

Classification cancelled / Changed to *UNCLASS*
By authority of *Section 4 AVES*
Date *27 Sept 1955*
CF-105 SERVICE DATA
Signature *DBuddy*
ANALYZED **Main Landing Gear**
Unit / Rank / Appointment *AVRS*
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CF-105 SERVICE DATA

Section 4

Classification cancelled / Changed to UNCLASS

By authority of AVRS

Date 27 Sept 96

Signature [Signature]

Unit / Rank / Appointment AVRS

MAIN LANDING GEAR

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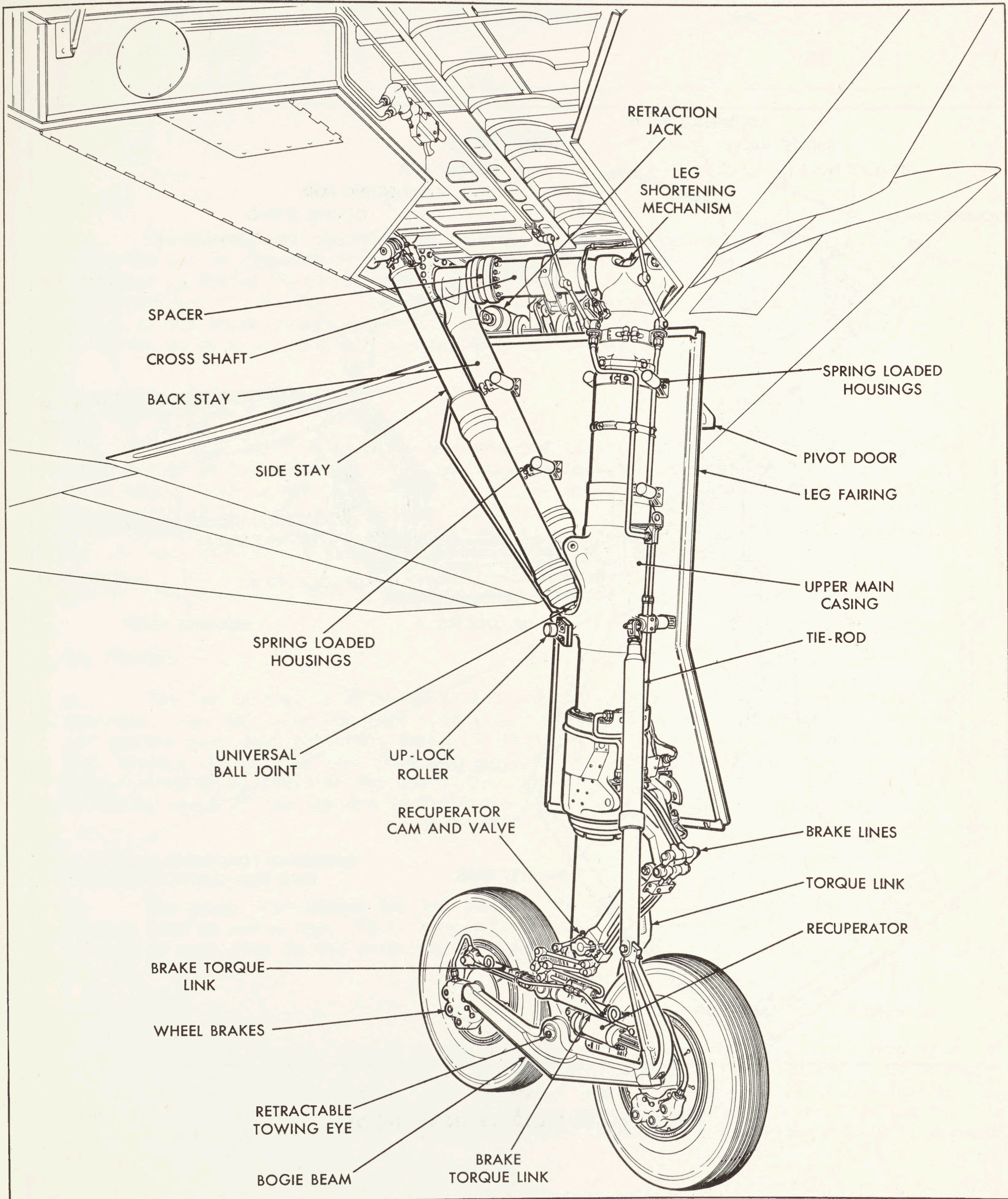
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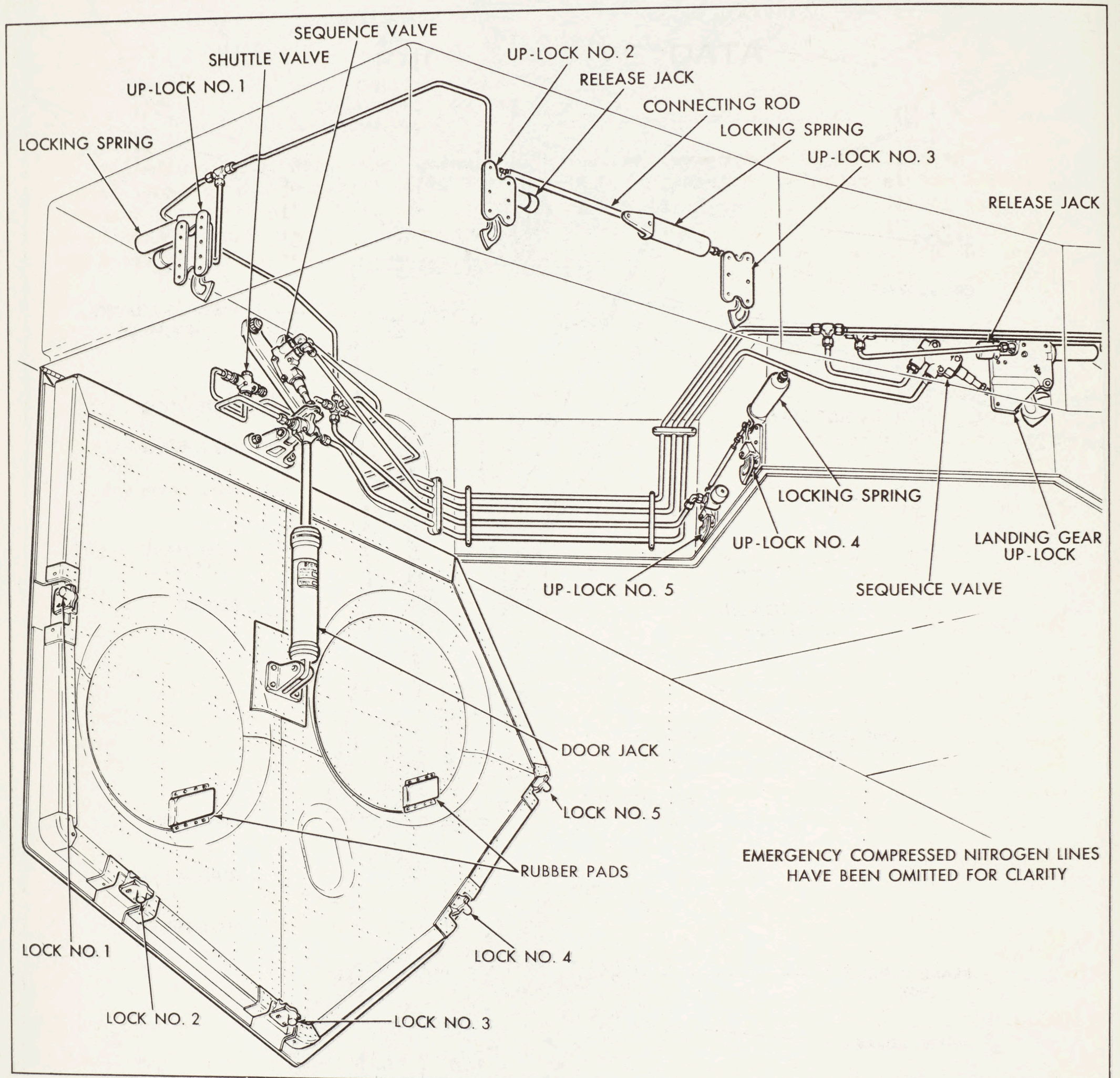
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FIG. 1 MAIN LANDING GEAR

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FIG. 2 MAIN LANDING GEAR DOOR

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SYSTEM DATA SHEET

SYSTEM	SUB-SYSTEM	AIRCRAFT EFF'TY	REF. NO.
MAIN LANDING GEAR		25201	92

DESCRIPTION

General

1. The aircraft is equipped with a tricycle landing gear which is hydraulically retracted and is extended by free fall assisted by airflow forces when in flight. The main gear is fitted with twin wheels in tandem. These have hydraulic disc type brakes with provision for electrically operated anti-skid devices. The main landing gear is housed in the inner wing. Retraction is inwards and forwards. When fully retracted it is faired in by a leg fairing, a pivot door and a wheel door.

Main Landing Gear Attachment

2. The main leg and back-stay are attached to the aircraft by a cross-shaft which is supported in two self-aligning bearings, one in the main spar and the other in the front spar. A shear pin locates the leg to the cross-shaft. To facilitate removal and replacement of the main landing gear the cross-shaft is manufactured in two sections with a spacer fitted between them. Removal of the spacer allows sufficient movement for the rear section and main leg to be withdrawn from the bearings.

3. The retraction jack attachment is on the upper part of the back-stay.

Leg Fairing

4. The leg fairing is attached to the leg and back-stay by nine spring loaded housings. The two lower housings each incorporate a cam operated locking device. In the landing gear down position, these two housings are locked to prevent the air flow from forcing the fairing away from the leg. In the landing gear up position, the cams are actuated by strikers in the wheel bay. The spring housings are then free to take up any movement of the leg due to flexing of the wing in flight.

Pivot Door

5. The pivot door closes the gap between the leg fairing and the wing skin when the landing gear is retracted. It is hinged to the structure by two arms. The operating linkage is connected to the cross-shaft by two adjustable links.

Wheel Door

6. The wheel door is hinged to the fuselage side of the wheel bay by a piano type hinge. When retracted it is locked in the up position by five up-locks which are locked mechanically and are released by three hydraulic jacks. The door supports the landing gear on two rubber blocks which lift it from the up-lock when flight stresses flex the wings. The door is operated by a hydraulic jack fitted with a multi-stage lock to prevent blow back.

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Up-lock

7. The main landing gear up-lock is fitted on the wheel bay diaphragm and engages with an adjustable roller on the leg. When the leg retracts, the up-lock engages mechanically and also operates a sequence valve which allows hydraulic pressure to be fed to the wheel door jack.

8. The up-lock is released by hydraulic pressure when the wheel door jack reaches its first blow-back lock position.

Main Leg

9. Owing to the limited size of the wheel bay, the leg must be reduced in length to accommodate it in the wheel bay. This is accomplished by a shortening device fitted to the top of the leg and connected to the structure by a trunbuckle. This shortening device consists of a chain and sprocket which is geometrically arranged to telescope the lower leg and shock absorber into the upper main casing, without compressing the shock absorber.

10. The landing gear retracts at an angle of forty five degrees to the centre line of the aircraft and with normal retraction this would bring the forward wheel into a higher position than the rear wheel. To maintain both wheels parallel to the wing chord, the lower leg is rotated about the centre line of the leg.

Back Stay

11. The back stay braces the leg for fore and aft loads. One end is attached to the main casing with a pivot pin, the other being integral with the cross-shaft rear section.

Side Stay

12. A telescopic side stay is fitted between the main spar and main casing to brace the leg against side loads. It is attached to the main spar with a swivel bearing and to the leg with a universal ball joint. In the fully extended position an internal lock is engaged and forms the main landing gear down lock. The lock is disengaged by hydraulic pressure when the landing gear is selected up.

Shock Absorber

13. The liquid spring type shock absorber is housed within the leg. The upper end is secured with a transverse pip-pin which is accessible after removal of two rubber plugs from the main fitting. The piston rod end is secured to the lower leg.

Torque Links

14. The torque links are fitted between the torque fitting and the sliding member to prevent rotation of the lower leg.

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SYSTEM	SUB-SYSTEM	AIRCRAFT EFF'TY	REF. NO.
MAIN LANDING GEAR		25201	92

Bogie Beam

15. A bogie beam pivots on the lower end of the lower leg. Integral with each end of the beam are the two main wheel axles. Above the beam are two brake torque links, which form the anchor for the wheel brake friction pads.

Recuperator

16. A recuperator which maintains the shock absorber at the correct charging pressure, is attached to the forward brake link. One end of the recuperator is charged with oil and the other end is charged with nitrogen. A valve, operated by the torque links, opens the oil end of the recuperator to the shock absorber each time the shock absorber is fully extended. An oil content indicator and a nitrogen charging valve are fitted at the forward end of the recuperator, and a minimum safe working pressure indicator and an oil charging point are fitted at the rear end.

Tie-rod

17. A spring loaded telescopic tie-rod is fitted between the bogie beam and outer casing. The tie-rod extends and tilts the bogie beam forward when the landing gear is retracted. This locates the wheels in the correct position for retraction into the wheel bay. The tie-rod also dampens oscillation of the bogie beam on initial landing.

Main Wheels

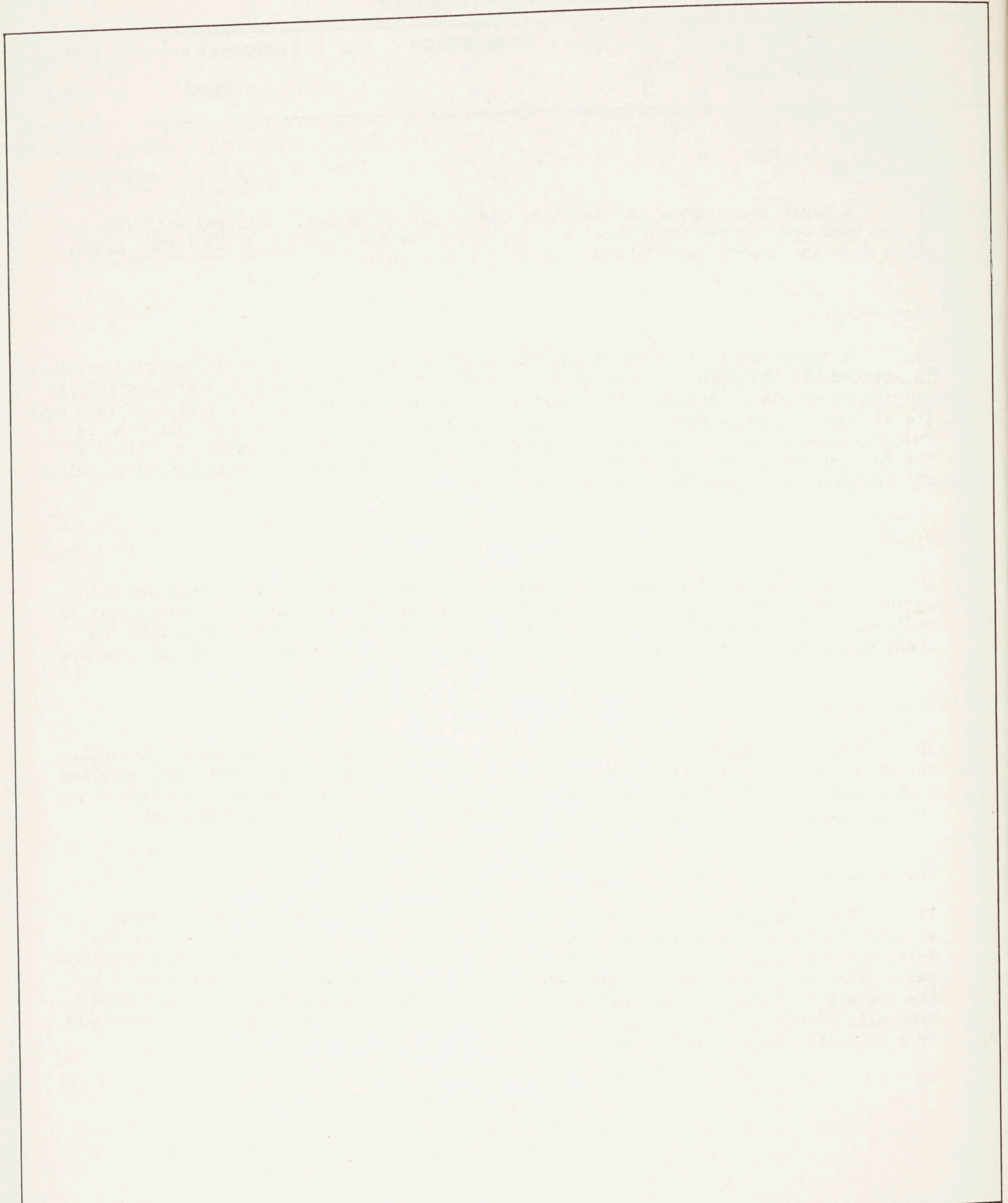
18. The main wheels are of the split hub type with the two halves sealed to enable the wheel to be fitted with either tubeless or conventional tires. The wheel revolves on two tapered roller bearings fitted in the wheel hub. A dust excluder is fitted to the inner bearing and a hub cap is fitted over the outer bearing and wheel nut.

Wheel Brakes

19. Each brake unit consists of two friction plates and a triple friction pad assembly operated hydraulically. The friction plates are keyed to the wheel by ten driving blocks and rotate with the wheel to provide a braking surface for the friction pads. The stationary friction pads are mounted on the wheel axle and are secured to the brake torque links. The pads are arranged to sandwich the friction plates when a hydraulic piston exerts pressure on the inner pad. Pressure is supplied to the brakes by a solenoid operated selector.

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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Main Landing Gear		REF. NO. 92-1	
AVRO PART NO. 7-4292-1 and 2		MANUFACTURER Dowty Limited		MAN'FR'S PART NO. XV 1283 - 1A and B		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE :		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Main landing gear.							
LOCATION Inner wing wheel bay between the main spar and front spar.							
ACCESS Accessible in the main wheel bay. Front bearing covered by an access panel in the wing leading edge.						MEN X MINUTES	
REPLACEMENT PROCEDURE Secure the landing gear in the ground handling rig. Remove the back stay. Position the leg in the front bearing. Assemble and tighten the bearing. Fit the back stay in the rear bearing. Assemble the cross shaft spacer and back stay pivot pin. Remove the ground handling rig. Install the telescopic side stay. Adjust the leg to the correct rigging position. Connect the retraction jack. Connect the shortening device. Connect the hydraulic brake swivel elbows and electrical wiring. Fit the pivot door and leg fairing. Carry out a complete functional test.						MEN X MINUTES	

INSPECTION		MEN X MINUTES	
<p>Check leg and attachments for security, cleanliness, damage, leaks and corrosion. Check all pivot pins and bearings for wear. Lubricate according to lubrication chart.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
<p>Carry out retraction test and operate the emergency extension.</p>			
GROUND HANDLING AND GROUND TEST EQUIPMENT			
<p>Hydraulic ground test rig. Electrical ground power unit. B4 stand. Main leg ground handling rig. Aircraft jacks.</p>			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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CF-105 SERVICE DATA
COMPONENT DATA SHEET

SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Main Landing Gear Leg Fairing		REF. NO. 92-2	
AVRO PART NO. 7-1062-4393 and 4394		MANUFACTURER Avro Aircraft Ltd.		MAN'FR'S PART NO.		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION To enclose the landing gear when retracted.							
LOCATION Attached to the main landing gear leg.							
ACCESS Unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Secure the fairing to the nine spring loaded housings on the main leg. Carry out a functional test. Adjust attachment rods to position the fairing.						MEN X MINUTES	

INSPECTION		Check for loose rivets, damage, cracks and corrosion. Check the fairing spring housings for freedom of movement. With the landing gear retracted check for fit and skin clearance.								MEN X MINUTES	
FUNCTIONAL CHECKS										MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT		B4 stand. Hydraulic ground test rig. Aircraft jacks. Electrical ground power unit.									
SPECIAL TOOLS TO REMOVE OR SERVICE		Tool for compressing attachment springs - about 200 lb load.									
REMARKS											
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COMPONENT DATA SHEET

SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Telescopic Side Stay		REF. NO. 92-3	
AVRO PART NO. 7-1092-11 and 12		MANUFACTURER Dowty Ltd.		MAN'FR'S PART NO. XV 1284-1A and 1B		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE :		KNOWN-		ESTIMATED-		500 hours	
FUNCTION Braces the landing gear against side loads. Provides the main landing gear down lock.							
LOCATION Fitted between the main landing gear and main spar.							
ACCESS Unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Remove the micro-switch and swivel elbows. Remove the upper pin. Support the side stay and unscrew the ball joint from the leg main fitting.						MEN X MINUTES	

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INSPECTION		MEN X MINUTES	
<p>Disconnect top end of stay and check for wear in the universal ball joint and the internal downlock mechanism. Drain the side stay and refill the 10 cubic inches of oil MIL Spec O-6083.</p>			
FUNCTIONAL CHECKS		MEN X MINUTES	
<p>Functional test the landing gear. Check the downlock for engagement and unlocking.</p>			
GROUND HANDLING AND GROUND TEST EQUIPMENT			
<p>B4 stand. Hydraulic ground test rig. Aircraft jacks. Electrical ground power unit.</p>			
SPECIAL TOOLS TO REMOVE OR SERVICE			
REMARKS			
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COMPONENT DATA SHEET

SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Shock Absorber		REF. NO. 92-4	
AVRO PART NO.		MANUFACTURER Dowty Ltd.		MAN'FR'S PART NO. V 1284-9A and 9B		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION To absorb landing loads.							
LOCATION Inside the main landing leg.							
ACCESS Remove the bogie beam, wheels, brakes and sliding member to gain access.						MEN X MINUTES	
REPLACEMENT PROCEDURE Fit the shock absorber into the sliding member. Screw in the recuperator valve and tighten the nut securing the piston rod. Secure the lower torque scissor to prevent the cam opening the recuperator valve. Fit the sliding member into the torque fitting. Secure the shock absorber with the pip-pin. Locate the lower bearing with the four eccentric screws. Position the cam followers and lock the eccentric screws. Fit the bogie beam and connect the tie rod. Connect the recuperator lines, bleed and re-charge the recuperator. Connect the torque scissors and brake swivel elbows. Assemble wheels and brakes. Carry out a functional test on complete main landing gear and brakes.						MEN X MINUTES	

INSPECTION		Check the oil content and nitrogen pressure indicators. Charge with oil to spec Dowcan 200 and compressed nitrogen as required.								MEN X MINUTES	
FUNCTIONAL CHECKS										MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT											
Aircraft jacks. High pressure nitrogen charging rig.											
SPECIAL TOOLS TO REMOVE OR SERVICE											
Fluid charging gun.											
REMARKS											
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COMPONENT DATA SHEET

SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Main Wheel Assembly		REF. NO. 92-5	
AVRO PART NO. 1092-13 and 15		MANUFACTURER Goodyear Tire Co.		MAN'FR'S PART NO. 9541028		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION To facilitate motion.							
LOCATION Main landing gear.							
ACCESS Unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Assemble the wheel to the axle. Assemble bearing and tighten the wheel nut until correct bearing end float is obtained. Lock the wheel nut and fit the hub cap. Check tire pressure. Lower wheel to the ground. Remove jury strap from the tie rod.						MEN X MINUTES	

<p>INSPECTION</p> <p style="text-align: center;">Check tires for pressure 255. psi, creep and condition. Remove wheels, clean and inspect for cracks, corrosion and general condition. Lubricate as required.</p>	<p>MEN X MINUTES</p>								
<p>FUNCTIONAL CHECKS</p>	<p>MEN X MINUTES</p>								
<p>GROUND HANDLING AND GROUND TEST EQUIPMENT</p> <p style="text-align: center;">Aircraft axle jack. Main landing gear jury strap.</p>									
<p>SPECIAL TOOLS TO REMOVE OR SERVICE</p> <p style="text-align: center;">Tool to remove tubeless tires. Tire pressure gauge.</p>									
<p>REMARKS</p>									
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SYSTEM MAIN LANDING GEAR		SUB-SYSTEM		COMPONENT Telescopic Tie-rod		REF. NO. 92-6	
AVRO PART NO.		MANUFACTURER Dowty Ltd.		MAN'F'R'S PART NO. V. 1283-290		AIRCRAFT EFFECTIVITY 25201	
OVERHAUL LIFE:		KNOWN-		ESTIMATED-		500 hours	
FUNCTION To position the bogie beam correctly for landing gear retraction.							
LOCATION Fitted between the bogie beam and main leg.							
ACCESS Unobstructed.						MEN X MINUTES	
REPLACEMENT PROCEDURE Bolt the upper fitting to the main leg and the lower fitting to the bogie beam horn. Lower the aircraft and remove the jacks.						MEN X MINUTES	

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INSPECTION										MEN X MINUTES	
Check for security, damage and cleanliness. Lubricate according to lubrication chart.											
FUNCTIONAL CHECKS										MEN X MINUTES	
GROUND HANDLING AND GROUND TEST EQUIPMENT											
Aircraft jacks.											
SPECIAL TOOLS TO REMOVE OR SERVICE											
Tool for compressing the spring.											
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