

Chapter 7

MAIN UNDERCARRIAGE UPLOCK JACK

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Introduction

1. This jack is employed to disengage the main undercarriage uplock preparatory to the lowering operation. The complete jack consists of a jack unit to which a shuttle valve and a banjo connection are fitted. A basic type is described and illustrated in this chapter and its variants are given in appendices.

Description

2. One end of the jack cylinder is closed and is integral with an eye which houses a spherical bearing retained by two collets. Two fluid connections are provided in bosses one at each end of the cylinder. In the open end of the cylinder an abutment ring and a gland carrier are secured by a ring nut. The gland carrier is sealed in the cylinder by a rubber ring and it carries a rubber ring and backing ring for the piston rod.

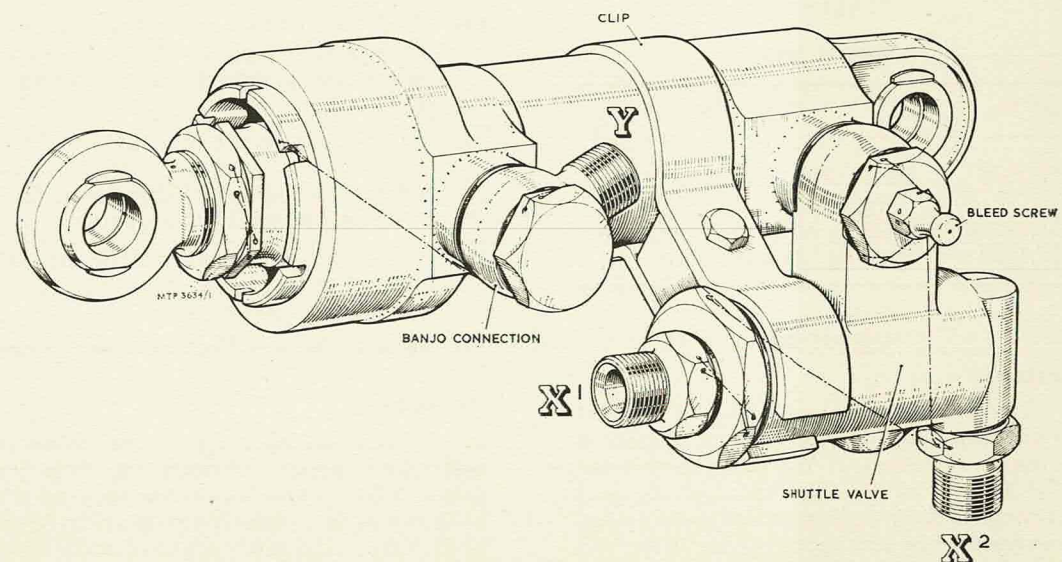


Fig. 1. Main undercarriage uplock jack assembly

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3. The piston rod is fitted with a screwed sleeve which provides a land for the piston seal; the seal is comprised of a rubber ring between two backing rings and is retained by a nut that is locked by a split pin. An eye-end fitting, which houses a spherical bearing retained by two collets, is screwed into the outer end of the piston rod and is locked by a lock nut and tab-washer.

4. A banjo body is secured by a banjo bolt, with bonded seals, in the fluid connection at the open end of the cylinder. In the other fluid connection a banjo bolt, with bonded seals, secures the shuttle valve, which is given additional support by a clip that encircles the valve body and jack cylinder; a bleed screw is fitted in this banjo bolt. References covering the shuttle valve will be found in the appendices.

Principle of operation (fig. 2)

5. The jack is extended by the admission of hydraulic pressure at connection X and its simultaneous release from Y. Reversal of the pressure closes the jack.

TABLE 1
Special tools

Part No.	Description
MT.1025	Bench clamp for use with holding blocks
MT.1026/59	Holding block for piston rod
MT.1304	Holding block for body

SERVICING

Leakage

6. Leakage at bonded seals may be rectified by checking that the banjo bolt or adapter is normally tightened. If this is ineffective the joint faces must be examined and the seal renewed. Defective gland carrier sealing rings are indicated by leakage along the piston rod or around the ring nut; in this case examine the surfaces and renew the sealing rings.

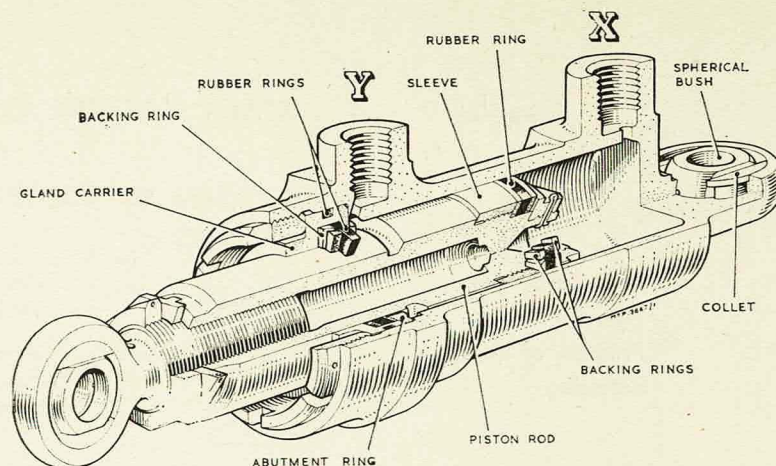


Fig. 2. Main undercarriage uplock jack

Dismantling

- (1) Remove the spherical bushes and collets from the eye-ends.
- (2) Remove the clip bolt and clip.
- (3) Remove the banjo bolts, banjo connections and shuttle valve; remove the bleed screw.
- (4) Hold the cylinder in its holding block, unscrew the ring nut and withdraw the piston rod, gland carrier and abutment ring.
- (5) Hold the piston rod in its holding block, slacken the lock nut, and remove the eye-end fitting and tab-washer; remove the gland carrier and abutment ring.
- (6) Extract the split pin and remove the piston nut and sealing rings. The sleeve on the rod is not to be removed.
- (7) Remove the gland carrier sealing rings.

Assembling

8. Fit new sealing rings on the piston rod and gland carrier, lubricate the rings with grease XG-315 and locate the backing rings as shown in fig. 2. Backing rings are to be split at 45 degrees; the gap is not to exceed 0.005 in. when the ring is fitted in the appropriate bore and the gap edges are to be trimmed clean.

The spherical bushes are to be lubricated with grease XG-375 and other bearing surfaces with oil OM-15.

- (1) Hold the piston rod in its holding block and fit and tighten the piston nut retaining the sealing rings; lock the nut with the split pin and ensure that the head of the pin will clear the cylinder bore.
- (2) Hold the cylinder in its holding block and insert the piston rod.
- (3) Pass the abutment ring (chamfer leading) and the gland carrier (seals leading) over the piston rod and into the cylinder and secure them with the ring nut.
- (4) Fit the lock nut and tab-washer on the eye-end fitting, screw the fitting into the piston rod until the inspection hole in the shank is no longer visible, engage the tab-washer in the piston rod and tighten the lock nut finger tight.
- (5) Carry out the tests detailed in para. 9.
- (6) Secure the shuttle valve to the fluid connection at the closed end of the jack cylinder with the banjo bolt and two bonded seals; the axis of the shuttle valve body is to be parallel to the jack cylinder; fit the bleed screw in the banjo bolt.
- (7) Fit the clip on the jack and shuttle valve, and secure it with the bolt.

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- (8) Secure the banjo body to the other fluid connection with the banjo bolt and two bonded seals; the banjo body is to face towards the closed end of the jack cylinder and is to be inclined at 20 degrees to the cylinder axis and away from the shuttle valve.
- (9) Fit the collets and spherical bushes into the eye-ends and check the bushes for freedom of movement.
- (10) Carry out the tests detailed in *para.* 10.

Testing

Jack unit (fig. 2)

9. Carry out all tests using oil OM-15.

- (1) Apply a pressure of 5400 lb/in² at connection X and hold it for two minutes. Leakage is not permissible.

- (2) Apply a pressure of 5400 lb/in² at connection Y and hold it for two minutes. Leakage is not permissible.
- (3) Apply pressure alternately at X and Y to extend and close the jack against no load; movement must be smooth and regular. At the end of each stroke adjust the pressure to 100 lb/in² and hold for one minute without leakage, then increase the pressure to 4000 lb/in² and hold for a further minute without leakage.
- (4) Carry out test (3) five times. During one test check that the stroke is 1.380/1.415 in. and check the bleed screw for flow.
- (5) Apply pressure alternately at X and Y to extend and close the jack against no load. The maximum pressures to extend and

close must not exceed 60 lb/in² and 360 lb/in² respectively.

- (6) Carry out test (5) five times.

Jack assembly (fig. 1)

- 10. (1) With connections X1 and X2 open, apply a pressure of 4000 lb/in² at connection Y. Leakage is not permissible.
- (2) With X1 and Y open, apply a pressure of 4000 lb/in² at X2. Leakage is not permissible.
- (3) With X2 and Y open, apply a pressure of 4000 lb/in² at X1. Leakage is not permissible.
- (4) Tests are to be carried out in the above sequence.

Appendix 1 MAIN UNDERCARRIAGE UPLOCK JACK
Type No. 1.00646.001

incorporating UPLOCK JACK Type No. 5246
SHUTTLE VALVE Type No. 8511, Mk. 2

Introduction

1. This uplock jack is identical to that described and illustrated in the chapter. Refer to A.P.1803T for a description of and servicing instructions for Shuttle Valve Type No. 8511 Mk. 2.

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