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## **DWG 35-230 INSTALLATION INSTRUCTIONS FOR DUAL CONTROL**

DRAWING DATE - 1 MAY 96 Sheet 1 of 2

REVISION DATE - 1 SEP 99 REV-C

### **GENERAL**

These instructions are intended as a supplement to Beech Service Manuals for the removal of Beech Single (or Dual) Control Arm and installation of the Cygnet Aerospace Dual Control.

Refer to Beech Illustrated Parts Catalog and Service Manuals for specific model aircraft on which the Cygnet Dual Control is to be installed.

The Cygnet Aerospace Dual Control is identical in function and operation to the Beech Dual Control Arm. It is intended to be used with single control column Beech aircraft as an upgrade to the single control arm as well as replacement for the dual control arm.

The existing Ram's Horn control wheels will be removed and re-installed on the Cygnet Aerospace Dual Control. Beech control arms with non-Ram's Horn style wheels will require pilot and copilot Ram's Horn control wheels. These control wheels have optional parts such as electrical switches and bezel mounted clocks. Use Beech Illustrated Parts Catalog and Service Manuals for further reference of optional parts and attached components.

**CAUTION: The Cygnet Aerospace Dual Control should not be installed in any aircraft on which other approved modifications are incorporated, unless it is determined that the inter-relationship between this installation and any of those previously incorporated approved modifications will not introduce any adverse effect upon the airworthiness of the aircraft. Suitability is to be determined by the installer.**

### **INSTALLATION KIT PARTS LIST:**

1 ea. Dual Control 35-221

#### **1. REMOVE EXISTING CONTROL WHEEL(S) FROM BEECH CONTROL UNIT.**

If existing Beech Ram's Horn style control wheel(s) will be re-installed on the Cygnet Dual Control, remove wiring attached to the existing Beech Control Arm housing. Remove existing Ram's Horn control wheel(s) from the adapter flange.

If the existing Beech control wheel(s) will be replaced: Disconnect wiring attached to the Beech Control Arm for later re-installation.

**Note:** The Cygnet Aerospace Dual Control features 3 hole mounting flanges and requires the use of Ram's Horn style control wheels. Use left and right hand Ram's Horn Control wheels and associated hardware listed in Beech Illustrated Parts Catalogs for model aircraft to be installed.

#### **2. BEECH CONTROL ARM REMOVAL**

Remove Upper (35-524238-4) and Lower Control Arm (35-524238-12) retainers. The Beech Control Arm may now be removed.

#### **3. CLEANING, INSPECTION AND LUBRICATION**

Clean inspect and lubricate the control column end where the original control wheel was installed. Note: This is a good opportunity to check the condition and lubricate the column rollers.

#### **4. CONTROL UNIT ORIENTATION**

The Cygnet Aerospace, Dual Control Unit MUST be installed with the "V" oriented appropriately up or down as intended by Beech for the specific model aircraft. Determine correct orientation from Beech Service and Parts Manuals. Single engine aircraft generally left the factory with yoke "V" down (arms drooping down). Twin engine aircraft have "V" oriented up (arms up). Raytheon technical support (800) 429-5372.



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**DWG 35-230, REV-C, Sheet 2 of 2**

#### **5. CONTROL WHEEL INSTALLATION**

Install Ram's Horn style control wheels on the Cygnet Aerospace Dual Control with hardware and associated parts per Beech Illustrated Parts Manual.

#### **6. CHAIN POSITION**

Center chain link orientation must be verified visually. Remove inspection panel on the pilot side by removing 10 retaining screws. Rotate the control wheel to the horizontal position where the chain tightening turnbuckle screws are closest to the line between the two center inspection panel screw holes. (This is to allow full aileron travel without reaching the limit of chain travel). In general, if ailerons have full stop to stop travel and the internal chain end block does not make contact with the sprocket, then the installation is correct.

#### **7. CYGNET DUAL CONTROL INSTALLATION**

Install Cygnet Aerospace Dual Control Unit, part number 35-221, on the column. Replace Beech Upper (35-524238-4) and Lower Control Arm Retainers (35-524238-12) and hardware.

#### **8. LOCK PIN INSTALLATION**

Position Cygnet Aerospace, Dual Control Unit on the column to where the control wheels are at the same horizontal level. Install Cygnet Lock Pin Assy. (35-213), Lock Washer (AN365C416) and Check Nut (AN316-4R) 2 places. These are factory installed in the dual yoke and only need to be tightened during installation. Back off check nuts, tighten set screws with 1/8" Allen driver. Then tighten lock nuts.

#### **9. FUNCTIONAL CHECK**

- a). Rotate control wheels to CHECK FULL RANGE OF AILERON TRAVEL.
- b). VISUALLY CHECK DUAL CONTROL FOR LIMIT OF INTERNAL CHAIN TRAVEL.
- c). CHECK FULL FORWARD LIMIT OF ELEVATOR MOTION FOR ANY INTERFERENCE WITH INSTRUMENT PANEL.
- e). Re-install inspection panel removed previously in step #6. Use these screws to attach control wheel wiring clamps per Beech installation. If using longer screw, make sure screw does not interfere with internal chain. It is permissible to drill and tap holes along the centerline of the chain cover panels.

#### **10. AILERON TRIMMER INSTALLATION**

Aircraft requiring installation of Beech Aileron Trimmer Control Assembly (ATC35-107 or similar), remove 3 screws and front cover panel. Install Aileron Trimmer with Beech hardware.

#### **11. REVISE AIRCRAFT RECORDS**

- a). Enter appropriate record of installation in Aircraft Airframe Log Book.
- b). Revise aircraft weight and balance records to reflect all added and removed components if required.

**Dual Yoke weight is 6.6 LBS. Additionally, Ram's Horn Control Wheels are 2 LBS each.**

#### **12. MAINTENANCE INSTRUCTIONS:**

No Change. All maintenance and inspection intervals identical to Beech Service Manual.

#### **13. REPLACEMENT PARTS AND SERVICE**

Refer to Cygnet Aerospace Drawing 35-221, Assembly Detail, for any replacement parts.