



THE STC GROUP, LLC



Project Number STC SA04230CH

Post Installation Test Flight Cards

**Document Number: F-1006-43
Revision C**

Date:

Aircraft Make _____

Aircraft Model _____

Serial Number _____

N Number _____



| TEST 1 – Aircraft Control System Checks – Systems Check Utilizing Ground Power | | |
|---|--|--------------|
| Mechanic / Pilot: | Date: | Time: |
| Objectives: <ul style="list-style-type: none"> • Enter Initial Gain Settings • Verify proper servo operation • Verify aircraft control system rigging • Verify servo arm positions | | |
| Check | Action | |
| | Lock ailerons and elevators in Neutral position with blocks | |
| | Power up the AP system | |
| | Enter current field elevation into AP | |
| | Enter the maintenance settings | |
| | Select HNAV VNAV servo gains screens | |
| | Set and record HNAV gain | |
| | Set and record VNAV gain | |
| | Advance to LNAV Servo Set Screen | |
| | Record Neutral servo arm position | |
| | Unblock ailerons | |
| | Record Full right aileron servo arm position | |
| | Record Full Left aileron servo arm position | |
| | Press HMode button to enter LNAV Servo Set test mode | |
| | Verify arrow is observed | |
| | Rotate Encoder clockwise until right aileron is full up | |
| | Verify that aileron displacement matches full right aileron reading & record | |
| | Return the Encoder to the Neutral position | |
| | Verify that ailerons return to Neutral | |
| | Rotate Encoder counterclockwise until left the aileron is full up | |
| | Verify that aileron displacement matches full left aileron reading & record | |
| | Return the Encoder to the Neutral position | |



| | |
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| | Verify that ailerons return to Neutral |
| | Press HMode button to exit LNAV Servo Set test mode |
| | Rotate Encoder counter clockwise to VNAV Servo Set screen |
| | Record Neutral servo arm position |
| | Unblock elevators |
| | Move control yoke / stick full aft |
| | Record full UP pitch servo arm position |
| | Move control yoke / stick full forward |
| | Record full DOWN pitch servo arm position |



| TEST 2 - Initial System Checks – Systems Check Utilizing Ground Power | | |
|---|--|--------------|
| Mechanic / Pilot: | Date: | Time: |
| Objectives: <ul style="list-style-type: none"> • Validate BARO screen setup • Verify proper servo slip clutch operation • Verify visual servo indications and aural warnings • Assure operation of yoke disconnect | | |
| Check | Action | |
| | Power up the AP system | |
| | Enter current field elevation into AP | |
| | Center flight controls and engage servos | |
| | Verify HNAV and VNAV servo LEDs are ON | |
| | Override HNAV servo to left and release | |
| | Verify roll control returns to neutral | |
| | Override HNAV servo to right and release | |
| | Verify roll control returns to neutral | |
| | Override VNAV servo to pitch up and release | |
| | Verify pitch control returns to neutral | |
| | Override VNAV servo to pitch down and release | |
| | Verify pitch control returns to neutral | |
| | Press the VNAV button to release the VNAV servo | |
| | Observe 3 audible beeps when the servo disconnects | |
| | Observe the pitch axis controls are free and clear | |
| | Press the HNAV button to release the HNAV servo | |
| | Observe 3 audible beeps when the servo disconnects | |
| | Verify roll axis controls free and clear | |



| TEST 3 – Initial System Checks – Systems Check Utilizing Ground Power | | |
|--|--|--------------|
| Mechanic / Pilot: | Date: | Time: |
| Objectives: <ul style="list-style-type: none"> • Verify the servos fully release using manual disconnect • Verify servos fully release when power is removed from the autopilot | | |
| Check | Action | |
| | Engage both the HNAV and VNAV servos | |
| | Place the controls in a full up and down / full right and left positions overriding servo slip clutches. | |
| | Press the autopilot disconnect button | |
| | Verify aural disconnect tone indicating servos have been disconnected | |
| | Verify roll and pitch controls free and clear | |
| | Engage both the HNAV and VNAV servos | |
| | Place the controls in a full up and down / full right and left position overriding the servo slip clutches | |
| | Place power switch to OFF | |
| | Verify roll and pitch controls free and clear | |
| | Power ON autopilot, enter current BARO ALT (Field elevation) | |
| | Engage HNAV and VNAV servos | |
| | Pull autopilot circuit breaker | |
| | Verify roll and pitch controls free and clear | |
| | Reset the circuit breaker | |
| | Power ON autopilot, enter current BARO ALT | |
| | Engage HNAV and VNAV servos | |



| TEST 4 – Aircraft Dynamics without Autopilot | |
|---|---|
| Pilot: | Date: |
| Time: | |
| Objectives: <ul style="list-style-type: none"> • Check aircraft rigging • Demonstrate the damping of normal aircraft short period and Dutch roll oscillations • Test Performed at _____ feet MSL or appropriate Safe VFR altitude | |
| Check | Action |
| | Carefully trim the aircraft in level flight at a normal cruise airspeed for the selected altitude. Observe that the aircraft will fly “hands off”. |
| | Record whether “roll off” is consistently left or right. |
| | From the stable cruise condition, excite the short period with a positive elevator pulse and observe/record the response . If phugoid motion is started, it must be manually damped, and the short period test reinitiated. |
| | From the stable cruise condition, excite the Dutch roll with a rudder pulse. Observe and record the response. |

Hobbs Out _____
 Hobbs In _____
 Time Out _____
 Time In _____
 Total Time _____

Note any aircraft operational discrepancies before starting test:



| TEST 5 - Confirmation of Servo Override and Determine Gain Settings | |
|--|--|
| Pilot: | Date: |
| Time: | |
| Objectives: <ul style="list-style-type: none"> • Confirm that the roll and pitch servos can be easily overridden by the pilot • Establish pitch gain settings that result in less than a 40-foot altitude loss • Test Performed at _____ feet MSL or appropriate Safe VFR altitude | |
| Check | Action |
| | Carefully trim the aircraft in level flight at a normal cruise airspeed at _____ MSL or appropriate safe altitude. |
| | Engage H NAV in CRS and V NAV in Altitude Hold. |
| | Ensure that the force necessary to override the H NAV and V NAV servos feels normal (3.5 lbs. approx.). If <i>inappropriate</i> force required, terminate the test. |
| | Initiate the left 180 degree turn function and record the altitude loss. |
| | Adjust pitch gains as required to achieve the desired altitude loss. |
| | Record the gain settings and altitude loss |

Note:

The Avionics Addendum Document provides specific instructions to set aircraft Gains.
 This document is available at www.thestcgroupllc.com.

Initial VNAV Gain _____

Final VNAV Gain _____

Initial HNAV _____

Final HNAV _____



| TEST 6 – Aircraft Dynamics with Autopilot | |
|---|---|
| Pilot: | Date: |
| Time: | |
| Objectives: <ul style="list-style-type: none"> • Demonstrate the damping of normal aircraft short period and Dutch roll oscillations with autopilot engaged • Test Performed at _____ feet MSL (or appropriate VFR altitude) | |
| Check | Action |
| | Carefully trim the aircraft in level flight at a normal cruise airspeed at _____ feet MSL. |
| | From the stable cruise condition, engage the H NAV and V NAV servos to hold the heading and altitude. |
| | <ul style="list-style-type: none"> • From a stable cruise condition, and the autopilot engaged, excite the short period with a positive elevator pulse. • Observe and record the aircraft response. • If phugoid motion is observed, manually arrest the motion and reinitiate the short period test. • If damping is less than observed in the airplane with the autopilot disengaged, stop the testing. |
| | <ul style="list-style-type: none"> • From a stable cruise condition and the autopilot engaged, excite the Dutch roll with a rudder pulse. • Observe and record the response. • If damping is less than observed in the airplane with the autopilot disengaged, terminate the test. |
| | If the damping has not changed or has improved, slow the aircraft to slow flight speed with appropriate trim and power changes. |
| | <ul style="list-style-type: none"> • When established in level slow flight engage the autopilot. • Excite the short period with an elevator pulse. • Observe and record the response. • If damping is not adequate, terminate the test. |
| | <ul style="list-style-type: none"> • When established in level slow flight engage the autopilot • Excite the Dutch roll with a rudder pulse. • Observe and record the response. • If damping is not adequate, terminate the test. |
| | Slow the aircraft further by using a flap setting appropriate for level flight with appropriate trim and power settings. |
| | Repeat the short period and Dutch roll observations above. |



| TEST 7 – WAAS Enabled GPS Confirmation | | |
|---|---|--------------|
| Pilot: | Date: | Time: |
| Objectives: <ul style="list-style-type: none"> • Demonstrate the functionality of the autopilot when using data from a WAAS enabled panel mount GPS to fly an LPV approach and missed approach with holding pattern. | | |
| Check | Action | |
| | Fly the aircraft a safe distance from an airport in controlled airspace. | |
| | Set a course on the GPS to return to the airport. | |
| | Engage the autopilot HNAV servo and place the A/P in CRS Mode. | |
| | Engage the autopilot VNAV servo and place the A/P in AH Mode. | |
| | Use the Encoder knob in CRS mode to control flight toward the airport. | |
| | Use VNAV to execute any required descents. | |
| | Request a practice RNAV LPV approach. | |
| | Load the RNAV LPV approach. | |
| | Practice the approach using the autopilot. | |
| | When the Glideslope is captured use power to control the descent rate. | |
| | <ul style="list-style-type: none"> • Observe and record the ability of the autopilot to capture and hold both vertical and horizontal guidance. • Performance should be within 1/2 dot. | |
| | Disconnect the autopilot at Placarded altitude – 500 feet AGL. | |
| | Execute missed approach procedure utilizing the vertical and horizontal navigational capability of the autopilot with appropriate trim and power settings. | |
| | <ul style="list-style-type: none"> • Observe and record the autopilot guidance. • Performance should be within .25 nautical mile horizontally and 50 feet vertical. | |
| | <ul style="list-style-type: none"> • Allow the A/P to enter the published hold per published hold entry. • Observe and record the autopilot guidance. | |
| | Allow the A/P to fly published hold. | |
| | Configure the airplane for landing, and land safely | |



Attachment 1

Flight Test Observations