

Test Project

Aircraft Maintenance

Module C: Mechanical Defect Rectification

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Marking Scheme

Module C – Mechanical Defect Rectification	Marks
C1a. Preparation	0.80
C1b. Zonal Inspection (record on task card)	1.50
C2. PFCU Removal & Examination	1.00
C3. PFCU Refit	0.90
C4. Inner Bell Crank Removal	0.30
C5. Inner Bell Crank Examination	0.80
C6. Inner Bell Crank Fit	0.60
C7. Fit (continued)	0.20
C8. Outer Bell Crank Removal	0.40
C9. Examination	0.70
C10. Outer Bell Crank Fit	0.60
C11. Outer Bell Crank Control Adjustment	0.80
C12. Inner Bell Crank Adjustment	0.60
C13. Control Rods Final Fit and freedom of movement check	0.90
C14. PFCU Final Fit	1.70
C15. Recovery	2.20
C16. Task Card	1.00
Total	15

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.

NAME	(First)	(Last)	
COUNTRY			
START TIME		END TIME	

Objective

To test the Competitor's skill for inspecting, removing and reinstalling components in an airworthy condition.

Time Allotted

Four hours

REFERENCE DOCUMENT

Genskill Technical Manual 97500-000-3001 Issue 001.

Process

Notes:

1. Follow the Process as laid out below and, use the Reference Documents as and when required.
2. Competition Information Leaflet GST001 offers information in support of Cleaning and Examination.

1. Preparation (a) Access Panels (b) Zonal Examination of Gen Skill Trainer "GST" (c) Defect report (d) Ensure Hydraulic pressure is dissipated. (e) Control Check Rig	(a) Remove and store safely on racking. (b) Inspect the complete GST for airworthiness condition. (c) Complete the 'Defect Report - Zonal Examination' and hand it over to the Expert. (Do not rectify the defects) (d) Ensure disconnected and depleted by confirming with Expert. Display Warning Sign. (e) iaw GenSkill-AO-E27-00-00-00A-322A.
NOTE: Record the defects detected during the following work process to the Defect Report; Work Process	
2. PFCU Removal & Examination (a) Powered Flying Control Unit (PFCU) flexible hydraulic hoses NB Ensure that each attachment bolt and nut are kept as a set to avoid misalignment of split pin holes on refit.	(a) Remove wire locking from the PFCU unions and disconnect from the PFCU adapters. (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

<ul style="list-style-type: none"> (b) PFCU input control rod (c) PFCU Fixed end and Ram end attachment bolts (2x). (d) PFCU (e) PFCU (f) PFCU (g) PFCU Eye End Spherical Bearing 	<ul style="list-style-type: none"> (d) Support body. Remove attachment bolts x2 (e) Remove from GST (f) Clean and Examine (g) Clean and lubricate with Multipurpose Grease.
3. PFCU Refit <ul style="list-style-type: none"> (a) PFCU (b) PFCU attachment bolts (c) PFCU Input control rod (d) PFCU Hydraulic hoses 	<ul style="list-style-type: none"> (a) Position in the ST and align the eye ends. (b) Fit ensuring correct bolt orientation and washer position. Do not torque load the nuts or fit split pins at this stage. (c) Connect. Do not torque load the nuts or fit split pins at this stage. (d) Connect and tighten. Ensure hoses are correctly routed and not twisted during the tightening procedure.
4. Inner Bell Crank Removal <p>Ensure that each attachment bolt and nut is kept as a set to avoid misalignment of split pin holes.</p> <ul style="list-style-type: none"> (a) Inner Bell Crank assembly input and output control rod attachment bolts. <p>NB During operation 4.(b) note which of the 2 sets of holes the mounting bolts are fitted into. They must be refitted into the alternative set of holes on refit.</p> <ul style="list-style-type: none"> (b) Inner Bell Crank pivot block (c) Inner Bell Crank assembly 	<ul style="list-style-type: none"> (a) Remove split pins and disconnect the input and output Control rods from the inner bell crank input and output lever arms. (b) Remove mounting bolts x2, remove the Inner bell crank assembly from the GST. (c) Remove the split pin, nut and washer from the Pivot block stud and remove the Bell crank lever arm from the pivot block.
5. Inner Bell Crank Examination <ul style="list-style-type: none"> (a) Bell Crank Lever (b) Bell Crank Lever pivot Block Stud (c) Bell Crank Lever and pivot block (d) Bell crank assembly 	<ul style="list-style-type: none"> (a) Clean and examine, ensure no radial movement exists between the bell crank and the nylon bush. (b) Examine for thread damage. (c) Reassemble; refit the nut and washer, tighten as per The Outer Bell Crank. Fit the split pin using around the nut castellation technique. (d) Lubricate with Multipurpose Grease - ensure free to rotate.

6. Inner Bell Crank Fit (a) Inner Bell Crank Assembly (b) Pivot Block (c) Pivot mounting bolts (d) Inner bell crank Output/PFCU input Control rod	(a) Locate over alternate mounting holes. (b) Fit mounting bolts (x2) hand tighten bolts then torque load to 5 lbf-ft. (c) Wire-lock bolts. (d) Re connect to the Inner Bell Crank assembly output Lever.
7. Fit (continued) (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 GST (b) Remove lockwire and slacken both eye end locknuts (c) Reconnect input control rod. Do not torque load the nuts or fit split pins at this stage.
8. Outer Bell Crank Removal (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 GST. (c) Remove split pin, nut and washer from the pivot block stud and remove the bell crank lever arm from the pivot block.
9. Examination (a) Bell Crank Lever (b) Bell Crank pivot block stud (c) Bell crank lever and pivot block (d) Bell crank assembly	(a) Clean and examine, ensure no radial movement exists between the bell crank and the nylon bush. (b) Examine for thread damage. (c) Reassemble; refit the nut and washer, tighten in accordance with GenSkills-AO-E27-11-03-00A-720A-a page 3. Fit the split pin using around the nut castellation technique. (d) Lubricate with Multipurpose Grease - ensure free to rotate.
10. Outer Bell Crank Fit (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 5 lbf-ft. (c) Wire-lock bolts. (d) Re connect to the Inner Bell Crank assembly output Lever. Fit the attachment bolts and nuts.

<p>11. Outer Bell Crank Control adjustment</p> <p>(a) Torque Tube assembly</p> <p>(b) Torque Tube Output control rod</p> <p>(c) Rigging pin</p> <p>(d) Torque Tube Output control rod</p> <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>(a) Disconnect output control rod and remove from GST</p> <p>(b) Remove all wire locking and slacken both eye end locknuts.</p> <p>(c) Ensure removed</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 GST and wire lock locknuts.</p> <p>(h) Reconnect to the outer bell crank input lever to the torque tube output lever. Do not torque load the nuts or fit split pins at this stage.</p>
<p>12. Inner Bell Crank Control adjustment</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 in PFCU input lever.</p> <p>(d) Ensure in safety, tighten locknuts.</p> <p>(e) Remove from GST and wire lock the lock nuts.</p> <p>(f) Reconnect to the outer bellcrank output lever and the inner bellcrank input lever. Do not torque load the nuts or fit split pins at this stage.</p>
<p>13. Control Rods Final Fit and freedom of movement check</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) Rigging pin</p> <p>(e) Control system</p>	<p>(a) Disconnect.</p> <p>(b) Ensure system operates smoothly over complete range of movement.</p> <p>Request Expert to check</p> <p>(c) Reconnect and tighten in accordance with Genskill AO-E27-11-02-00A-720A-A page 4. Fit split pin using around the nut castellation technique.</p> <p>(d) Fit to PFCU input lever.</p> <p>(e) Ensure witness marks align.</p> <p>Request Expert to check for alignment of the system and rig pin.</p>
<p>14. PFCU Final Fit</p> <p>(a) PFCU Hydraulic Hoses</p>	<p>(a) Wire lock unions x4</p>

<ul style="list-style-type: none"> (b) PFCU attachment bolts x2 (c) PFCU input control rod attachment bolt (d) All control rods (e) Control Check Rig 	<ul style="list-style-type: none"> (b) Torque nuts to 55lbf/in and fit split pin. (c) Torque nut to 55lbf/in and fit split pin. (d) All disturbed control rods Torque load to the values given in the Genskill Technical Manual 97500-000-3001 Issue 001 and fit split pins. (e) IAW GenSkill-AO-E27-00-00-00A-322A.
15. Recovery <ul style="list-style-type: none"> (a) Rigging pin (b) Access panels 	<ul style="list-style-type: none"> (a) Remove if fitted (b) Carry out internal Airworthiness checks and refit all removed panels. <p>Inform Expert of completion</p>
16. Task Card	Complete Task Card and then hand over to the Expert

C1b - Zonal Inspection

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