Single Engine

Service Bulletin

November 25, 2002

SB02-22-01

TITLE

HONEYWELL KAP 140 AUTOPILOT SYSTEM MODIFICATION

EFFECTIVITY

<table>
<thead>
<tr>
<th>Model</th>
<th>Serial Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>172R</td>
<td>17280001 thru 17281073, 17281075 thru 17281127 and 17281130</td>
</tr>
<tr>
<td>172S</td>
<td>172S8001 thru 172S9195, 172S9197, 172S9198 and 172S9200 thru 172S9203</td>
</tr>
<tr>
<td>182S</td>
<td>18280001 thru 18280944</td>
</tr>
<tr>
<td>182T</td>
<td>18280945 thru 18281065, 18281067 thru 18281145, 18281147 thru 18281163, 18281165 thru 18281167 and 18281172</td>
</tr>
<tr>
<td>T182T</td>
<td>T18208001 thru T18208109 and T18208111 thru T18208177</td>
</tr>
<tr>
<td>206H</td>
<td>20608001 thru 20608183, 20608185, 20608187 and 20608188</td>
</tr>
<tr>
<td>T206H</td>
<td>T20608001 thru T20608039, T20608041 thru T20608367, T20608369 thru T20608379, T20608381, T20608382 and T20608385</td>
</tr>
</tbody>
</table>

REASON


DESCRIPTION

According to Honeywell, "due to the possibility of inadvertently engaging the KAP 140 autopilot system, the KAP 140 operating software has been updated." This software update makes three operational changes: (1) The AP button will be the only button that can engage the autopilot, (2) adds two voice messages for autotrim operation, and (3) the AP button must be depressed for 0.25 seconds to engage the autopilot, which when engaged, will show the letters AP with a box around them annunciates on the display. Non-compliance with this software upgrade could allow the autopilot to become inadvertently engaged.
COMPLIANCE

Mandatory; shall be accomplished by August 31, 2003 as described in Honeywell Installation Bulletin No. 491 (or latest revision).

APPROVAL

FAA approval has been obtained on technical data in this publication that affects airplane type design.

Refer to the attached Honeywell Service Bulletin KC 140-M1 (or latest revision).

MANPOWER

Refer to the Honeywell Service Bulletin No. KC 140-M1 (or latest revision).

REFERENCES

Honeywell Installation Bulletin No. 491 (or latest revision)

Honeywell Service Bulletin No. KC 140-M1 (or latest revision)


NOTE: Make sure all publications used are complete and current.

NOTE: This information shall be considered an amendment to the Cessna Manufacturer’s Service/Maintenance Manual or Instructions for continued airworthiness and must be accomplished for ongoing airworthiness compliance as required per 14 CFR Part (FAR) 43.13.

OTHER PUBLICATIONS AFFECTED

Model 172R and Model 172S Illustrated Parts Catalog

Model 182S/182T/T182T Illustrated Parts Catalog

Model 206H & Model T206H Illustrated Parts Catalog

NOTE: Make sure all publications used are complete and current.
## MATERIAL PRICE AND AVAILABILITY

Additional copies of the supplements are available from Cessna Parts Distribution through an appropriate Cessna Service Station for the suggested list price shown.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Qty/Airplane</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>172RPHUS-S7-04</td>
<td>Revision 4, Model 172R Supplement 7 Bendix/King KAP 140 Single Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>172RPHUS-S15-02</td>
<td>Revision 2, Model 172R Supplement 15 Bendix/King KAP 140 2-Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>172SPHUS-S7-02</td>
<td>Revision 2, Model 172S Supplement 7 Bendix/King KAP 140 Single Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>172SPHUS-S15-04</td>
<td>Revision 4, Model 172S Supplement 15 Bendix/King KAP 140 2-Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>182SPHUS-S7-03</td>
<td>Revision 3, Model 182S Supplement 7 Bendix/King KAP 140 Single Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>182SPHUS-S15-02</td>
<td>Revision 2, Model 182S Supplement 15 Bendix/King KAP 140 2-Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>182TPHUS-S7-01</td>
<td>Revision 1, Model 182T Supplement 7 Bendix/King KAP 140 Single Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
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<tr>
<td>182TPHUS-S15-01</td>
<td>Revision 1, Model 182T Supplement 15 Bendix/King KAP 140 2-Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>T182TPHUS-S7-01</td>
<td>Revision 1, Model T182T Supplement 7 Bendix/King KAP 140 Single Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
<tr>
<td>T182TPHUS-S15-01</td>
<td>Revision 1, Model T182T Supplement 15 Bendix/King KAP 140 2-Axis Autopilot</td>
<td>1 (as required)</td>
<td>$28.00 (F) ea.</td>
</tr>
</tbody>
</table>

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206PHUS-S7-01           Revision 1, Model 206H Supplement 7 Bendix/King KAP 140 Single Axis Autopilot
                              1 (as required)  $ 28.00 (F) ea.

206PHUS-S15-03           Revision 3, Model 206H Supplement 15 Bendix/King KAP 140 2-Axis Autopilot
                              1 (as required)  $ 28.00 (F) ea.

T206PHUS-S7-02           Revision 2, Model T206H Supplement 7 Bendix/King KAP 140 Single Axis Autopilot
                              1 (as required)  $ 28.00 (F) ea.

T206PHUS-S15-05           Revision 5, Model T206H Supplement 15 Bendix/King KAP 140 2-Axis Autopilot
                              1 (as required)  $ 28.00 (F) ea.

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

CREDIT INFORMATION

Refer to the Honeywell Service Bulletin No. KC 140-M1 (or latest revision).

The applicable airplane model Pilot's Operating Handbook Supplements will be sent to owners of record at no charge.

ACCOMPLISHMENT INSTRUCTIONS

Weight And Balance Information

WEIGHT CHANGE ................ None

Instructions

1. Prepare the airplane for maintenance:
   A. Electrically ground the airplane.
   B. Make sure that all switches are in the "OFF/NORM" position.
   C. Remove engine cowling or battery access panel as necessary to get access to the battery.  (Refer to the appropriate model Maintenance Manual, Chapter 71, Cowling-Maintenance Practices.)
   D. Disconnect the electrical power from the airplane.
      (1) Disconnect the airplane battery.  (Refer to the appropriate model Maintenance Manual, Chapter 24, Battery-Maintenance Practices.)
      (2) Disconnect the external power if applicable.
   E. Attach maintenance warning tags to the battery and external power receptacle that have "DO NOT CONNECT ELECTRICAL POWER - MAINTENANCE IN PROGRESS" written on them.


3. Do Honeywell Installation Bulletin No. 491.

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4. Verify if a single axis or if a 2 axis autopilot is installed in the airplane. Obtain and incorporate the applicable model specific Pilot's Operating Handbook KAP 140 Autopilot System Supplement into the Pilot's Operating Handbook. Discard the existing supplement.

NOTE: A single axis and a 2 axis supplement have been sent to the airplane owner of record. Make sure the correct supplement is incorporated into the Pilot's Operating Handbook.

5. Remove maintenance warning tags from battery and external power receptacle.

6. Reconnect the airplane battery. (Refer to the appropriate model Maintenance Manual, Chapter 24, Battery-Maintenance Practices.)

7. Perform the test procedure on the KC140 autopilot as outlined in the Honeywell Service Bulletin KC140-M1 (or latest revision).

8. Install the engine cowlng or battery access panel as necessary.

9. Make an entry in the airplane logbook stating compliance with this Service Bulletin.

OWNER NOTIFICATION

On November 25, 2002 the following Owner Advisory message will be sent to applicable owners of record in SB02-22-01A.

Dear Cessna Owner:

This Owner Advisory is to inform you that Service Bulletin SB02-22-01 has been issued to transmit Honeywell Installation Bulletin No. 491, Inadvertent Engagement of the KAP140 Autopilot System, and Honeywell Service Bulletin No. KC140-M1, KC 140 Autopilot Computer.

According to Honeywell, "due to the possibility of inadvertently engaging the KAP 140 autopilot system, the KAP 140 operating software has been updated." This software update makes three operational changes: (1) The AP button will be the only button that can engage the autopilot, (2) adds two voice messages for autotrim operation, and (3) the AP button must be depressed for 0.25 seconds to engage the autopilot, which when engaged, will show the letters AP with a box around them annunciated on the display. Non-compliance with this software upgrade could allow the autopilot to become inadvertently engaged.

Compliance is Mandatory; shall be accomplished by August 31, 2003 as described in Honeywell Installation Bulletin No. 491 (or latest revision).

Applicable parts and labor credit will be provided as described in Honeywell Service Bulletin No. KC140-M1 (or latest revision).

The applicable airplane model Pilot's Operating Handbook Supplements are being sent to owners of record at no charge. After accomplishment of Honeywell Service Bulletin KC 140-M1 and Honeywell Installation Bulletin No. 491 (or latest revisions), select and incorporate into the Pilot's Operating Handbook, the appropriate supplement for the autopilot configuration (single axis or 2 axis supplement) of your airplane. Discard the supplement that is not needed.

The information contained in the referenced Cessna Service Bulletin shall be considered an amendment to the Cessna Manufacturer's Service/Maintenance Manual or Instructions for continued airworthiness, and must be accomplished for ongoing airworthiness compliance as required per 14 CFR Part (FAR) 43.13.

Please contact a Cessna Single Engine Service Station for detailed information and arrange to have Cessna Service Bulletin SB02-22-01/Honeywell Service Bulletin KC 140-M1 and Honeywell Installation Bulletin No. 491 (or latest revisions) accomplished on your airplane.

* * * * * * * * * * *
Honeywell

Service Bulletin

BULLETIN NO: KC 140-M1
KC 140 Autopilot Computer

EFFECTIVITY

KC 140 units P/N 065-00176-2602, -5402, and -7702, all serial numbers.

REASON

To reduce the possibility of inadvertently engaging the autopilot.

DESCRIPTION

This conversion consists of changing the KC 140 application software, changing the unit part number, placing an M Tag on the unit serial tag, and updating the unit's Software Mod Tag.

<table>
<thead>
<tr>
<th>Old Part Number</th>
<th>New Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>065-00176-2602</td>
<td>065-00176-2603</td>
</tr>
<tr>
<td>065-00176-5402</td>
<td>065-00176-5403</td>
</tr>
<tr>
<td>065-00176-7702</td>
<td>065-00176-7703</td>
</tr>
</tbody>
</table>

This conversion makes the following functional changes:

1. The AP button will be the only button that can engage the autopilot.
2. Added two voice messages for autotrim operation.
   A. The message TRIM IN MOTION, TRIM IN MOTION occurs when the autotrim has been running for more than 5 seconds, and it repeats until the autotrim stops running.
   B. The message CHECK PITCH TRIM occurs when the KAP 140 System has detected an out-of-trim condition for more than 15 seconds.
3. The AP button must be depressed for .25 seconds to engage the autopilot. When the autopilot is engaged, the letters AP with a box around them are annunciated on the display.

A revised flight manual supplement is needed for each unit that is converted according to this bulletin. Contact the appropriate aircraft manufacturer for the appropriate revised flight manual supplement, or contact Honeywell for an aircraft flight manual supplement for the STC'd aircraft.

Date: Aug/02
P/N: 660-07550-0010
Operational Changes:

1. The AP button will be the only button that can engage the autopilot.
2. Added two voice messages for autotrim operation.
   A. The message "TRIM IN MOTION, TRIM IN MOTION" occurs when the autotrim has been running for more than 5 seconds, and it repeats until the autotrim stops running.
   B. The message "CHECK PITCH TRIM" occurs when the KAP 140 system has detected an out-of-trim condition for more than 15 seconds.
3. The AP button must be depressed for at least 0.25 seconds to engage the autopilot. Upon engagement, the letters AP with a box around them are annunciated on the display.

Approval:

For KAP 140 systems installed in Cessna aircraft, contact your Cessna service center for details.

For KAP 140 systems installed in a Piper PA-28-181, see STC Installation Bulletin P/N 159-03500-0001.

Date: Aug/02
P/N: 800-09491-0000
Honeywell

Installation Bulletin

BULLETIN NO: 491

APPLICABLE TO: Aircraft Equipped with KAP 140 Autopilot System

SUBJECT: Inadvertent Engagement of the KAP 140 Autopilot System

Due to the possibility of inadvertently engaging the KAP 140 autopilot system, the KAP 140 operating software has been updated. This software update makes the operational changes described on page 2 of this bulletin and changes the part number of the KC 140. (See the conversion table below for details.)

Compliance:

This conversion is REQUIRED for any KC 140 located near the throttle quadrant. This action shall be completed by August 31, 2003.

This conversion is recommended for KC 140 units P/N 065-00176-5402, 065-00176-5101, or 065-00176-7702 located in the upper half of the instrument panel, and for units P/N 065-00176-2602 in any location.

All conversions necessitate a new Flight Manual Supplement from the appropriate aircraft manufacturer or an aircraft flight manual supplement from Honeywell for the STC'd aircraft.

CONVERSION TABLE

<table>
<thead>
<tr>
<th>Current P/N</th>
<th>New P/N</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>065-00176-2501</td>
<td>065-00176-2603</td>
<td>Request a warranty exchange unit.</td>
</tr>
<tr>
<td>065-00176-2602</td>
<td>065-00176-2603</td>
<td>Comply with SB KC 140-M1.</td>
</tr>
<tr>
<td>065-00176-5001</td>
<td>065-00176-5403</td>
<td>Comply with Cessna SB 98-22-01, then comply with SB KC 140-M1.</td>
</tr>
<tr>
<td>065-00176-5201</td>
<td>065-00176-5403</td>
<td>Request a warranty exchange unit.</td>
</tr>
<tr>
<td>065-00176-5402</td>
<td>065-00176-5403</td>
<td>Comply with SB KC 140-M1.</td>
</tr>
<tr>
<td>065-00176-7702</td>
<td>065-00176-7703</td>
<td>Comply with SB KC 140-M1.</td>
</tr>
<tr>
<td>065-00176-5101</td>
<td>065-00176-7703</td>
<td>Comply with IB #491.</td>
</tr>
</tbody>
</table>

Date: Aug/02

P/N: 600-08491-0000

IB #491

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The Pilot's Operating Handbook has also changed; see P/N 006-18034-0000, Rev 2, May/2002.

COMPLIANCE

Required for aircraft with the KAP 140 located near the throttle quadrant; recommended for KAP 140s located in the upper half of the instrument panel.

WARRANTY INFORMATION

Warranty credit or payment will be issued for any KC 140 being converted according to this bulletin. For units that are out of warranty, the conversion must be completed by 31 August 2003. If the unit is converted by an appropriately rated Honeywell Service Center, a properly completed warranty claim for four (4.0) hours labor plus parts must be submitted. If the unit is converted by Honeywell in Olathe, Kansas, a properly completed warranty claim for two and one-half (2.5) hours labor for removal and re-installation must be submitted.

We recommend that you contact Warranty Administration to have the warranty record updated for any converted unit.

APPROVAL

This conversion does not affect the original approval.

MANPOWER

Four (4.0) hours labor including testing to complete the conversion.

Two and one-half (2.5) hours labor for unit removal and installation only.

REFERENCES

This bulletin only.

CONVERSION PROCEDURE

1. Build a test harness as shown in Figure 1 using the following parts. This test harness can be reused to program any number of KC 140 units according to this M bulletin.
   A. 37-pin connector P/N 030-01175-0000
   B. 37-pin hood P/N 030-02351-0023
   C. 5 crimp sockets P/N 030-01157-0011
   D. 2 screws P/N 089-06415-0006
   E. Shop-supplied 22AWG wire

Date: Aug/02

P/N: 660-07850-0010

SB KC 140-M1
CAUTION

Any disassembly/assembly of the KC 140 MUST be done at a static-safe workstation. Removed modules should be placed in static-safe bags when not installed in the unit.

2. Remove the unit from the aircraft.
3. Make sure there is no power to the test harness and the laptop or desktop computer.
4. Remove the 8 screws securing the top cover of the KC 140. Note that the Power Supply Board is attached to the top cover via a ribbon cable. Do not disconnect the ribbon cable. With the unit's front panel facing you, fold open the unit top cover to the left side, and place the cover next to the main chassis.
5. Connect the test harness from a 28-volt DC supply to J1401 on the KC 140.
6. Connect the ribbon cable from the Programming Interface Box to P4 on the Main Board. See Figure 2 for the location of P4.
7. Connect the parallel port cable from the Programming Interface Box 25-pin D-sub connector to the PC's parallel port.
8. Insert floppy disk PN 225-00047-0301 into the PC's floppy disk drive.
9. Apply power to the KC 140.
10. Apply power to the PC. It should boot to DOS and begin executing an autoexec.bat file to program the KC 140 flash. It will pause and display the message Ready to begin programming KC 140 Flight Software - Press any key to continue... . . .
11. When prompted by the PC, press ENTER.
12. The PC will begin programming the KC 140 flash ROM; this will take several minutes. When complete, a message will appear on your PC stating FLASH ROM SUCCESSFULLY PROGRAMMED.
13. Shut off power to the KC 140. Remove the ribbon cable from J4 on the Main Board to disconnect the Programming Interface Box.
14. Disconnect the test harness from P1401.
15. Reassemble the KC 140, ensuring that the ribbon cable between the power supply and the Main Board remains completely connected.
IDENTIFICATION PROCEDURE

On the unit's serial tag, attach Tag P/N 057-02203-0003 over the last two digits of the unit part number. This changes the unit's part number as noted below.

<table>
<thead>
<tr>
<th>Old Part Number</th>
<th>New Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>065-00176-2502</td>
<td>065-00176-2603</td>
</tr>
<tr>
<td>065-00176-5402</td>
<td>065-00176-5403</td>
</tr>
<tr>
<td>065-00176-7702</td>
<td>065-00176-7703</td>
</tr>
</tbody>
</table>

Affix a M tag P/N 057-02984-0501 in front of the unit's serial number to indicate that the unit's part number has been changed.

Attach Software Mod Tag P/N 057-05287-0301 in place of the old tag to indicate the change to SW MOD 03/01.

TESTING PROCEDURE

Reinstall the KC 140 in the aircraft.

1. Turn on the avionics power in the aircraft, and verify that the KC 140 passes Preflight Test.
2. Connect the PC to the diagnostic port in the aircraft. Access the diagnostic program and select S - Display SW ID. The Software Identification shall read 722-20014-0301.
3. Run the following test to ensure proper AP engagement/disenagement operation.
   A. Press the AP button, and hold it for at least .25 seconds. The autopilot shall engage.
   B. Momentarily press the AP DISC button on the control wheel. The autopilot shall disengage. If voice messages are enabled, the voice message AUTOPilot shall be heard.
   C. Momentarily press each of the other buttons on the KC 140. The autopilot shall NOT engage.

If Steps 1 through 3C pass, then the software update was successful and the conversion is complete.
MATERIAL INFORMATION

The following three parts are needed for each KC 140 that is converted according to this M bulletin.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>057-02203-0003</td>
<td>1</td>
<td>Flavor Sticker (03)</td>
</tr>
<tr>
<td>057-02984-0501</td>
<td>1</td>
<td>M Decal</td>
</tr>
<tr>
<td>057-05287-0301</td>
<td>1</td>
<td>Software Mod Tag (03/01)</td>
</tr>
</tbody>
</table>

The following parts are needed to convert any number of KC 140 units according to this M bulletin. (These parts are not warranty reimbursable.)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>030-01157-0011</td>
<td>5</td>
<td>20 AWG Crimped Socket</td>
</tr>
<tr>
<td>030-01175-0000</td>
<td>1</td>
<td>37-pin connector</td>
</tr>
<tr>
<td>030-02351-0023</td>
<td>1</td>
<td>37-pin hood</td>
</tr>
<tr>
<td>069-06415-0006</td>
<td>2</td>
<td>Screws, PHP 4-20X3/8</td>
</tr>
<tr>
<td>200-09421-0000</td>
<td>1</td>
<td>Programming Interface Box</td>
</tr>
<tr>
<td>225-00047-0301</td>
<td>1</td>
<td>KC 140 SW Image Disk</td>
</tr>
</tbody>
</table>

NOTE

A revised flight manual supplement is needed for each unit that is converted according to this bulletin. Contact the appropriate aircraft manufacturer for the appropriate revised flight manual supplement, or contact Honeywell for an aircraft flight manual supplement for the STC'd aircraft.

![Figure 1](image-url)

Test Harness

Date:  Aug/02
P/N:  660-07850-0010

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