxy and West Systems 410 filler. Use a syringe and fill the holes from the bottom up and leave the epoxy higher than the surface. Keep filling holes as the epoxy seeps down. Let dry overnight and sand flush (or cut the epoxy level when it has cured to a rubbery texture).
6. Mark and scribe the capstan line using the marks in #3 above.
7. With an awl, punch a dimple in the center of each key along the capstan line to center the drill bit.
8. Drill holes all the way through the keys. Chamfer holes slightly to make installation easier.

Install the capstans

9. Make an index board: Insert one of the two small pins (0.145" dia) into a hole centered in a piece of 1/4" stock. This piece should be large enough (say 12" x 12") to clamp onto the drill press table. The pin should stick up only about 1/8" or 3/16" above the surface of the index board. (For angled capstans make another index board with the other small pin inserted at an 8° angle.)
10. Put the index board onto the drill press table with the pin centered under the spindle. Chuck the phenolic driver with the small hole down. Lower the spindle and adjust the index board so that the pin fits into the small hole in the phenolic driver. Clamp the index board to the table. (The pin in the index board is now aligned with the spindle.)
11. Reverse the phenolic driver in the chuck so that the large hole (which accomodates the capstan head) is down. Set the spindle speed to about 600 RPM or so.
12. Put a key onto board so that the pin fits into the bottom of the newly drilled capstan hole. Lightly tap a capstan into the top chamfer of the capstan hole and drive a capstan. Set the height of the capstans such that with the key in the keyframe and stack screwed on, the shanks are off the shank rest about 1/8". Set the drill press depth stop for this capstan height.
13. Drive the rest of the capstans. Check the shank height from time to time and readjust the depth stop as necessary.

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