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FLAP JACK DOWTY ROTOL TYPE 07581YA02

GENERAL AND TECHNICAL INFORMATION REPAIR AND RECONDITIONING INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL

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Ministry of Defence

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Service users should send their comments through the channel prescribed for the purpose in:
Naval Aircraft Maintenance Manual (RN)
AP 100B-01, Order 0504 (RAF)

GENERAL AND TECHNICAL INFORMATION

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Introduction

1 These jacks are fitted in the hydraulic system and are operated to raise or lower the flaps.

Description

2 The cylinder is closed at one end and has twin mounting lugs. The opposite end houses a gland assembly which consists of a gland nut grooved for a sealing ring and a wiper ring and is recessed for a gland ring and a spacer secured by a circlip. The nut which is drilled for a breather hole and for fluid ports at the inner end, is secured by a wire locking ring. Two bosses intergral with the cylinder are tapped for pipe connections.

3 The assembly consists of a piston rod, threaded at the inner end of a piston head and slotted and tapped at the outer end for a spanner grip and bushed eye-bolt fitted with a locknut. The piston head, which is grooved for a sealing ring and two supporting piston rings, is screwed on to the rod and secured by a pin, a washer and a split pin.

4 Two pipe connections are fitted to the cylinder at the mounting end. Connection 1, for closing the jack, consists of a special banjo union incorporating a bleeder screw, fitted with bonded seals and secured to a blind tapping by a banjo adapter. From this connection fluid passes through a pipe to a banjo union fitted with bonded seals and secured by a banjo bolt to a through tapping at the opposite end of the cylinder. Connection 2 for extending the jack consists of a bleeder banjo union fitted bonded seals and secured by a banjo adapter to a through tapping adjacent to connection 1.

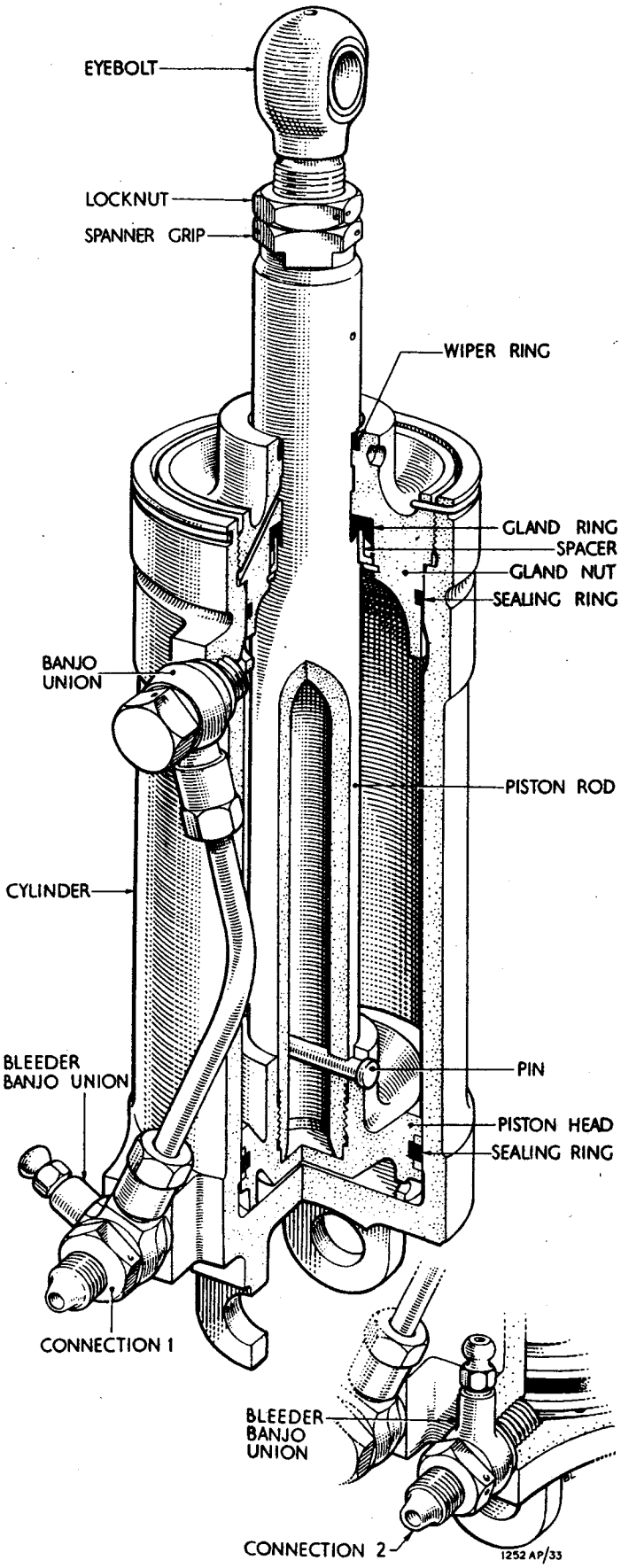

Fig.1 Flap Jack

SERVICING

TABLE 1 SPECIAL TOOLS

Stores Ref.	Part No.	Description
1B/4428	ST947A	Circlip pliers (Type S.I.S.)
27Q/13476	ST1181	'C' key spanner for gland nut
27Q/12290	ST1215	Vice clamp for piston rod
	ST1215-7	Collet for vice clamp
27Q/13479	ST1337	'C' key spanner for piston head
27Q/13478	ST1920	Sleeve for assembly of piston to cylinder

Leakage

5 External seepage may indicate a faulty seal which should be renewed. Internal leakage past the piston head sealing ring will be shown by sluggish action of the jack in service or loss of pressure under test. Renew the seal.

Dismantling

6

6.1 Remove Connection 2.

6.2 Remove the remaining two conections and the pipe.

6.3 Slacken the locknut and remove the eye-bolt and the spanner grip.

6.4 Remove the locking ring and the gland assembly. Remove the sealing ring, wiper ring, circlip, spacer and gland from the gland nut.

6.5 Withdraw the piston assembly, remove the split pin, washer and pin and unscrew the piston head from the piston rod.

6.6 Remove the sealing ring and piston rings from the piston head.

Cleaning

7

WARNING ...

CLEANING AGENT SHOULD BE USED IN A WELL VENTED AREA, AWAY FROM NAKED FLAMES. CARE SHOULD BE TAKEN NOT TO BREATH THE FUMES OR ALLOW CONTACT WITH SKIN.

CAUTION ...

Chlorinated solvents can combine with minute amounts of water found in operating hydraulic systems to form hydrochloric acid which will corrode internal metallic surfaces. It is imperative that all internal surfaces are dry and free from any traces of residual solvent prior to assembly and installation. For those applications where it is difficult to remove all traces of solvent, clean unused white spirit is recommended.

To enable all items to be visually inspected for damage and wear, each part must be thoroughly cleaned using the appropriate approved cleaning agents and methods. When cleaning is completed, parts must be dried using compressed air, clean lint-free cloth or tissues and all subsequent handling must be with clean PVC or polythene gloves. If delays occur before assembly, parts must be suitably protected against corrosion.

Assembling

8 Before being assembled all sealings rings are to be lightly coated with Grease XG-315.

8.1 Fit the sealing ring and the piston rings to the piston head ensuring fitted gap is 0·009 to 0·012 in. and screw the head tightly on to the piston rod. Screw the head back to the nearest locating position for the pin. Insert the pin and secure it with the washer and the split pin.

8.2 Insert the piston assembly in the cylinder.

8.3 Fit the sealing ring, the wiper ring and the gland ring and spacer to the gland nut. Secure the gland ring and spacer with the circlip.

8.4 Slide the gland nut assembly over the piston rod and screw it tightly into the cylinder. Fit the wire locking ring.

8.5 Fit the spanner grip to the piston rod and the locknut to the eye-bolt and screw the eye-bolt into the end of the piston rod.

8.6 Fit the Connection 2 comprising the bleeder banjo union, bonded seals and banjo adapter.

8.7 Fit the special banjo union of Connection 1 and the banjo union of the third connection to the ends of the pipe. Fit bonded seals to the Connection 1 and secure it to the blind tapping of the cylinder with the banjo adapter. Fit bonded seals to the third connection and secure it with the banjo bolt.

8.8 After final assembling and testing, wirelock the connections to the pipe assembly.

Testing

9 A static hydraulic test rig and a power pump rig, fitted with a pump capable of delivering 3·45 gall. per min. are required. All pipes between the rig and the jack are to be $\frac{3}{8}$ in. outside diameter for metal pipes or $\frac{3}{8}$ in. nominal for flexible hose. The jack is to be hydraulically operated at least six times in each direction before testing to expel all air.

9.1 Connect the supply line of the static hydraulic test rig to Connection 2 and apply pressure to fully extend the jack. Gradually increase the pressure to 4950 lbf/in^2. Leakage is not permissible. Release the pressure and disconnect the supply line.

9.2 Connect the supply line to Connection 1 and apply pressure to fully close the jack. Gradually increase the pressure to 4950 lbf/in^2. Leakage is not permissible. Release the pressure and disconnect the supply line.

9.3 Connect the supply line of the power pump rig to Connection 2 and operate the rig to fully extend the jack. The pressure required to extend the jack must not exceed 100 lbf/in^2 and the time required to complete the stroke must not exceed 8 seconds. Release the pressure and disconnect the supply line.

9.4 Connect the supply line to Conection 1 and operate the rig to fully close the jack. The pressure required to close the jack must not exceed 100 lbf/in^2 and the time required to complete the stroke must not exceed 10 seconds. Release the pressure and disconnect the supply line.

REPAIR AND RECONDITIONING INSTRUCTIONS

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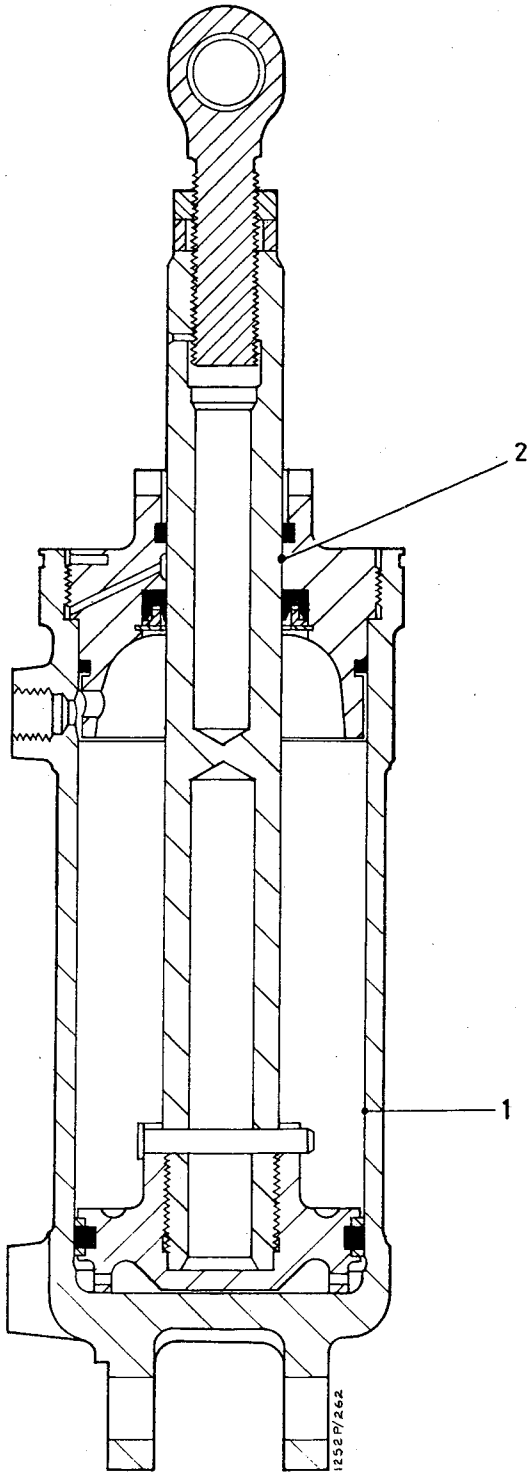

Fig 1 Fits and clearances - locations

FITS, CLEARANCES AND REPAIR TOLERANCES

Ref. No. on Fig. 1	Parts and Description		Dimension New	Permissible Worn Dimension		Permissible Clearance	
				Interchangeable Assembly	Selective Assembly	New	Worn
1	Cylinder	i/d	2·875 / 2·880	2·883	2·883	–	–
2	Gland nut	i/d	1·1280 / 1·1245	1·1290	1·1290	0·0060 / 0·0005	0·0070
	Piston rod	i/d	1·1240 / 1·1220	–	–		

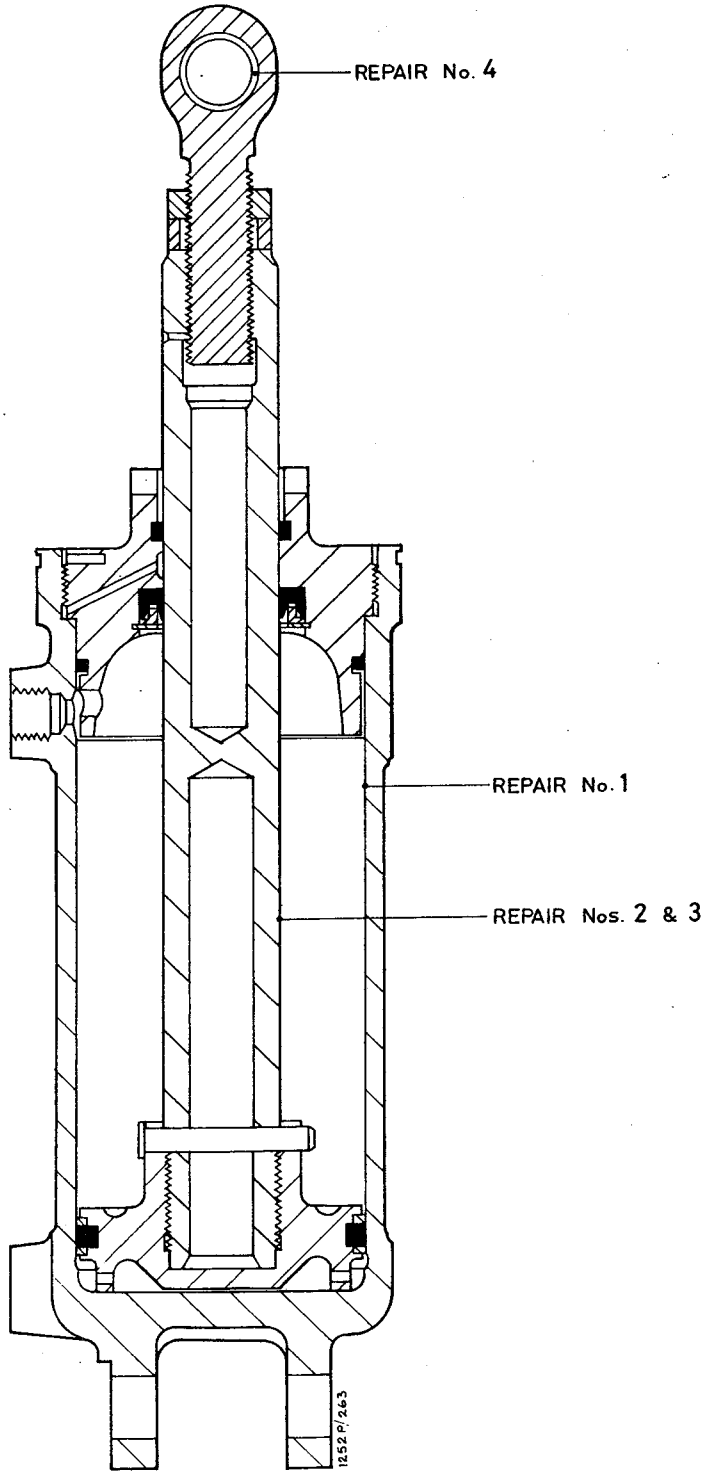

Fig 2 Repair - locations

REPAIR

General

When carrying out repairs, certain references are made to PS(eg. PS405-3). In these cases reference must be be made to Dowty Rotol Specification Manual, Publication 872.

REPAIR No 1

Repair to cylinder (fig 2)

Repair procedure

Scores in the bore are to be polished out providing that the permissible worn dimension is not exceeded. Mark repair number R313 diagram 1A1 adjacent existing part no to PS405-3.

REPAIR No 2

Repair to piston rod (fig 2)

Repair procedure

Scores on the chromium plated surface not penetrating the base metal are to be remedied by stripping the chromium and replating to the orginal diameter 1·124 to 1·122 in. Surface finish before and after plating to be 8 micro-inches C.L.A. max. Mark repair number R313 diagram 1B(a) adjacent existing part no to PS405-3.

REPAIR No.3

Repair to piston rod (fig 2)

Repair procedure

Scores on the chromium plated surface that penetrate the base metal are to be remedied by stripping the chromium plating and grinding back as necessary to a minimum diameter of 1·112 in. Diameter then to be built up with hard chromium plate and re-ground back to 1·122 in diameter with a surface finish of 8 micro-inches C.L.A. max. Mark repair R313 diagram 1B(b) adjacent existing part no to PS405-3.

REPAIR No.4

Repair to eyebolt (fig 2)

Repair procedure

Damage or wear to bush is to be remedied by renewal and subsequent check ream to 0·62575 in. to 0·62450 in. Mark repair number R313 diagram 1C adjacent existing part no to PS405-3.