

Chapter 24

MAIN UNDERCARRIAGE JACKS

◀Type No. 101085011
101085012▶

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Introduction

1. These jacks are similar in construction except for the angular location of the fork-end in relation to the pipe connections, the attachment pin is at an angle of 6 deg. either side to suit installation requirements. ◀Type No. 101085011 is for port installation and 101085012 is for starboard installation.▶ They embody a simple damping device that operates on the retraction stroke, thus avoiding excessive shocks to the aircraft structure.

Description (fig. 1)

2. The body of each jack is formed by a stepped cylinder that incorporates the extension port X and the retraction port Y; four bosses formed on the cylinder surrounding port Y accommodate four bolts for attachment purposes. Closing one end of the cylinder is the fork-end formed as an integral part of the cylinder. A hollow attachment pin is secured in the fork by a circlip and prevented from rotating during operation by a dowel pressed into the fork; fitted in the end of the pin is a plug carrying a grease

nipple. A blanking gland carrier secured in the mouth of the cylinder extension by a pin and collar, is sealed by a rubber sealing ring and a backing ring; a small drain hole is provided in the cylinder extension between the fork-end.

3. Working in the cylinder is the piston rod which carries the piston, so mounted that a small sliding movement is possible. A small radial hole in the piston together with the sliding movement of the piston forms the built-in damping device. A triple seal, consisting of a rubber ring between two nylon rings, seals the piston rod in the piston, while a similar type of seal on the piston seals it in the cylinder. Screwed into the end of the piston rod is a piston nut securing the piston in position, sealed by a single rubber ring and locked by a tabwasher.

4. Closing the other end of the cylinder is a sealed gland housing that is secured by a ringnut. Contained within the housing is a gland carrier through which passes the piston rod. The gland carrier is sealed by a single rubber sealing

ring while the piston rod is sealed by a double seal consisting of a rubber sealing ring and a backing ring; two washers and a circlip retain the double seal and gland carrier in the housing.

5. The outer end of the piston rod carries an eye-end fitting which is secured by a locknut and a tab-washer; the eye-end has a spherical bush which is retained by two collets.

Principle of operation

Extension

6. With the jack in the closed position fluid enters port X (fig. 1) and passes through the hole in the extension piece to act on the full area of the piston nut and piston rod to extend the jack.

Retraction

7. With the jack extended, fluid enters the unit at Port Y and acts on the annular face of the piston rod and the piston to retract the jack. The fluid pressure moves the piston along the piston rod until its leading edge abuts the head of the piston nut. Before the retraction stroke is completed, the leading edge of the piston enters the stepped bore of the cylinder extension and a quantity of fluid is trapped between this step and the face of the piston. The trapped fluid can only escape through the small radial hole in the piston, its flow is thus restricted, damping the final closure of the jack. The piston rod however, continues its travel until a shoulder on the piston rod abuts a shoulder in the bore of the piston.

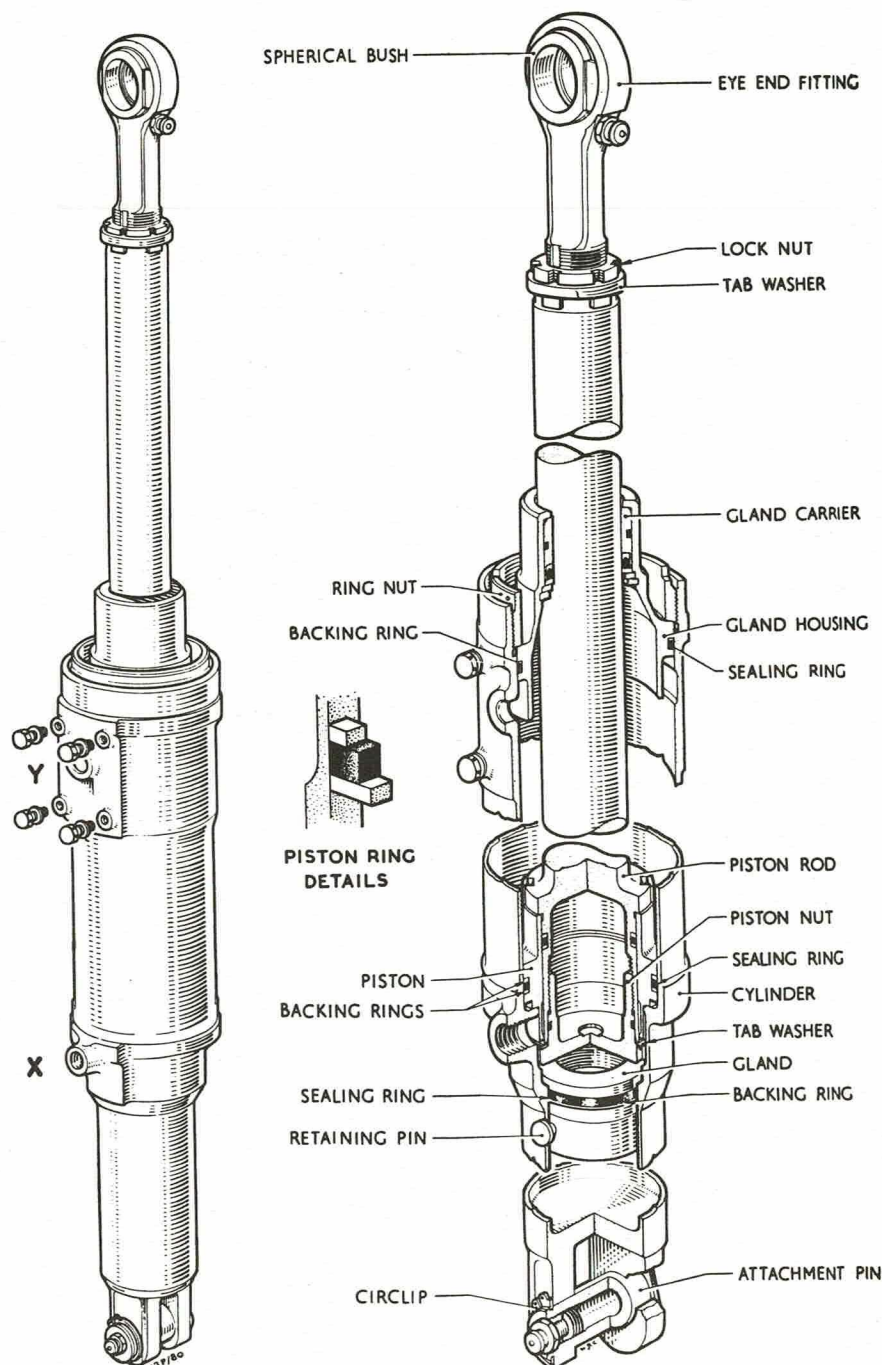


Fig. 1 Main undercarriage jack

SERVICING

Leakage

8. External leakage will indicate a faulty seal which must be renewed. Internal leakage indicated by sluggish movement of the piston rod may be due to damaged seals or a scored cylinder bore and piston. Renew the appropriate parts.

TABLE 1
Special tools

Part No.	Description
MT.1026/14	Holding block for piston rod
◀MT.1026/45▶	Holding block for cylinder
MT.1633	Extractor for gland carrier
RS.181/17	Hook spanner for locknut
RS.181/25	Hook spanner for piston nut
RS.181/35	Hook spanner for ringnut
◀460001957	Test adapter
460001958	Test union▶

Dismantling

9. (1) Remove all locking wire.

(2) Slacken the locknut on the eye-end fitting and remove the fitting and tabwasher from the piston rod, then the attachment pin from the cylinder fork.

(3) Secure the cylinder in its holding blocks held in the bench clamp. Unscrew the ringnut and withdraw the piston rod and gland housing from the cylinder.

(4) Slide the gland housing off the piston rod and remove the Seeger circlip from the gland housing. Extract the washers, seals and gland carrier from the housing.

(5) Remove the cylinder and its holding blocks from the bench clamp, then secure the piston rod in its holding blocks in the clamp.

(6) Unscrew the piston nut from the rod and remove the piston. Remove the piston rod and its blocks from the bench clamp.

(7) Remove the collar then withdraw the pin securing the gland carrier in the cylinder extension. Screw the extractor rod into the gland carrier and extract the gland carrier from the cylinder.

(8) Remove all sealing rings.

Assembling

10. ◀All sealing rings are to be lubricated with Oil OM-15 (34B/9100572) before assembling into the unit.▶

(1) Fit the sealing and backing rings to all parts, refer to fig. 1 for their relative positions. Take care not to overstretch the rubber rings.

(2) Insert the gland carrier into the gland housing, chamfered face leading; take care

not to damage the sealing rings as the carrier enters the bore. Insert the two washers and secure them with the Seeger circlip.

(3) Secure the piston rod in its holding blocks in the bench clamp. Fit the piston rod, chamfered face leading. Place the tabwasher on the piston nut and screw the nut into the piston rod. Tighten the nut and lock it in position.

(4) Insert the blanking gland carrier into the mouth of the cylinder extension, align the holes in the cylinder and gland carrier, then secure it with the pin. Fit the collar and lock it with a split pin.

(5) Remove the piston rod and its blocks from the bench clamp, then secure the cylinder with its holding blocks in the clamp.

(6) Slide the gland housing on to the piston rod. Insert the piston into the cylinder and the gland housing into the cylinder mouth. Screw the ringnut into the cylinder and tighten it; securing the gland housing in position. Wire-lock the nut to the cylinder.

(7) Fit the locknut and washer on the shank of the eye-end fitting and screw it into the piston rod. Tighten the locknut but do not lock as the end fitting will be adjusted on installation.

(8) Fit the attachment pin in the cylinder fork and secure it with its circlip, ensuring that the pin shoulder is engaged over the dowel in the fork.

TESTING

Proof tests

11. A static hydraulic test rig will be required to carry out the following tests.

Note . . .

Ensure that the unit is bled free of all AIR prior to carrying out any test.

(1) Connect the test rig supply line to connection X and Y

in turn. Apply a pressure of 4050 lbf/in² at connection X for two minutes. There must be no leakage.

(2) Apply a pressure of 4050 lbf/in² at connection Y for two minutes. There must be no leakage. Release the pressure.

Functional tests

12. (1) Apply a pressure alternately at connections X and Y to extend and close the jack against no load for a total of five times, during which, the movement must be smooth and regular and the maximum pressure must not exceed the following values:-

(a) Pressure at X extending 60 lbf/in².

(b) Pressure at Y closing 90 lbf/in².

At the end of each stroke, raise the pressure to 100 lbf/in² and hold it for one minute; there must be no leakage. Increase the pressure to 3000 lbf/in² and hold it for a further minute. During one extension stroke, check the dimension of the maximum stroke, this should be 7.33 to 7.48 in.

(2) Release all pressure and disconnect the unit from the rig.

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