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DWG 35-230 INSTALLATION INSTRUCTIONS FOR DUAL CONTROL

DRAWING DATE - 1 MAY 96 page 1 of 2
REVISION DATE – 15 MAR 2017 REV-E

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 or other approved data 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 only wiring clamps attached to the existing Beech Control Arm housing. Remove existing Ram's Horn control wheel(s) from the adapter flange. Disconnect wiring attached to the Beech Control Arm for later re-installation ONLY IF the existing Beech control wheel(s) will be replaced.

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 or other approved data 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: Inspect for correct rigging of the interlocking end of control column inner tube. The flat interlocking tab should be oriented vertically when the ailerons are neutral. Also 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 is 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) but may be installed "V" up for additional clearance. Twin engine aircraft ALWAYS have "V" oriented up (arms up).

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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 or other approved data.

6. CHAIN TENSION TURNBUCKLE POSITION - Center chain link orientation must be verified visually. Remove inspection panel(s) on the pilot side by removing the cover retaining screws. Rotate the control wheel full left to full right aileron 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, part number 35-221, on the column. Re-install Beech Upper (35-524238-4) and Lower Control Arm Retainers (35-524238-12) and hardware.

8. LOCK PIN INSTALLATION - Position Cygnet Aerospace, Dual Control on the column to where the control wheels are at the same horizontal level. Serial number 2121 and after use a self-locking thread insert and set screws only. Torque 50-60 in-lbs.
Prior models use Cygnet Lock Pin Assy. (35-213), Lock Washer (AN365C416) and Check Nut (AN316-4R) 2 places. Back off check nuts; tighten set screws with 1/8" Allen driver. Then tighten lock nuts. NOTE: Locking set screws do not line up with previously used holes for Beech spring loaded locking pins.

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 #8-32 screws and two tapped holes in the covers to attach control wheel wiring clamps per Beech installation. Note: Make certain screw does not protrude more than 1/8 inch beyond the inside face of the cover plate possibly interfering 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 (35-380072-1), remove 3 screws from round dust cover panel on dual control if installed. Trimmer is attached to housing with three #8-32, flat head screws. Access to these screws can be gained by unscrewing the two halves of the trimmer knob. Since it is reverse threaded, one must **tighten** the two knob halves to loosen it. The parting line is between the knurl on the knob outside diameter. Early version knobs have a series of dimples instead of knurling. Do NOT remove the retainer clip holding the front plastic bezel because there is no access to the screws under the springs.

11. REVISE AIRCRAFT RECORDS
a). Enter appropriate record of installation in Aircraft Airframe Log Book reflecting the installation.
b). Revise aircraft weight and balance records/equipment list to reflect all added and removed components. **Dual Yoke weight is 6.6 LBS. Additionally; Ram's Horn Control Wheels are 2 LBS each. Datum locations for specific models are listed in TCDS data 400 section. See http://www.faa.gov/aircraft/ select TCDS.**

12. MAINTENANCE INSTRUCTIONS:
No Change. All maintenance and inspection intervals identical to Beech Service Manual.

13. REPLACEMENT PARTS AND SERVICE

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Contact Cygnet Aerospace for replacement parts or technical assistance.