



MAINTENANCE MANUAL

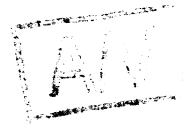
for

SERVO-JACK

Part No. AIR 45708

P4310-68

APS



This manual complies with British Civil Airworthiness Requirements, Section A, Chapter A6-2. The technical accuracy of this manual has been verified and is certified as correct.

Signed *W. N. Bainbridge.*

Date 10th May, 1968

A.R.B. Design Approval No. AD/1033/39

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REVISION RECORD

The introduction of any amendment or revision not certified in accordance with British Civil Airworthiness Requirements Section A, Chapter A6-2, will invalidate the statement of certification on Page 1. Amendments or revisions embodied in this manual, which have been certified under an approved authorisation other than that applicable to the initial certification must be recorded on separate record sheets.

REV. No.	INSERTION DATE	BY	REV. No.	INSERTION DATE	BY	REV. No.	INSERTION DATE	BY



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1. Description, operation and data

A. Description

This unit, Part No. AIR 45708, is a simple hydraulic jack used in trimming the aircraft. When installed in an aircraft the piston rod is secured to the airframe and the body moves. A selector valve is bolted to the body to control the jack.

The unit comprises a hollow, cylindrical body housing a hollow piston. One end of the body is closed by an end fitting bolted to the end face of the body, while the other end of the body is reduced in diameter to act as both a bearing surface and a stop for the piston rod. The piston rod has an integral eye-end at its outer end. The selector valve, bolted to the body, comprises a plunger lapped into a valve body, with an eye-end screwed into the plunger.

B. Operation

System pressure is constantly applied to the annulus side of the jack. The selector valve controls the flow of fluid into and out of the full area side, the differential areas of the jack affecting the selection. The selector valve plunger moves in the same direction as the jack body. When a selection is made the jack body and selector valve body govern the position adopted by the plunger. When the jack OUT position is selected the full area side is pressurised. When the jack IN position is selected the full area is de-pressurised. An intermediate selection blanks off the full area side to both pressure and return, and a hydraulic lock is created.

C. Data

Fluid	D. T. D. 585
Connections (two)	3/8 in. U.N.F.
Length between centres	
Jack extended	16.13 \pm 0.06 in.
Jack retracted	12.13 \pm 0.03 in.
Stroke	4.00 in. (nominal)
Valve travel (total)	0.125 in.



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2. Unpacking

Units are enclosed in a polythene bag and packed in either a wooden or cardboard box. Provided care is exercised when unpacking the units no special instructions or precautions are necessary.

Units are always despatched containing hydraulic fluid and with all connections blanked.

3. Acceptance checks

The following checks should be carried out when the unit is received.

- (1) Visually inspect the unit for corrosion, obvious signs of damage etc.
- (2) Check for fluid leakage past the blanking plugs. If fluid leakage is suspected exercise the unit as detailed in the storage instructions and tightly refit the blanking plugs before placing the unit in store.

An identification plate is attached to the unit and gives the following information:-

- (1) Part number and issue number of unit
- (2) Serial number of unit
- (3) Inspector's stamp and tester's stamp

This information is provided so that operators can correctly identify the unit when corresponding with the manufacturer. It is recommended that a record be kept of the dates of receipt of the various units in order to prevent an excessive storage period.

4. Storage instructions

A. General

These recommendations apply when units are protected from extremes of climatic variations; they may have to be varied to suit prevalent conditions.

Provided the recommendations contain herein are fulfilled, the maximum recommended shelf life should be attained without any derogatory effects.

All units are despatched containing residual fluid from the test procedures and with all connections plugged.



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When units are received in approved containers, they should be left in their containers until it is necessary to carry out any of the test procedures detailed herein, they should then be repacked. Any silica-gel capsules must be dehydrated and any V.P.I. paper renewed.

When the maximum recommended shelf life has expired, all seals, fabric rings etc., not built into units should be scrapped. When the maximum recommended life of seals, fabric rings, etc., built into units has expired they must be renewed in accordance with the instructions given in the overhaul manual.

B. Complete units

(i) Conditions

- (1) Where a unit is received packed in an approved container, it should be kept in that container until it is necessary to carry out any of the procedures detailed herein; it should then be repacked.
- (2) Units should be stored horizontally on racks in a room which is dry and at a temperature of approximately 16°C (60°F). Metal-to-metal contact between units must be avoided, and there must be no risk of crushing. Care must be taken to avoid damage to external threads, the exposed portions of piston rods, valve plungers, etc. All fluid connections must be kept plugged whilst the units are in store to prevent both the egress of fluid and the ingress of foreign matter.

(ii) Order of usage

To prevent certain units remaining in storage for an excessive period, units should be used in the order in which they are received in store. When no record of delivery has been kept, the serial numbers stamped on the units are reasonable guide to the sequence of delivery.

(iii) Exercising units

Every month turn the units over to allow the fluid in the units to contact seals and surfaces from which it may have drained.



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Every six months inject hydraulic fluid into the units and manually operate them through their full range of movement six times. The fluid used must be to the same specification as that used on the aircraft and must have passed through a 10 micron filter before being injected into the units.

C. Detail parts

(i) Conditions

Seals and anti-extrusion rings are despatched in individual plastic bags and are to be kept in these bags until required. Store in a dry, well-ventilated and shaded place at a temperature of approximately 16°C (60°F) and not in the immediate vicinity of heating apparatus or electrical plant. Protect from direct sunlight or strong artificial light. Do not allow any oil or grease in contact with the bags.

When storing seals which incorporate fabric, do not allow the fabric to become damp, as this will cause deterioration of the seal.

If seals and anti-extrusion rings are being stored loose and are kept in metal containers, do not allow them in direct contact with the metal; do not use copper containers. Do not tightly string these parts together.

Metal detail parts are supplied wrapped and are to be kept wrapped until required; in addition, bright parts, for example plunger tubes, are coated with thick lanolin. Protect from dirt and moisture and avoid damage from other components.

D. Shelf life

Provided the storage conditions have been fulfilled the shelf life of the units is governed by the condition of the seals. The following are the maximum recommended storage periods for seals supplied as spares and built into units.

Seals supplied as spares	Four years from date of cure or whenever seal pack is opened (whichever occurs first).
Seals fitted into units in service	Four years or the recommended overhaul period (whichever occurs first).



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Total life of assembly (from date of cure of oldest seal) ... 10 years
The unused seal life at any period is not transferable to the next period, that is if a seal has been in store for one year it does not follow that the storage period for the assembly into which the seal has been built can be extended to three years. Furthermore if a seal has been stored for more than four years, the assembly into which it is built must be used immediately in service; there is no storage period available for the assembly.

5. Checks before installation

Provided the storage instructions have been complied with, no checks are necessary before the unit is installed.

6. Installation and removal

(To be written by the aircraft manufacturer)

7. Checks after installation

(To be written by the aircraft manufacturer)

8. Maintenance

A. Schedule

The following recommended inspections should be intergrated into the aircraft inspection schedule:

Every 100 flying hours

Inspect the unit for damage, corrosion, fluid seepage and security.

B. Procedures

(1) There are no temporary repairs for this unit.

(2) Cleaning

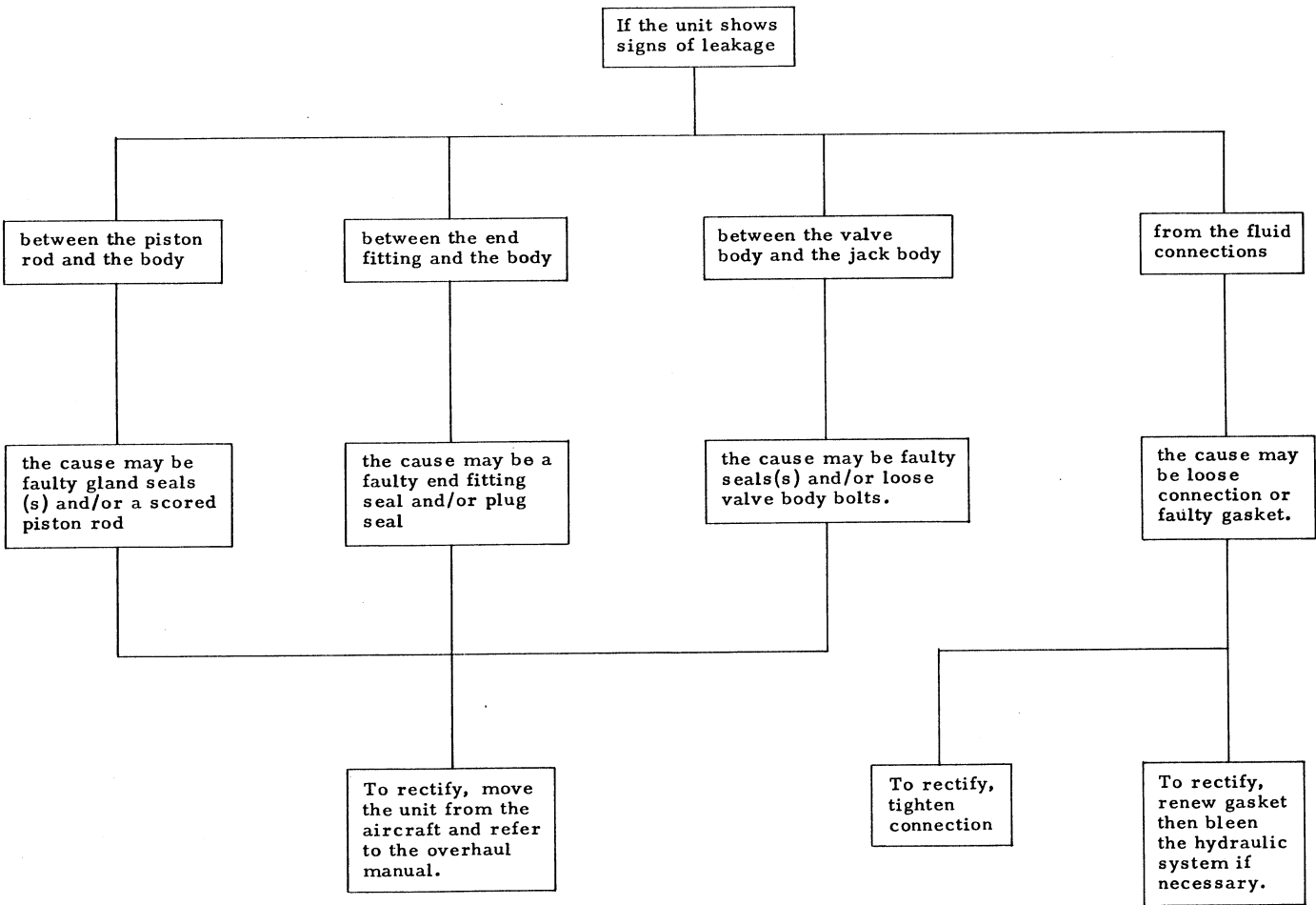
WARNING: DO NOT INHALE THE SOLVENT VAPOURS.

DO NOT ALLOW THE SOLVENT TO CONTACT THE SKIN.

All metal parts should be thoroughly cleaned in trichloroethylene. Seals and fabric rings must not be allowed to come in contact with the cleaning solvent.

Use hydraulic fluid for cleaning non-metallic parts.

9. Trouble shooting.





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10. Adjustment

This unit is not adjustable.

11. Overhaul period

The overhaul period of this unit is 1800 flying hours or 4 years, whichever is the less.

12. Return to base or manufacturer or base

It is recommended that the unit be packed in a similar manner to that described in para. 2. Whenever possible a condensed history of the unit in service should be enclosed together with the reason for returning the unit. All fluid connections are to be fitted with blanking caps.

