Honeywell

Business & General Aviation
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Service Memo

SERVICE MEMO NO. 292

Most Honeywell products are designed and manufactured to allow "on-condition maintenance." On-condition maintenance is defined as follows: No maintenance is required until the equipment does not properly perform its intended function. When service is required, a complete performance test should be accomplished following any repair action. Refer to the appropriate unit Maintenance/Overhaul Manual for complete performance test information.

However, certain components of Honeywell Flight Control Systems do require routine maintenance as described in this memo. In addition, routine inspections or performance testing of Honeywell products may be required to comply with Federal Aviation Administration Regulations.

Certain components of BENDIX/KING model KAP 100, KAP 140, KAP 150, KAP 150H, KFC 150, KFC 200, KAP 200, KFC 225, KFC 250/A, KFC 275, KFC 300, KFC 325, KFC 400, and KFC 3100 Flight Control Systems require periodic maintenance as outlined in this paragraph. The following maintenance actions should be accomplished at least once each calendar year (13 months maximum) or every 1000 hours (1100 hours maximum) of operation, whichever comes first.

1. Remove all servo capstan assemblies (model KS 177, KS 178, KS 179, KM 275, KM 275H, KM 276, KM 277, KSM 375, KSM 376, or KSM 475) from the aircraft and check the slip-clutch torque setting. Re-adjust if necessary to the specifications found in the test procedure in the applicable STC Maintenance/Overhaul Manuals.

2. If the aircraft has model KS 270, KS 270A, KS 270C, KS 271, KS 271A, KS 271C, KS 272, KS 272A, KS 272C, KS 273, KSA 373, or KSA 374 Servo Actuators installed, they should be removed from the aircraft. Remove the unit cover, and visually inspect for evidence of corrosion and/or buildup of dirt or other particulate matter which may interfere with servo operation, particularly in the area of the engage solenoid.

   If any foreign matter is found, disassemble the unit solenoid engage plate as necessary, and carefully clean the area using hand-controlled dry air not exceeding 15 psi.

NOTE

Once a unit cover is removed, a complete return-to-service test must be performed before the unit may be re-installed in the aircraft.

3. If the aircraft has model KSA 370, KSA 371, KSA 372, KSA 372T, or KSA 372X Servo Actuators installed, they should be removed from the aircraft. Check the electrical torque-limiting circuitry as outlined in the appropriate sections of the KFC 300 Maintenance/Overhaul Manuals or the individual servo maintenance manual. The gear train of the servo actuator should be inspected and lubricated as necessary.

4. Reinstall servos (if removed) and servo capstans. Inspect bridle cables for wear, corrosion, and distortion. (Refer to FAA Advisory Circular AC 43.13.1A.) Re-tension the bridle cables to the specifications listed in the applicable STC Maintenance Manual, Installation Manual, or aircraft TC data.

5. Perform preflight checks and flight checks as described in the applicable STC Maintenance Manual, Installation Manual, or aircraft TC data.

Some autopilot installations are included on an aircraft's type certificate. Maintenance information for the autopilot system may be located in the aircraft's Maintenance/ Overhaul Manual for autopilot instructions that are included on an aircraft type certificate.

As an alternative to the aforementioned periodic maintenance, the following procedures may be used for these servos: KS 270A, KS 271A, KS 272A, KS 270C, KS 271C, KS 272C, KS 177, KS 178, KS 179.

PERIODIC INSPECTION PROCEDURE
for the KS 17X SERVO

Models covered: KS 177, KS 178, and KS 179 (all flavors).

Cover Removal

CAUTION

Any disassembly/assembly of the KS 17X Servo MUST be done at a static-safe workstation. The inspector and bench should be grounded.

1. Remove the two screws that hold the cover on the unit, and carefully slide the cover off over the wiring harness.
2. Place the servo (without its cover) on the bench so that the inner parts of the unit will not be damaged.

Solenoid/Clutch Inspection

3. Inspect the operation of the solenoid. The plunger should move freely in and out of the solenoid body. There should be no dirt, contamination, or corrosion around the solenoid plunger. (This could impede the actuation of the solenoid.)
4. The release spring should pull the plunger out of the solenoid and against its stop freely and without hesitation.

General Inspection

1. Inspect the wiring for evidence of wear or damage to the insulation. This could cause wire shorts.
2. Inspect the entire servo for any loose hardware or other abnormalities.

Additional Inspection for the KS 177 Pitch Servo

1. Position the KS 177 Servo so that the solenoid plunger is oriented vertically with the motor up.
2. With finger or thumb, apply pressure to the side of the pinion gear. The motor should rock back and forth, activating the 2 trim-sensing microswitches when pressure is applied, and deactivating the switches when pressure is removed. The microswitches should both be deactivated in the hands-off condition.

Cover Replacement

1. Carefully slide the cover back on over the wiring harness onto the unit the same way as it was originally.
2. Install the screws using a low strength thread-locking compound such as Loctite 222 or Loctite 242.

PERIODIC INSPECTION PROCEDURE
for the KS 27XA SERVO

Models covered: KS 270A, KS 271A, and KS 272A.

Cover Removal

CAUTION

Any disassembly/assembly of these servos MUST be done at a static-safe workstation. The inspector and bench should be grounded.

1. Remove the two screws that hold the cover on the unit, and carefully slide the cover off over the wiring harness.
2. Place the servo (without its cover) on the bench so that the inner parts of the unit will not be damaged.

Solenoid/Clutch Inspection

1. Inspect the operation of the solenoid. The plunger should move freely in and out of the solenoid body. There should be no dirt, contamination, or corrosion around the solenoid plunger. (This could impede the actuation of the solenoid.)
2. The release spring should pull the plunger out of the solenoid and against its stop freely and without hesitation.

General Inspection

1. Inspect the wiring for evidence of wear or damage to the insulation. This could cause wire shorts.
2. Inspect the entire servo for any loose hardware or other abnormalities.

Additional Inspection for the KS 270A Pitch Servo

1. Position the KS 270A Servo so that the solenoid plunger is oriented vertically with the motor up.
2. With finger or thumb, apply pressure to the side of the pinion gear. The motor should rock back and forth, activating the 2 trim-sensing microswitches when pressure is applied, and deactivating the switches when pressure is removed. The microswitches should both be deactivated in the hands-off condition. The beryllium copper springs should have with no signs of cracking at corner bend.

Cover Replacement

1. Carefully slide the cover back on over the wiring harness onto the unit to its original position.
2. Install the screws using a low-strength thread-locking compound such as Loctite 222 or Loctite 242.

PERIODIC INSPECTION PROCEDURE
for the KS 27XC SERVO

Models covered: KS 270C, KS 271C, KS 272C (all flavors).

Cover Removal

CAUTION

Any disassembly/assembly of the KS 27XC Servo MUST be done at a static-safe workstation. The inspector and bench should be grounded.

1. Remove the two screws that hold the cover on the unit, and carefully slide the cover off over the wiring harness.
2. Place the servo (without its cover) on the bench so that the inner parts of the unit will not be damaged.
3. For the KS 270C Servo, take care not to move the positions of any wires, wire ties, or the counterweight spring clamp. Their positions are preset at the factory, and are important to insure proper performance of the unit.

Solenoid/Clutch Inspection

1. Inspect the operation of the solenoid. The plunger should move freely in and out of the solenoid body. There should be no dirt, contamination, or corrosion around the solenoid plunger. (This could impede the actuation of the solenoid.)
2. The release spring should pull the plunger out of the solenoid and against its stop freely and without hesitation. With hands off the solenoid plunger and spring, the pinion gear should spin with no interference from the clutch gears.

General Inspection

1. Inspect the wiring for evidence of wear or damage to the insulation. This could cause wire shorts.
2. Inspect the entire servo for any loose hardware or other abnormalities.

Additional Inspection for the KS 270C Pitch Servo

1. Position the KS 270C Servo so that the baseplate is on the bottom side of the unit.
2. While holding on to the top section of the motor, gently rotate the motor. It should rotate freely side to side a slight amount before touching and beginning to deflect the trim-sensing strain gauge beam.

Cover Replacement

1. Carefully slide the cover back on over the wiring harness onto the unit to its original position.
2. Install the screws using a low-strength thread-locking compound such as Loctite 222 or Loctite 242.