

## *Installation Bulletin*

**BULLETIN NO:** 385

**APPLICABLE TO:** KAP 150 and KFC 150 Flight Control Systems

**SUBJECT:** Approval of replacement part numbers for KC 191 and KC 192 Flight Computers in existing installations

The new generation of the KC 191 and KC 192 Flight Computers has updated circuit components with newer technology.

The new KC 191 P/N 065-0054-15 is a direct replacement for any of the following part numbers:

065-0054-00	065-0054-05
065-0054-01	065-0054-06
065-0054-02	065-0054-07
065-0054-03	065-0054-09
065-0054-04	065-0054-12

The new KC 192 P/N 065-0042-15 is a direct replacement for any of the following part numbers:

065-0042-00	065-0042-05
065-0042-01	065-0042-06
065-0042-02	065-0042-07
065-0042-03	065-0042-09
065-0042-04	065-0042-12

The Annunciator Dimming Adjust has been moved from the side of the unit to the face of the unit, below the hold down screw. The adjustment is labeled BL (Brightness of Lamps).

The Adapter Modules used in the following certifications remain unchanged, and will function exactly the same with the new flight computers. As always, refer to the applicable STC Installation Manual for the proper Adapter Module part numbers that apply to your specific aircraft and flight control configuration.

A gyro alignment procedure is included with this install bulletin and should be followed when aligning the KFC/KAP 150 Flight Control System.

**NOTE**

Before aligning a KFC/KAP 150 Flight Control System with an updated KC 191 or KC 192, check the mod status of the KI 256 to see if Mod 11 has been incorporated into the unit. Without Mod 11 installed, you might not be able to align the KI 256 with the updated KC 191 or KC 192 due to incompatibility issues between the units.

This installation bulletin is approved for incorporation in the following aircraft in conjunction with the following STCs:

**AIRCRAFT**

**STC**

Beechcraft A36, A36TC, B36TC	SA1574CE-D
Beechcraft F33A	SA1789CE-D
Cessna 172N, 172P, 172Q	SA1570CE-D
Cessna 172RG	SA1568CE-D
Cessna 182P, 182Q, 182R, T182	SA1770CE-D
Cessna F182P, F182Q	SA1794CE-D
Cessna R182, TR182	SA1571CE-D
Cessna FR182	SA1783CE-D
Cessna U206G, TU206G	SA1569CE-D
Cessna 208, 208A, 208B	SA2053CE-D
Cessna 210R, T210R	SA2050CE-D
Consolidated Aeronautics Lake 250	SA2069CE-D
Gulfstream Aerospace AG-5B	SA00058WI-D
Mooney M20J, M20K	SA1561CE-D
Mooney M20L	SA2074CE-D
Mooney M20M, M20R	SA2319CE-D
Partenavia AP68TP 300, AP68TP 600	SA1784CE-D
Partenavia P 68C, P 68C-TC	SA1791CE-D
Piper PA-28-161, PA-28-181, PA-28-236	SA1565CE-D
Piper PA-28R-201, PA-28R-201T	SA1563CE-D
Piper PA-28RT-201, PA-28RT-201T	SA1563CE-D
Piper PA-32-301, PA-32-301T	SA1567CE-D
Piper PA-32R-301, PA-32R-301T	SA1572CE-D
Piper PA-34-200T, PA-34-220T	SA1575CE-D
Piper PA-44-180	SA2321CE-D
Piper PA-46-310P, PA46-350P	SA1778CE-D
Piper PA-60-700P	SA1777CE-D
SOCATA TB 10, TB 20	SA1785CE-D

### 11.1.3 GYRO ALIGNMENT PROCEDURES

The following system alignment is required in the KFC/KAP 150 System:

- A. Remove the KC 191/192 Computer from the airplane panel. Connect the computer to the autopilot tester with the cables provided.
- B. Mount the gyro in the gyro tilt stand. Place the tilt stand in a convenient location with reference to the autopilot computer. Level the tilt stand using the twist adjust knobs and bubble level. Connect the gyro air input to a regulated 4.5 in. Hg. source. Connect the KI 256/KG 258 Flight Command Indicator to the airplane harness using gyro extender cable.

#### **NOTE**

A properly regulated and filtered air source is essential for correct gyro operation.

#### **NOTE**

When making gyro alignment adjustments, always have gyro set to zero in axis not under test.

- C. Before applying power, make sure that the proper adapter boards are installed in the KC 191/192 by checking the part numbers in the windows on the top and bottom of the unit. Refer to the system parts list for the correct numbers. Apply power to the system. All associated circuit breakers must be installed and activated.
- D. After the gyro is fully erected (ten minutes minimum run-up time), proceed with the following.
- E. Set the gyro stand to zero in both pitch and roll axis. Adjust leveling screws for pitch and roll zero visual indication.

#### **NOTE**

It is normal for the gyro to drift during testing. To minimize error due to drift, it is advisable to tilt the gyro and make the scale factor adjustment quickly. After each adjustment, return the tilt stand scales to zero and, if necessary, reset electrical zero by adjusting the leveling screws on the gyro tilt stand.

- F. Adjust R401, Roll Null Adjust for 0.0 VDC. This is a potentiometer that is accessible through the hole labeled RN in the front of the computer. Measure the voltage from J19X1 (22) to the signal ground J19X2 (10) with a digital voltmeter when making this adjustment.

## NOTE

Pitch null has been deleted.

- G. Tilt the gyro to a twenty-degree right bank using the gyro tilt stand. Adjust R1211, accessible through the hole labeled RDG on the right side of the computer, for  $-4 \pm 0.2$  VDC. Measure the voltage at J19X1 (22) with respect to signal ground.
- H. Tilt the gyro to a twenty-degree left bank using the gyro tilt stand. Measure the voltage at the same point as Step H. It should read  $4 \pm 0.2$  VDC.  

If the reading in Step H exceeds +4.2 VDC, repeat Step G and reduce the gain by one-half the amount exceeded in Step H. If Step H measured less than 3.8 VDC, repeat Step G and increase the gain setting by one-half the amount short in Step H. Repeat until there is a balance between left and right bank. The proper total voltage excursion should be  $8 \pm .4$  VDC.
- I. With the gyro test stand in the zero pitch position, adjust the leveling screws on the test stand to obtain a pitch zero visual indication on the vertical gyro. (Horizon Line aligned with 90° index marks.)
- J. Measure the voltage from J19X1 (2) to signal ground with a digital voltmeter for reference.
- K. Tilt the gyro ten degrees nose-up on the tilt stand, and adjust R1212 potentiometer, located on the right side of the computer through the hole labeled PDG, for  $-2 \pm 0.1$  VDC from the Pitch Reference Voltage as measured in step J. Measure the voltage at J19X1 (2) to signal ground.
- L. Tilt the gyro ten degrees nose-down on the tilt stand. The meter should read  $+2 \pm 0.25$  VDC from the Pitch Reference Voltage (J) at the same point as Step K. If the meter exceeds +2.25 VDC, repeat Step K and reduce the gain by one-half the amount exceeded in Step L. If the meter reads less than +1.75 VDC, repeat Step K and increase the gain by one-half the amount short in Step L.

**FAA APPROVAL:** The data contained herein have been reviewed by a representative of the Federal Aviation Administration (FAA) and found to comply with all applicable Federal Aviation Regulations. This installation bulletin is FAA-approved, and its contents may be incorporated into the subject aircraft.