

# TEST PROJECT AIRCRAFT MAINTENANCE

WSC2017\_TP14\_M5\_PFCU\_actual

Submitted by:

Name: All Experts at WSC2015





## COMPETITOR'S WORKING DOCUMENT

The following is a list of sections or information that must be included in all Test Project proposals that are submitted to WorldSkills.

<b>Objective</b>	To test the Competitor's skill for inspecting, removing and reinstalling components in an airworthy condition.
<b>Time allotted</b>	4 hours
<b>Process:</b>	
<b>1. Preparation</b> (a) Access Panels (b) Zonal Examination HST (c) Defect report (d) Ensure Hydraulic pressure is disconnected.  (e) Control Check Rig	(a) Remove as required, store safely on racking (b) <del>Inspect</del> the complete HST for airworthiness condition. (c) Complete the defect report and hand it over to the expert. (d) Ensure disconnected and depleted by confirming with Expert. Display Warning Sign. (e) IAW (Chap 67-00 para 2.5)
NOTE: Record the defects detected during the work process to the Defect Report #2	
<b>2. Removal</b> (a) Powered Flying Control Unit (PFCU) flexible hydraulic hoses  <b><u>NB</u> Ensure that each attachment bolt and nut are kept as a set to avoid misalignment of split pin holes on refit.</b> (b) PFCU input control rod (c) PFCU Fixed end and Ram end attachment bolts. (d) PFCU (e) PFCU (f) PFCU (g) PFCU Eye End Spherical Bearing	(a) Remove wire locking from the PFCU unions and disconnect from the PFCU  (b) Remove split pin and disconnect from the PFCU input lever (c) Remove split pins, nuts and washers. Note position of thick and thin washers (d) Support body. Remove attachment bolts x2 (e) Remove from HST (f) Examine, Eye End spherical bearing (g) Clean and lubricate with OM150.



<p><b>3. Fit</b></p> <ul style="list-style-type: none"> <li>(a) PFCU</li> <li>(b) PFCU attachment bolts</li>   <li>(c) PFCU Input control rod</li> <li>(d) PFCU Hydraulic hoses</li> </ul>	<ul style="list-style-type: none"> <li>(a) Position in the HST and align the eye ends.</li> <li><b>(b) Fit ensuring correct bolt orientation and washer position. Do not torque load the nuts or fit split pins at this stage.</b></li> <li>(c) Connect. <b>Do not torque load the nuts or fit split pins at this stage.</b></li> <li>(d) Connect and tighten. Ensure hoses are correctly routed during the tightening procedure.</li> </ul>
<p><b>4. Inner Bell Crank Removal</b>  <b>Ensure that each attachment bolt and nut is kept as a set to avoid misalignment of split pin holes.</b></p> <ul style="list-style-type: none"> <li>(a) Inner Bell Crank assembly Input and output control rod Attachment bolts.</li> </ul> <p><b>NB During operation 4.(b) note which of the 2 sets of holes the mounting bolts are fitted into. They must be refitted in to the alternative set of holes.</b></p> <ul style="list-style-type: none"> <li>(b) Inner Bell Crank pivot block</li> <li>(c) Inner Bell Crank assembly</li> </ul>	<ul style="list-style-type: none"> <li>(a) Remove split pins and disconnect the input and output Control rods from the inner bell crank input and output lever arms.</li>   <li>(b) Remove mounting bolts x2, remove the Inner bell crank assembly from the HST.</li> <li>(c) Remove the split pin, nut and washer from the Pivot block stud and remove the Bell crank lever arm from the pivot block.</li> </ul>
<p><b>5. Inner Bell Crank Examination</b></p> <ul style="list-style-type: none"> <li>(a) Inner Bell Crank Assembly</li> <li>(b) Bell Crank Lever</li>   <li>(c) Bell Crank Lever pivot Block Stud</li> <li>(d) Bell Crank Lever and pivot block</li>   <li>(e) Bell crank assembly</li> </ul>	<ul style="list-style-type: none"> <li>(a) Remove the split pin, nut and washer from the Pivot Block Stud and remove the Bell Crank Lever Arm from the Pivot Block.</li> <li>(b) Clean and examine, ensure No radial movement exists between the bell crank and the nylon bush.</li> <li>(c) Examine for thread damage.</li> <li>(d) Reassemble; refit the nut and washer, torque load to the value in the HST torque table. (Chap 07-00). Fit the split pin.</li> <li>(e) Lubricate with XG287 - ensure free to rotate.</li> </ul>
<p><b>6. Inner Bell Crank Fit</b></p> <ul style="list-style-type: none"> <li>(a) Inner Bell Crank Assembly</li> <li>(b) Pivot Block</li>   <li>(c) Pivot mounting bolts</li> <li>(d) Inner bell crank Output/PFCU input Control rod</li> </ul>	<ul style="list-style-type: none"> <li>(a) Locate over alternate mounting holes.</li> <li>(b) Fit mounting bolts (x2) Hand tighten bolts then torque load to value given in HST torque tables. (Chap 07-00)</li> <li>(c) Wire-lock bolts.</li> <li>(d) Re connect to the Inner Bell Crank assembly output Lever.  Fit the attachment bolts and nuts, torque load to value given in HST torque tables. (Chap 07-00).</li> </ul>



	Fit the split pin.
<b>7. Fit (continued)</b> (a) Outer Bell Crank assembly  (b) Outer Bell crank Output control rod (c) Inner Bell Crank Input control rod	(a) Disconnect outer bell crank/inner bell crank input control rod and remove from the HST (b) Remove all wire locking and slacken both eye end locknuts (c) Reconnect input control rod. <b>Do not torque load the nuts or fit split pins at this stage.</b>
<b>8. Outer Bell Crank Removal</b> (a) Outer Bell Crank Input Control Rod  (b) Outer Bell Crank mounting bolts  (c) Outer Bell Crank pivot block	(a) Disconnect control rod from Outer Bell crank/torque tube output lever. (b) Remove mounting bolts x2 Remove outer bell crank assembly from HST. (c) Remove split pin, nut and washer from the pivot block stud and remove the bell crank lever arm from the pivot block.
<b>9. Examination</b> (a) Outer Bell Crank Assembly (b) Bell Crank Lever  (c) Bell Crank pivot block stud (d) Bell crank lever and pivot block  (e) Bell crank assembly	(a) Remove the split pin, nut and washer from the Pivot Block Stud and remove the Bell Crank Lever Arm from the Pivot Block. (b) Clean and examine, ensure no radial movement exists between the bell crank and the nylon bush. (c) Examine for thread damage. (d) Reassemble; refit the nut and washer, torque load to the value in the HST torque table (chap 07-00). Fit the split pin. (e) Lubricate with XG287 - ensure free to rotate.
<b>10. Outer Bell Crank Fit</b>  (a) Outer Bell Crank Assembly (b) Pivot Block  (c) Pivot mounting bolts (d) Outer bell crank Output/inner bell crank input Control rod	(a) Locate over alternate mounting holes. (b) Fit mounting bolts (x2) Hand tighten bolts then torque load to value given in HST torque tables. (Chap 07-00) (c) Wire-lock bolts. (d) Re connect to the Inner Bell Crank assembly output Lever. Fit the attachment bolts and nuts.
<b>11. Outer Bell Crank Control adjustment</b> (a) Torque Tube assembly  (b) Torque Tube Output control rod  (c) Rigging pin (d) Torque Tube Output control rod	(a) Disconnect output control rod and remove from HST (b) Remove all wire locking and slacken both eye end locknuts.  (c) Ensure removed



<p>(e) Torque tube Output control rod</p> <p>(f) Torque tube Output Control rod eye ends</p> <p>(g) Torque tube Output control rod</p> <p>(h) Refit output control rod</p>	<p>(d) Reconnect to the torque tube output lever and outer bell crank lever. Hand tight only</p> <p>(e) Adjust length to align witness marks on the outer bell crank.</p> <p>(f) Ensure in safety, tighten locknuts.</p> <p>(g) Remove from HST and wire lock locknuts.</p> <p>(h) Reconnect to the outer bell crank input lever to the torque tube output lever. <b>Do not torque load the nuts or fit split pins at this stage.</b></p>
<p><b>12.Inner Bell Crank Control adjustment</b></p> <p>(a) Input control rod</p> <p>(b) Control Rod</p> <p>(c) Rigging Pin</p> <p>(d) Input control rod eye ends</p> <p>(e) Input control rod</p> <p>(f) Input control rod</p>	<p>(a) Ensure connected to the outer bell crank output lever.</p> <p>(b) Adjust length to align witness marks on inner bell crank.</p> <p>(c) Ensure sliding fit.</p> <p>(d) Ensure in safety, tighten locknuts.</p> <p>(e) Remove from HST and wire lock the lock nuts.</p> <p>(f) Reconnect to the outer bellcrank output lever and the inner bellcrank input lever. <b>Do not torque load the nuts or fit split pins at this stage.</b></p>
<p><b>13.Control Rods Final Fit and freedom of movement check</b></p> <p>(a) Torque tube assembly input control rod</p> <p>(b) Control System</p> <p>(c) Torque tube assembly input control rod</p> <p>(d) Control Check Rig (Rigging pin)</p>	<p>(a) Disconnect (Chap 67-10)</p> <p>(b) Ensure system operates smoothly over 'full and complete range of movement'.</p> <p><b>(c) Reconnect and torque nuts to value in HST table (Chap 07-00) and fit split pin. Request Judge check for alignment of the system.</b></p> <p>(d) In Accordance With (IAW) Chap 67-00 para 2.5</p>
<p><b>14.PFCU Final Fit</b></p> <p>(a) PFCU Hydraulic Hoses</p> <p>(b) PFCU attachment bolts x2</p> <p>(c) PFCU input control rod attachment bolt</p> <p>(d) All control rods</p> <p>(e) Control Check Rig</p>	<p>(a) Wire lock unions x4</p> <p>(b) Torque nuts to value in HST table (Chap 07-00) and fit split pin.</p> <p>(c) Torque nut to value in HST table (Chap 07-00) and fit split pin</p> <p>(d) All disturbed control rods Torque load to the value given in the HST table (chap 07-00) and split pin.</p> <p>(e) IAW (Chap 67-00 para. 2.5)</p>
<p><b>15.Recovery</b></p> <p>(a) Rigging pin</p> <p>(b) Access panels</p>	<p>(a) Remove if Fitted</p> <p>(b) Carry out internal Airworthiness checks and refit all removed panels (Chap 07-10)</p>



	Torque load fasteners to torque values in the HST torque table (Chap 07-00)
<b>16. Defect report</b>	Complete the defect report and hand it over to the expert



## DEFECT REPORT – ZONAL EXAMINATION

Aircraft type: \_\_\_\_\_

Registration #: \_\_\_\_\_

Date opened: \_\_\_\_\_

DEFECT #	DEFECT DESCRIPTION	INITIALS

THE MAINTENANCE DESCRIBED HEREIN HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS.

<b>Signature:</b>	<b>Print Name:</b>	<b>License Number:</b>	<b>Date:</b>



## DEFECT REPORT – WORK PROCESS

Aircraft type: \_\_\_\_\_

Registration #: \_\_\_\_\_

Date opened: \_\_\_\_\_

DEFECT #	DEFECT DESCRIPTION	INITIALS

THE MAINTENANCE DESCRIBED HEREIN HAS BEEN PERFORMED IN ACCORDANCE WITH THE APPLICABLE AIRWORTHINESS REQUIREMENTS.

<b>Signature:</b>	<b>Print Name:</b>	<b>License Number:</b>	<b>Date:</b>