



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

This test can be used to determine whether an Alpha Marine Systems Drive Unit has its drive and feedback sensor synchronized. Correct synchronization is critical to the operation of the system, as it allows the Control Unit to determine when the rudder is amidship, as well as to avoid running the Drive Unit to its mechanical limits.

The test involves measuring electrical resistances, so an ohmmeter (preferably in the form of a digital multimeter) is required. Resistance is measured with the Drive Unit's red, white and green leads (terminals 3-5 of the Control Unit's lower terminal strip) *disconnected* from the Control Unit. Because the Control Unit requires these three leads to sense the feedback position, to avoid having the Drive Unit driven to a mechanical limit it is best to **power off the system any time these leads are disconnected.**

The test requires the Drive Unit be positioned near its minimum, center and maximum extension. 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.)

The correct resistance value is indicated below for different wire pairings, such as 'RED - WHT.' For this example, the measurement would be taken between the red and white wires. The 'Ω' character (Greek letter omega) represents ohms, and 'KΩ' indicates kilo- (thousands of) ohms.

### Drive Unit at **MINIMUM** extension\*

RED - WHT = ~10 KΩ  
RED - GRN = ~0-2 KΩ (decreases as Drive Unit retracts)  
WHT - GRN = ~8-10 KΩ (increases as Drive Unit retracts)

### Drive Unit at **MID**-extension

RED - WHT = ~10 KΩ  
RED - GRN = ~5 KΩ (about half the RED - WHT value; should be very close to matching the WHT - GRN value)  
WHT - GRN = ~5 KΩ (about half the RED - WHT value; should be very close to matching the RED - GRN value)

### Drive Unit at **MAXIMUM** extension\*

RED - WHT = ~10 KΩ  
RED - GRN = ~8-10 KΩ (increases as Drive Unit extends)  
WHT - GRN = ~0-2 KΩ (decreases as Drive Unit extends)

\*It is best to avoid reaching the mechanical limits of the Drive Unit's travel; attempt to stop about 1 inch/2cm short of minimum and maximum limits.

If the measured values do not approximate what is given here, then the Drive Unit will probably need to be re-synchronised per the separate "Linear Drive Unit Feedback Sensor Synchronization Procedure."

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)).

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