



# CENTURY I

## AUTOPILOT SYSTEM



PILOT'S OPERATING HANDBOOK

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## INTRODUCTION

The Century Flight Systems, Inc. Century I is a light weight, all electronic stabilization system contained in two compact units.

The Panel Mounted unit contains a Pictorial Turn and Bank, Stabilizer electronics, optional Tracker Electronics, Turn Command Control, Roll Trim Control and Tracker Switching. The Roll Servo motor is the other unit and it is mounted in the fuselage or wing as required by the particular aircraft installation.

The Roll Servo incorporates a fail safe engage and disengage mechanism to provide complete control freedom upon disengagement. Engagement and disengagement is controlled by a panel mounted stabilizer master switch and a pilot's wheel disengage switch.

In addition to these switches, safety over-ride features permit the pilot to over-ride the system at anytime without damage to the servo or aircraft controls.

## PANEL CONTROLS

1. Century I Master Switch—This switch is conveniently mounted to control power to the Stabilizer electronics and the Roll Servo. Power to the Turn and Bank Gyro is supplied separately through the aircraft master switch so that the Gyro is operating whenever the aircraft master switch is on.
2. Turn Command Control—This control is located at the lower right corner of the Turn and Bank Instrument. Turns up to standard rate may be commanded with this control when it is in the “out” position. Note that a detent is provided for level flight. This control also provides an on-off switch for the optional tracker. Pushing the control “in” turns the tracker “on”. Note that the control can only be pushed “in” while in the level flight detent and that while “in”, the control cannot be turned.
3. Roll Trim Control—This control is located at the lower left corner of the Turn and Bank Instrument. It provides fine trim adjustment in both the Stabilizer mode and the Tracker mode. Additionally, this control selects high and low sensitivity for the Tracker, if installed, by pushing the control “in” or pulling it “out”.

## PILOT’S INTERRUPT SWITCH

### NOTE

**Not all models of aircraft require the use of the Pilot’s Interrupt switch. Further, on those models where the switch is not required the switch is not approved for installation.**

In some installations a momentary off switch is located on the left side on the pilot’s control wheel. Light thumb pressure on this switch will disengage the system to permit maneuvering and heading changes. When the switch is released, the system will re-engage.

### PICTORIAL TURN & BANK



CENTURY I WITH TRACKER



KNOBS USED IF TRACKER NOT INSTALLED



PILOT'S INTERRUPT SWITCH



CENTURY I MASTER SWITCH

## PRE-FLIGHT GROUND CHECK

The Century I may be ground checked as follows:

1. Turn on Century I Master Switch.
2. Pull Turn Command Control "out" and rotate left and right. Note wheel movement in proper direction.
3. If Tracker is installed, with Omni Converter operating, rotate the Turn Command Control to the detent position and push "in" to turn the Tracker "on". Rotate the Omni Bearing Selector to move the deviation needle left and right. Notice that the control wheel moves in the correct direction,
4. While taxiing, with the Turn Command Control in the detent, note that wheel movement is opposite the direction of turn.
5. Check the aileron over-ride in each direction.
6. Depress wheel interrupt switch and note servo disengagement.

## ENGAGING THE AUTOPILOT

The autopilot is approved for full time use from climb out to final approach. After aircraft attitude is established and necessary aircraft trim is accomplished, turn the Century I Master Switch on, and with the Turn Command Control in the “out” detent position, adjust Roll Trim Control to stop any heading drift. If turns are required, they may be accomplished by either commanding a turn, up to standard rate, with the Turn Command Control or manually by pressing the Wheel Interrupt Switch and operating the aircraft controls normally. Upon release of the Wheel Interrupt Switch, the servo will re-engage and the Stabilizer will again control the aircraft.

### NOTE:

**The Autopilot, when properly trimmed, will seek to hold a constant heading (no turning). If the aircraft consistently flies wing low, it indicates that the rudder is not properly trimmed and rudder trim is needed in the direction of the low wing.**

## TRACKER OPERATION

After the Autopilot system has been trimmed for minimum heading drift, turn the Omni Bearing Selector to center the VOR needle and determine the bearing to or from the station desired.

Turn the aircraft to the magnetic heading indicated, and after establishing level flight, push the Turn Command Control “in”. If the VOR needle is within the “Target” and the heading within 10° of the centered OBS reading, the Tracker will capture and track the radial without undue heading deviation.

If the Tracker tends to fly with the VOR needle off center for an extended period, turn the Stabilizer Trim Control toward the needle until accurate tracking is established.

The Tracker has high and low sensitivity positions. Low sensitivity is used for cross country navigation and high sensitivity, where accuracy is desired such as approaches and close-in work.

High Sensitivity

Low Sensitivity

Stabilizer Trim “in”

Stabilizer Trim “out”

## ROUGH AIR OPERATION

It is perfectly safe to operate the Stabilizer Tracker in turbulence, without excessive loading to the servo or the aircraft control surfaces.

## EMERGENCY PROCEDURES

In the event of malfunction, the Autopilot can be disengaged by pressing the wheel switch, turning the Century I Master Switch “off”, pulling the Autopilot Circuit Breaker, or by overriding the Servo Clutch. To restore Turn and Bank power after Circuit Breaker operation, turn Century I Master Switch “off” and reset Century I Circuit Breaker.

## PLACARDS AND LIMITATIONS

Century I installations have either an:

- (1) Airplane Flight Manual Supplement or a
- (2) Limitations Placard

These should be consulted for FAA approved procedures and/or limitations that are specifically applicable to the aircraft.

## OPERATIONAL NOTE ON THE CENTURY I

The Century I Autopilot really has no idea of the actual heading, the radial, or the crosswind. It simply seeks to maintain a condition of no turning which results in the holding of a relatively constant heading. The human pilot only knows the desired heading.

When the Tracker is ON, it seeks to keep the VOR/LOC Needle in the center. It does this by first stopping any needle movement and then gradually trying to center the needle. The Tracker has been designed to TRACK the needle after the human pilot has captured the needle, centered it, and aimed the aircraft in the direction of intended flight +/- 10°. Under very strictly controlled conditions the Tracker can capture and track a radial. This ability should be considered a happenstance and not a capability of the device.

Of necessity, the Tracker works slowly. Under conditions of extreme crosswind, the human pilot can assist the Tracker in getting established on a radial by turning the aircraft slightly into the wind before turning on the Tracker.

For use with a GPS or LORAN would be the same as with a VOR signal. **NOTE: Some GPS and LORAN will have an adjustable course width setting (CDI sensitivity). This setting determines how many nautical miles it is from full scale left to full scale right deviation. A course width that is too wide will cause the Century I to S - turn or oscillate along the desired track. A course width that is too narrow will cause the Century I to be overly sensitive to needle movement.**



Effective: July 4, 1975

LIMITED WARRANTY CENTURY FLIGHT SYSTEMS AUTOPILOT

Each new Century Flight Systems Inc. Autopilot is warranted by the manufacturer to be free from defects in material and workmanship under normal use, subject to the following conditions:

1. Century Flight Systems Inc. will through its designated service facilities at its option either repair or replace new components which, shall within (12 months after date of installation, be found, to Century Flight Systems Inc. satisfaction, to have been defective in material or workmanship under normal use.
2. The warranty registration must be signed and returned to Century Flight Systems Inc. within ten days of equipment installation date. In the event that the registration card is not returned within this time, the date of shipment from the factory will be deemed to be the installation date.
3. This warranty will not apply to any product which has been installed, repaired or altered in any way whatsoever in Century Flight Systems Inc. opinion to adversely affect its performance or reliability, or which has been subject to misuse, contamination, negligence, or accident.
4. Cost of transportation, removal or reinstallation are at the option of Century Flight Systems Inc..
5. This is Century Flight Systems Inc. sole express warranty with respect to the goods supplied herein. CENTURY FLIGHT SYSTEMS INC. MAKES NO OTHER EXPRESS WARRANTY OF ANY KIND WHATSOEVER. CENTURY FLIGHT SYSTEMS INC. EMPLOYEES MAY HAVE MADE ORAL STATEMENTS ABOUT THE PRODUCTS DESCRIBED IN THIS CONTRACT. SUCH STATEMENTS DO NOT CONSTITUTE WARRANTIES, SHALL NOT BE RELIED UPON BY THE CUSTOMER, AND ARE NOT PART OF THE SALE CONTRACT.
6. THE DURATION OF ANY IMPLIED WARRANTY, AND OF ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED TO (12) MONTHS COMMENCING AT DATE OF INSTALLATION TO THE FULL EXTENT PERMITTED BY APPLICABLE LAW, CONSEQUENTIAL DAMAGE OR BREECH OF ANY WARRANTY ARE HEREBY DISCLAIMED AND EXCLUDED BY CENTURY FLIGHT SYSTEMS. INC. .

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