

WAM Wrist Cable Tensioning Instructions

Barrett Technology, Inc.
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This document describes how to properly tension the Motor 5 (M5) and Motor 6 (M6) cables on a WAM Wrist using the built-in autotensioner. This is necessary after replacing any of the cables in the Wrist or if the cables become loose after extended use.

The document is written as if tensioning M6. To tension M5, swap the roles of M5 and M6.

Note: After tensioning any of the WAM's cables, it is advisable to rerun the Zero-Calibration Procedure (<http://wiki.barrett.com/support/wiki/WAMCalibration>).

For additional support, please email support@barrett.com.

- 1) With the wrist attached to the WAM and the WAM Shift-Idled, remove the Wrist Cover Clamp and Wrist Cover.

Wrist Cover Clamp

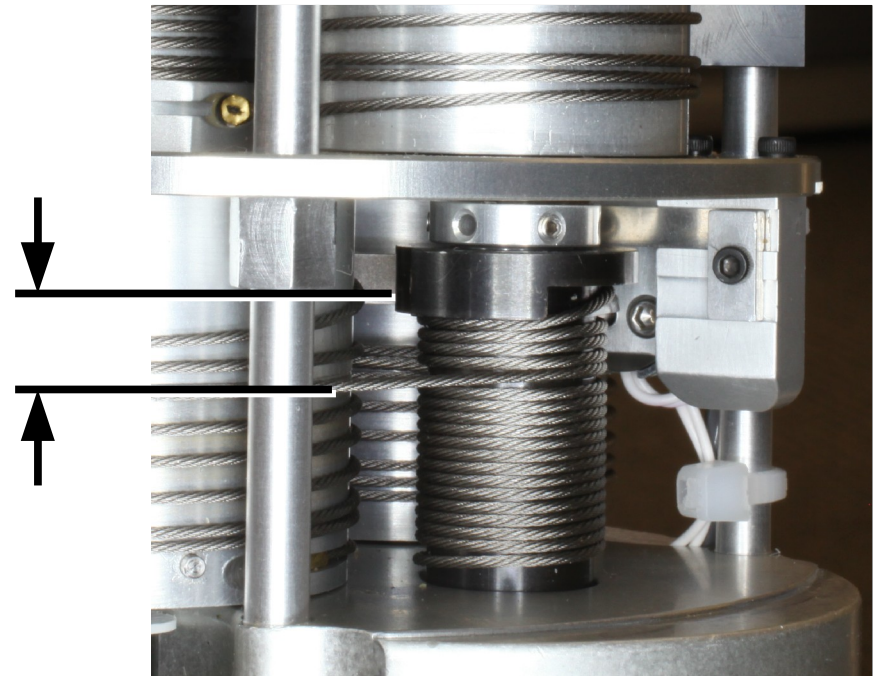
Wrist Cover



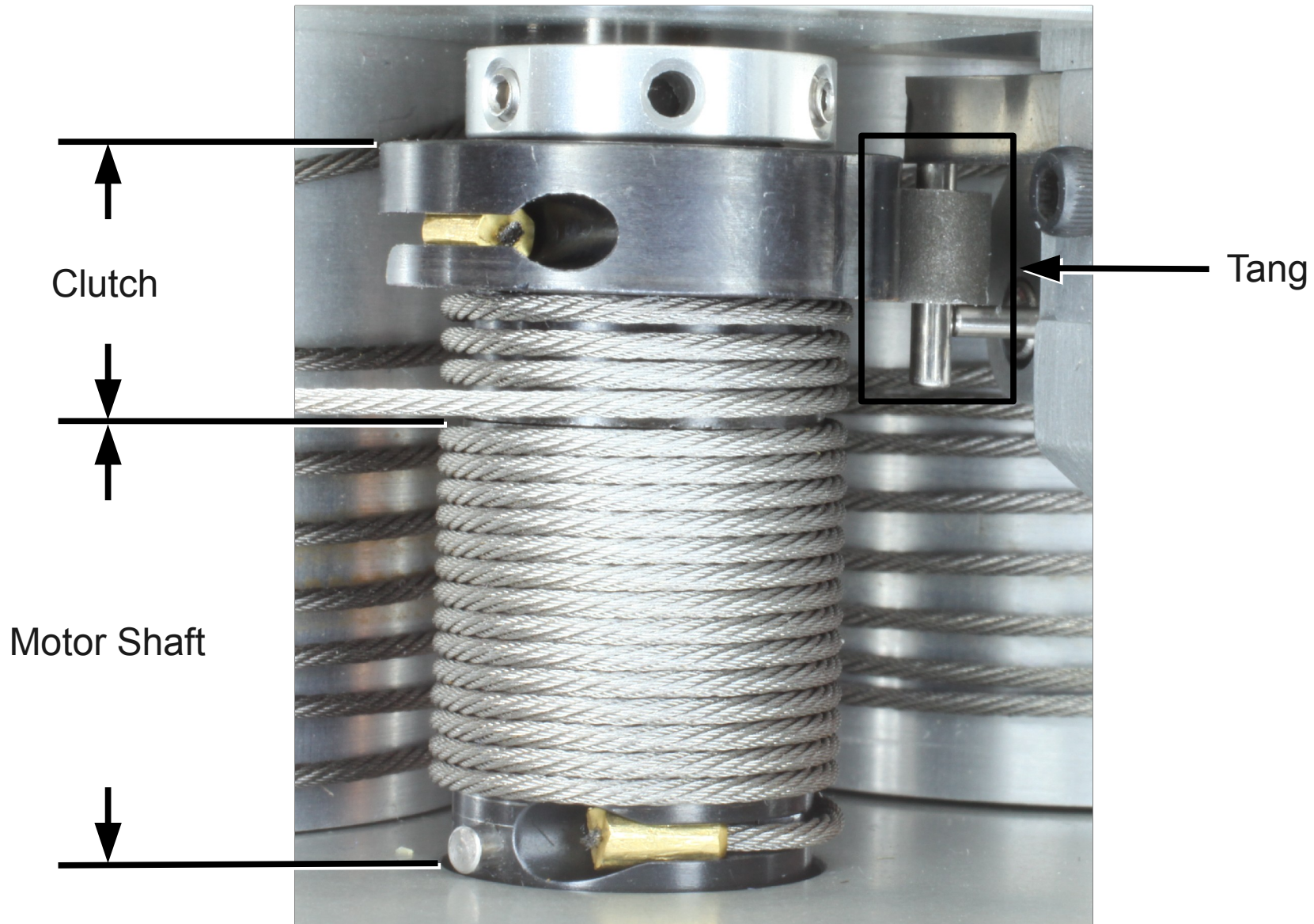
```
$ cd ~/btclient/src/btutil
```

```
$ ./btutil t 6
```

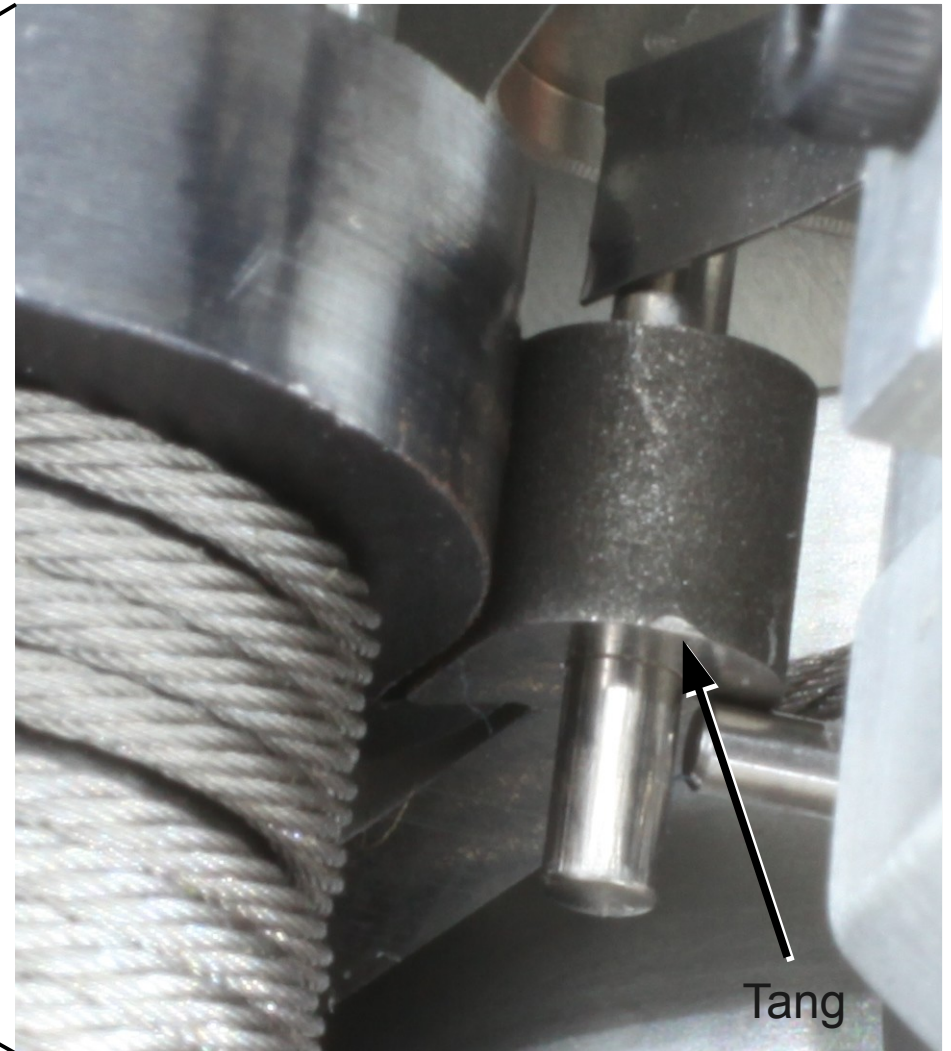
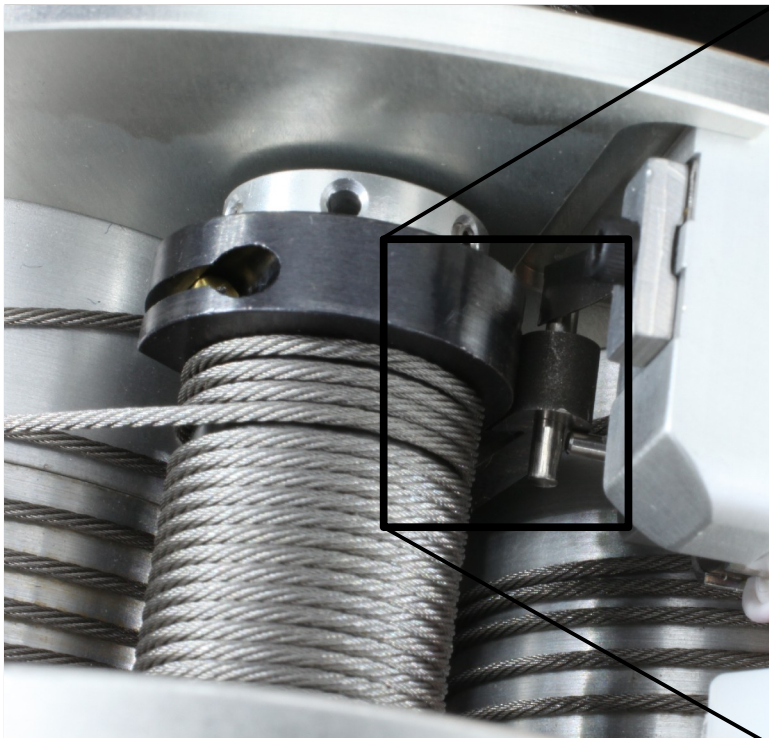
4) Turn the Motor Shaft so that the cable is as far away from the Motor Body as possible.



- 5) Press the Enter key twice. Torque will be applied to M6 and the Tang will be deployed.
- 6) A Clutch is attached to the end of the Motor Shaft. Turn the motor shaft in the direction that moves the cable down towards the Motor Body. Stop when the seam between the Clutch and the Motor Shaft is visible. Look closely, it is easy to miss!



- 7) Let the Motor settle back onto the Tang. If the seam is no longer visible, turn the Motor one additional revolution. (If you need to try again, press $C_{tr1}-C$ and return to Step 3.)
- 8) Notice that the Tang extends almost the full diameter of the Wrist. In order to properly engage the M6 Clutch, it must simultaneously engage the M5 Clutch. Turn the M5 Motor Shaft until the Tang seats fully. (The M5 cable need not be at any particular end of its shaft.) At this point, both M5 and M6 should be immobilized.



- 9) Press the `Enter` key. The Wrist will move slightly as a small length of slack is wound onto the Clutch. Note that the number of encoder counts taken up is displayed on the screen.
- 10) Now the tension must be worked through the entire length of the cable. Back-drive joints 5 and 6 such that the M6 cable moves fully from one extreme to the other. Do this at least five times.
- 11) Repeat Steps 3 through 10 until the number of encoder counts taken up on two consecutive repetitions differs by less than 10 counts.