

## Alpha Marine Systems Linear Drive Unit Feedback Sensor Synchronization Procedure

1. Extend the Drive Unit's shaft to its maximum extent. This can be done carefully by hand if at least one of the Drive Unit's power leads is disconnected from the Control Unit, or by motor using a Remote Helm. Slow the movement as the shaft nears full extension to avoid "slamming" to the end of travel. Do not allow the shaft and clevis fitting to rotate during this procedure. (If it turns a little bit, that's okay, but try to turn it back to the starting orientation.)
2. Measure from the seam where the clevis fitting meets the shaft to the point where the shaft disappears into the drive housing. Divide this measurement by two, then use a Sharpie or similar marker to make a large "X" on the shaft marking this mid-way point between the ends of the measurement.
3. Again by hand or using the Remote Helm, position the shaft such that your mid-way mark is within 2-4 inches of the drive housing. If on, turn the Control Unit off before the next step.
4. Turn the YAW Knob to MAX and set the Remote Helm's switch to PILOT (if connected). *With the Compass System disconnected* from the Control Unit but the Drive Unit's power and feedback sensor leads connected, power on the Control Unit and observe the movement of the Drive Unit. If the shaft is being driven close to fully retracted or extended, power off the Control Unit to avoid reaching an extreme, and verify that the motor and feedback sensor lead sets are both wired for the correct extension — port or starboard. If necessary, correct the wiring and repeat from step 3, otherwise continue to step 5.
5. Turn the YAW Knob to MIN. If wired correctly and the feedback sensor is properly synchronized, the shaft will be extended until only the outer half of the "X" is visible, appearing like "<" or ">", depending upon perspective. If the shaft stops with more or less of the "X" visible, the shaft and clevis fitting assembly may be rotated until half the "X" is visible, then repeat from step 3 to verify synchronization.
6. Now repeat once from step 3, except this time position the mid-way mark 2-4 inches *inside* the drive housing (not visible).

If synchronization cannot be achieved within a couple of iterations, then it may be that the feedback sensor is failing to turn during some or all of the shaft's movement. This would need to be rectified before the system can be put into service.

Once the feedback sensor is known to be synchronized, the Drive Unit should be coupled to the rudder arm and checked for rudder alignment. A properly-aligned and engaged Drive Unit should have its shaft extended to mid-position (with half the "X" from step 3 visible) when the rudder is amidships. Any discrepancy here will require re-mounting the Drive Unit to achieve the proper rudder alignment, however small corrections (e.g. 1/4 inch) may be achieved by turning the shaft and clevis fitting to offset the shaft's "centered" position.

If you have any questions about this testing procedure, please contact the service department at The Offshore Store ([service@offshorestore.com](mailto:service@offshorestore.com)) or Alpha Marine Systems ([service@alphamarinesystems.com](mailto:service@alphamarinesystems.com)).