

CF-105 SERVICE DATA

Utility Hydraulics System

Wheel Brakes Circuit

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UNLIMITED

section 7

UTILITY HYDRAULICS SYSTEM

WHEEL BRAKES CIRCUIT

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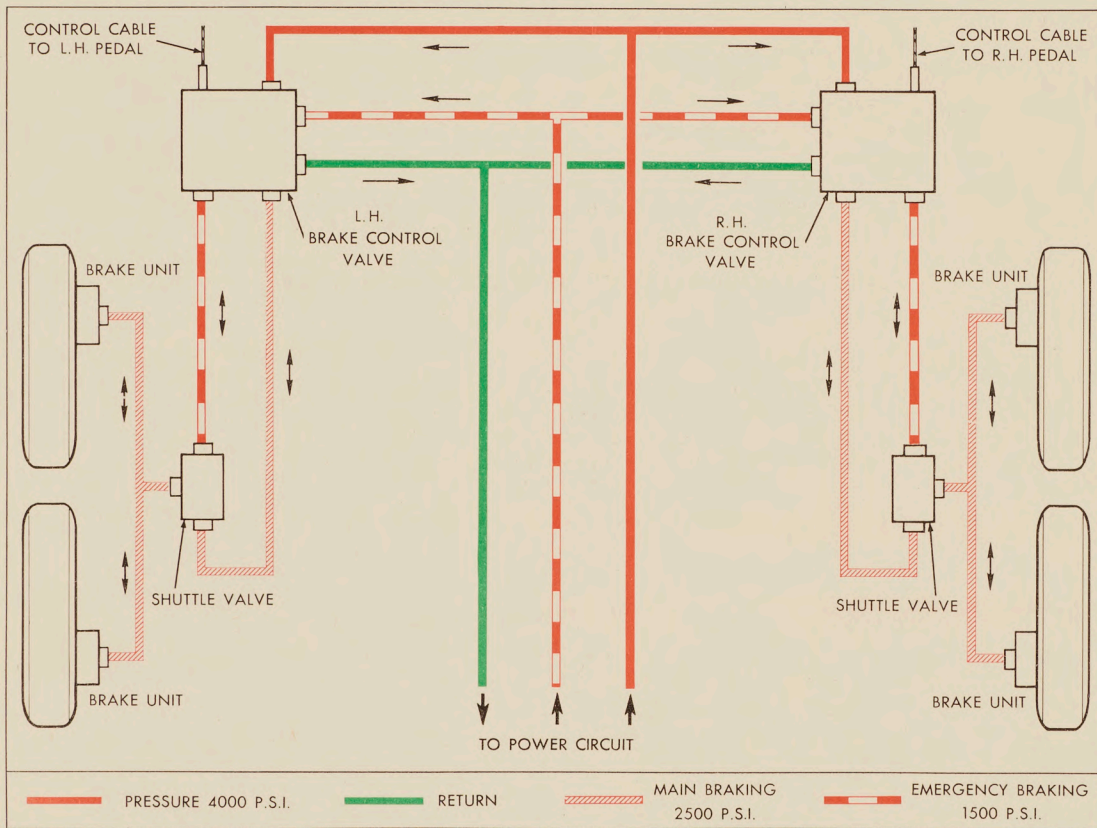
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 by authority of _____ (date) _____
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7M1-2201-1

FIG. 1 WHEEL BRAKES - SCHEMATIC

7M1-3K13-2-2

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SYSTEM DATA SHEET

| SYSTEM | SUB-SYSTEM | AIRCRAFT EFFTY | REF. NO. |
|---|--------------|----------------|----------|
| UTILITY HYDRAULICS | WHEEL BRAKES | 25201 | 19-3 |
| <p>DESCRIPTION</p> <p>General</p> <ol style="list-style-type: none"> 1. The wheel brakes circuit consists of a normal braking system and an emergency braking system. The emergency system takes over automatically from the normal system whenever the pressure to the normal system drops below 1000 psi. The brakes are automatically applied during retraction of the landing gear. 2. Each pair of brake units on the main landing gear is operated independently by control valves in the armament bay. Differential and proportional braking is obtained by foot pressure on a brake pedal on each of the pilot's rudder pedals. The brake pedals are mechanically connected to the control valves by cable runs. For parking, the brake pedals can be held in the on position by depressing the brake pedals, pulling a handle on the instrument panel marked PARKING, and releasing the brake pedals before releasing the parking brake handle. 3. Two warning lights on the pilot's right hand console are operated by pressure switches in the power circuit. One, marked UTIL HYD, warns the pilot that the emergency braking system is coming into operation and the other, marked EMERG BRAKE HYD, warns the pilot that the emergency brake pressure has failed or has been exhausted. A limited number of brake applications can be obtained after the engines have been shut down, from the charge in the accumulators in the power circuit. 4. Steel pipelines incorporating swivel and expanding joints are used to allow movement of the landing gear. <p>Brake Control Valves</p> <ol style="list-style-type: none"> 5. Fluid from the power circuit main pressure line at pressures up to 4000 psi and from the power circuit reduced pressure line at pressures up to 1500 psi is delivered to each of the two brake control valves. 6. Two spring operated spool valves, one for normal braking and one for emergency braking are contained in each control valve. A pressure operated spring-loaded spool valve is also installed in each control valve to automatically change over from normal to emergency, or from emergency to normal, according to the pressure of the fluid in the power circuit. 7. When the pressure in the power circuit is above 1000 psi the change-over valve is held by fluid pressure in the normal braking position, allowing pressure fluid from the main pressure line in the power circuit to be delivered to the normal brake valve. From the normal brake valve pressure fluid at pressures up to 2500 psi is delivered into the main brake pipeline. 8. If the pressure in the main pressure line of the power circuit falls below 1000 psi, the pressure operated change-over valve is moved by spring pressure to the emergency braking position, allowing pressure fluid from the reduced pressure line in | | | |
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the power circuit to be delivered to the emergency brake valve. From the emergency brake valve, fluid at pressures up to 1500 psi is delivered into the emergency brake pipeline.

9. A solenoid valve, operated by a micro-switch on the main landing gear, is also installed in each control valve to operate the main braking system when the landing gear is being retracted. When the solenoid valve is energised, pressure fluid operates the main brake valve and applies the wheel brakes.

Shuttle Valves

10. From each control valve a main brake pipeline and an emergency brake pipeline is led to a shuttle valve on the rear brake torque rod of each main landing gear. The shuttle valve prevents fluid in the operative system from entering the non-operative system.

Brake Units

11. From the shuttle valves, brake pressure fluid is delivered to triple cylinder, multiple disc, brake units. Pressure is applied by pistons having a spring loaded return to overcome the pressure of the return fluid when braking pressure is released.

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CF-105 SERVICE DATA
COMPONENT DATA SHEET

| | | | | | | | |
|--|--|-----------------------------|--|------------------------------------|--|-------------------------------|--|
| SYSTEM UTILITY HYDRAULICS | | SUB-SYSTEM WHEEL BRAKES | | COMPONENT Valve - Brake Control | | REF. NO. 19-3-1 | |
| AVRO PART NO. 7-1954-11 | | MANUFACTURER Hydra-Power | | MAN'FR'S PART NO. HP 402100 | | AIRCRAFT EFFECTIVITY 25201 | |
| OVERHAUL LIFE: | | KNOWN- | | ESTIMATED- | | 500 hours | |
| FUNCTION To apply hydraulic pressure to the wheel brakes. | | | | | | | |
| LOCATION In the armament bay, station 469. | | | | | | | |
| ACCESS Unobstructed when missile pack is removed. | | | | | | MEN X MINUTES | |
| REPLACEMENT PROCEDURE Install with four attachment bolts. Connect the electrical cable. Connect the cable from the rudder pedal. Connect the six hydraulic pipelines. Prime the system. | | | | | | MEN X MINUTES | |

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|--|----------|---------------|--|--|--|--|--|--|--|
| INSPECTION | | MEN X MINUTES | | | | | | | |
| | | | | | | | | | |
| FUNCTIONAL CHECKS | | MEN X MINUTES | | | | | | | |
| | | | | | | | | | |
| GROUND HANDLING AND GROUND TEST EQUIPMENT | | | | | | | | | |
| Hydraulic ground test rig. Electrical ground power circuit. | | | | | | | | | |
| SPECIAL TOOLS TO REMOVE OR SERVICE | | | | | | | | | |
| REMARKS | | | | | | | | | |
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CF-105 SERVICE DATA
 COMPONENT DATA SHEET

| | | | | | | | |
|---|--|-----------------------------|--|-------------------------------|--|-------------------------------|--|
| SYSTEM UTILITY HYDRAULICS | | SUB-SYSTEM WHEEL BRAKES | | COMPONENT Valve - Shuttle | | REF. NO. 19-3-2 | |
| AVRO PART NO. 7-1992-107 | | MANUFACTURER Hydra-Power | | MAN'FR'S PART NO. HP 51800 | | AIRCRAFT EFFECTIVITY 25201 | |
| OVERHAUL LIFE: | | KNOWN- | | ESTIMATED- | | 1500 hours | |
| FUNCTION To supply emergency pressure to the brakes on failure of the normal system. | | | | | | | |
| LOCATION Rear brake torque rod. | | | | | | | |
| ACCESS Unobstructed. | | | | | | MEN X MINUTES | |
| REPLACEMENT PROCEDURE Install with two bolts. Connect three hydraulic lines. | | | | | | MEN X MINUTES | |

141-3413-2-5

| | | |
|--|---------------|--|
| <p>INSPECTION</p> <p>Check for security, damage, cracks, corrosion and leaks.</p> | MEN X MINUTES | |
| <p>FUNCTIONAL CHECKS</p> | MEN X MINUTES | |
| <p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p> <p>Hydraulic ground test rig.</p> | | |
| <p>SPECIAL TOOLS TO REMOVE OR SERVICE</p> | | |
| <p>REMARKS</p> | | |
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STANDARD FORM NO. 64
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

| | | | |
|--|----------|---------------|--|
| INSPECTION | | MEN X MINUTES | |
| Check brakes for leaks, overheating and wear. Check brake clearances. | | | |
| FUNCTIONAL CHECKS | | MEN X MINUTES | |
| | | | |
| GROUND HANDLING AND GROUND TEST EQUIPMENT | | | |
| Hydraulic ground test rig. | | | |
| SPECIAL TOOLS TO REMOVE OR SERVICE | | | |
| | | | |
| REMARKS | | | |
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

| | | | |
|--|----------------------------|--------------------------------|-------------------------------|
| SYSTEM UTILITY HYDRAULICS | SUB-SYSTEM WHEEL BRAKES | COMPONENT Assembly - Swivel | REF. NO. 19-3-4 |
| AVRO PART NO. 7-1992-25 | MANUFACTURER | MAN'FR'S PART NO. | AIRCRAFT EFFECTIVITY 25201 |
| OVERHAUL LIFE: KNOWN- | | ESTIMATED- 1500 hours | |
| <p>FUNCTION</p> <p style="text-align: center;">To connect hydraulic supply lines on aircraft structure to line on main landing gear leg.</p> | | | |
| <p>LOCATION</p> <p style="text-align: center;">Upper end main landing gear leg.</p> | | | |
| <p>ACCESS</p> <p style="text-align: center;">Unobstructed.</p> | | | MEN X MINUTES |
| | | | |
| <p>REPLACEMENT PROCEDURE</p> <p style="text-align: center;">Install four bolts securing assembly to brackets on airframe structure and leg. Connect hydraulic pipelines. Prime the system.</p> | | | MEN X MINUTES |
| | | | |

WD-3433-2-5

| | | | | | | | | | |
|---|----------|--|--|--|--|--|---------------|--|--|
| INSPECTION | | | | | | | MEN X MINUTES | | |
| Check for leakage and security. | | | | | | | | | |
| | | | | | | | | | |
| FUNCTIONAL CHECKS | | | | | | | MEN X MINUTES | | |
| | | | | | | | | | |
| | | | | | | | | | |
| GROUND HANDLING AND GROUND TEST EQUIPMENT | | | | | | | | | |
| Hydraulic ground test rig. | | | | | | | | | |
| SPECIAL TOOLS TO REMOVE OR SERVICE | | | | | | | | | |
| REMARKS | | | | | | | | | |
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

| | | | |
|---|----------------------------|---------------------------------|-------------------------------|
| SYSTEM UTILITY HYDRAULICS | SUB-SYSTEM WHEEL BRAKES | COMPONENT Fitting - Trombone | REF. NO. 19-3-5 |
| AVRO PART NO. 7-1992-21 | MANUFACTURER Dowty | MAN'FR'S PART NO. | AIRCRAFT EFFECTIVITY 25201 |
| OVERHAUL LIFE: KNOWN- | | ESTIMATED- 1500 hours | |
| FUNCTION Sliding joint in brake hydraulic lines. | | | |
| LOCATION On main landing gear leg. | | | |
| ACCESS Unobstructed. | | | MEN X MINUTES |
| REPLACEMENT PROCEDURE Connect the fitting to the landing gear leg. Connect four hydraulic lines. Prime the system. | | | MEN X MINUTES |

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| | |
|--|--|
| <p>INSPECTION</p> <p style="text-align: center;">Check for damage, wear, security and leakage.</p> | <p>MEN X MINUTES</p> |
| <p>FUNCTIONAL CHECKS</p> | <p>MEN X MINUTES</p> |
| <p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p> | |
| <p>SPECIAL</p> | <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>National Research Council Canada</p> <p>Canada Institute for Scientific and Technical Information J.H. Parkin Branch</p> </div> <div style="text-align: center;"> <p>Conseil national de recherches Canada</p> <p>Institut canadien de l'information scientifique et technique Annexe J.H.Parkin</p> </div> </div> <p>Report No.: <u>QCX Avro CF105 S.D.S-54</u></p> |
| <p>REMARK</p> | <p>Has been: <input type="checkbox"/> Downgraded to:</p> <p><input checked="" type="checkbox"/> De-Classified</p> <p>By: (Name) <i>B.J. Petzinger</i></p> <p>(Dept) <i>B.J. Petzinger</i></p> <p>Date: <u>5th Dec 96</u> <i>B.J. Petzinger</i> Deputy Coordinator Access to Information and Privacy</p> <p style="text-align: right;">Signature</p> |
| <p>ISSUE</p> | |
| <p>DATE</p> | <p>8 Dec 56</p> |

141-3413-2-4

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