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Nov. 79

FLAP SYNCHRONISING JACK DOWTY ROTOL TYPES 07390PA03 and 07390SA03

GENERAL AND TECHNICAL INFORMATION
REPAIR AND RECONDITIONING INSTRUCTIONS

BY COMMAND OF THE DEFENCE COUNCIL

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

CONTENTS

Introduction

1 These jacks are fitted as a pair and are interconnected in the flap circuit to maintain a synchronised movement of the port and starboard flaps. The jacks are similar, but are handed for their respective locations.

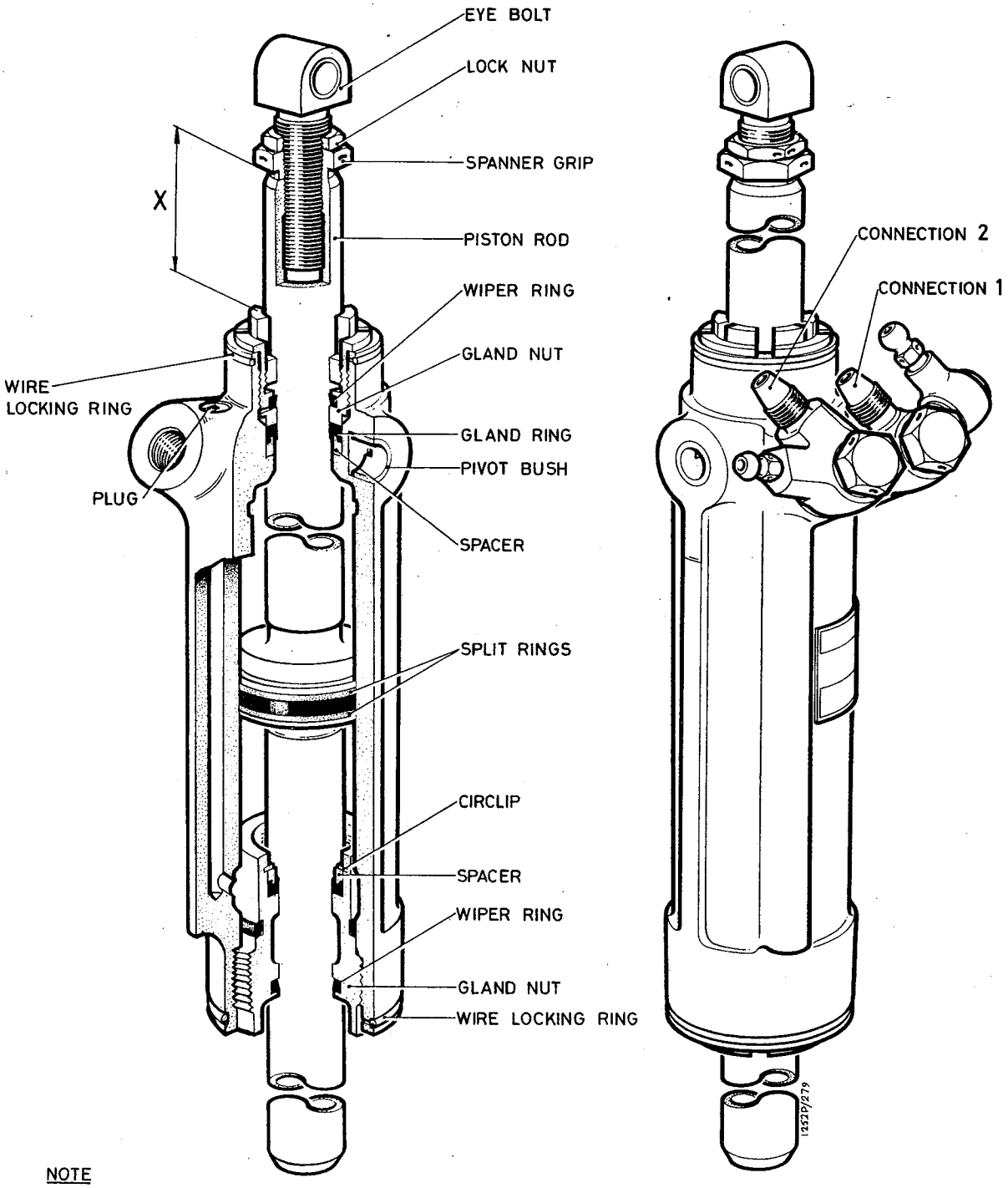
Description

2 The cylinder has a gland assembly at each end and at one end is a boss, tapped for pipe connections and blind drilled and bushed for a pivot attachment. The cylinder wall has a longitudinal fluid duct, one end of which leads to the cylinder bore, the other end being closed by a screwed plug and sealing ring.

3 The gland assembly at the bossed end consists of a gland ring and a spacer retained by a gland nut, which is grooved for a wiper ring and secured by a wirelocking ring. The gland assembly has an adjusting nut fitted to it to ensure that the piston is fully bottomed in the cylinder at the end of the stroke. The opposing gland assembly consists of a gland nut grooved for a wiper ring and a sealing ring and recessed for a gland ring and a spacer, retained by a circlip. The housing is also grooved and drilled for a breather hole, and is locked to the cylinder with a wirelocking ring.

4 The piston rod is drilled from each end and at a mid-position is integral with the piston head. The head is grooved for a sealing ring and two supporting split piston rings. Each end of the piston rod is supported in a gland assembly and at the connection end the rod is slotted to receive a spanner grip and tapped for a bushed eyebolt fitted with a locknut.

5 Connection 2, for extending the jack, comprises a right-angle banjo union fitted with bonded seals and secured by a banjo bolt to the tapping which joins the longitudinal drilling in the cylinder wall. A bleeder banjo union with bonded seals is secured by a special banjo bolt to one adapter of the right-angle banjo union. Connection 1, for closing the jack, is positioned adjacent and consists of a special banjo union fitted with bonded seals and a bleeder screw and secured by a banjo bolt screwed into a tapping leading direct to the cylinder bore.



NOTE
STARBOARD UNIT SHOWN

Fig. 1 Flap synchronising jack

SERVICING

TABLE 1 SPECIAL TOOLS

Stores Ref.	Parts No.	Description
27Q/13476	ST1181	'C' key spanner for gland nut
1B/4428	ST947/A	Circlip pliers (Type S.I.S.)
27Q/13480	ST1619	Assembly tool for gland ring
27Q/13486	ST880	'C' key spanner for gland nut
27Q/13482	ST2024	Sleeve for split piston rings
-	ST1953	Spanner for adjusting nut

Leakage

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

Dismantling

7

7.1 Remove Connection 1 comprising the banjo bolt, the right-angle banjo union, the special banjo bolt, the bleeder banjo union and the bonded seals.

7.2 Remove Connection 2, comprising the banjo bolt, the special banjo union and the bonded seals.

7.3 Remove the wire locking ring and unscrew and remove the larger gland nut. Remove the wiper ring and sealing ring, the circlip, the spacer and the gland ring from the gland nut.

7.4 Slacken the locknut and remove the eye-bolt and the spanner grip from the piston rod.

7.5 Remove the wire locking clip and unscrew and remove the adjusting nut and the gland nut. Remove the wiper ring from the gland nut.

7.6 Withdraw the piston from the gland housing end of the cylinder and extract the gland ring and spacer.

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

7.8 Remove the blanking plug and remove the sealing ring from the plug.

Cleaning

8

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 UNDUE CONTACT WITH THE SKIN.

CAUTION ...

Chlorinated solvents 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

9 Before being assembled, all sealing rings should be lightly coated with Grease XG-315.

9.1 Fit the sealing ring and supporting piston rings to the piston head, insert the piston in the cylinder with tapped end leading.

9.2 Slide the spacer and the gland ring over the tapped end of the piston rod and locate them in the counterbore of the cylinder. Fit the wiper ring to the gland nut, slide the nut over the piston rod and screw it tightly into the cylinder. Fit the adjusting nut over the piston rod and screw into the gland nut. With piston rod in the fully extended position, rotate adjusting nut until dimension X (fig. 1) is 6·920 to 6·910 in. Screw the gland nut back to the nearest locking position and fit the wire locking ring.

9.3 Fit the locknut to the eye-bolt and the spanner grip to the piston rod and screw the eye-bolt into the piston rod. The eye-bolt will be finally adjusted and locked on installation of the jack in the aircraft.

9.4 Fit the sealing ring to the blanking plug and screw the plug into the end of the longitudinal drilling.

9.5 Fit the wiper ring and the sealing ring and the gland ring and spacer, retained by the circlip, to the gland housing. Slide the gland housing assembly over the piston rod and screw it tightly into the cylinder. Screw the housing back to the nearest locking position and fit the wire locking ring.

9.6 Fit the Connection 1, comprising the right-angle banjo union, the banjo bolt, the bleeder banjo union, and the special banjo bolt together with the bonded seals.

9.7 Fit Connection 2, consisting of the special banjo union and the banjo bolt together with bonded seals.

9.8 After final assembly and test the connections should be wirelocked.

Testing

10 A power pump test rig, fitted with a pump capable of delivering 3·45 gall. per min. is required.

10.1 Connect the the test rig supply line to Connections 1 and 2.

10.2 Operate the jack to move the piston through the full travel, at least three times in each direction to expel air.

10.3 Repeat 10.2 and check that the pressure required to move the piston through the full stroke does not exceed 75 lbf/in^2 and that the time required does not exceed 5 sec.

10.4 Increase the pressure to 5250 lbf/in^2 at the end of each stroke. Leakage is not permissible. Release the pressure and disconnect the supply line.

REPAIR AND RECONDITIONING INSTRUCTIONS

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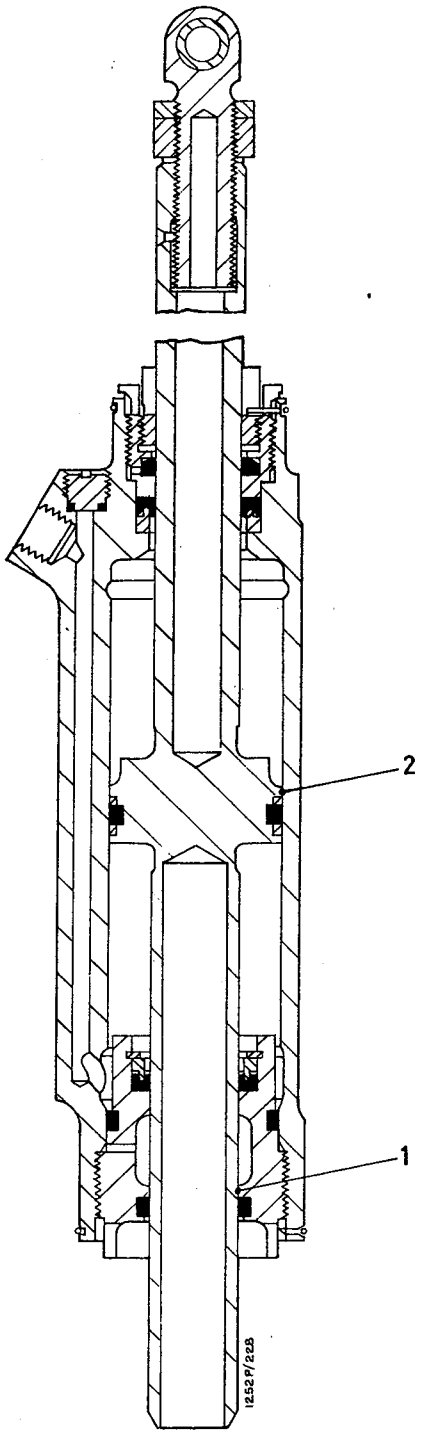

Fig. 1 Fits and clearances - locations

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	Gland nut	i/d	0·87575 / 0·87450	0·87700	0·87700	0·00050 / 0·00375	0·00500
	Piston	o/d	0·87400 / 0·87200	-	-		
2	Cylinder	i/d	1·755 / 1·750	1·758	1·758	-	-

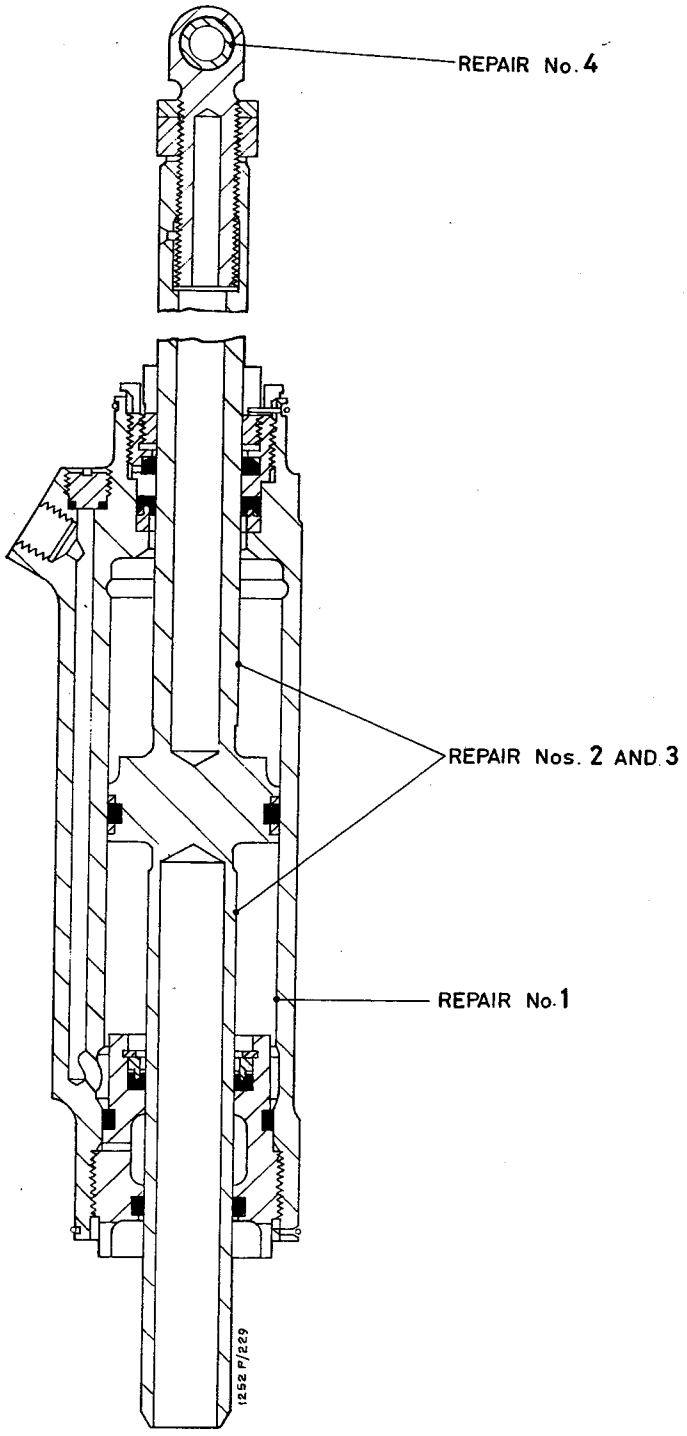

Fig.2 Repair - locations

REPAIR

General

When carrying out repairs, certain references are made to PS (eg. PS405-3). In these cases, reference must be 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 the permissible worn dimension is not exceeded and that a final surface finish of 8 micro-inches C.L.A. max is achieved. Mark repair number R321 diagram 1B adjacent existing part no to PS405-3.

REPAIR No.2

Repair to piston (fig.2)

Repair procedure

Scores on the chromium plated surface that do not penetrate the base metal are to be remedied by stripping the chromium, then replating to the original diameter of 0·872 to 0·874 in. Surface finish before and after plating to be 8 micro-inches C.L.A. max. Mark repair number R321 diagram 1C(a) adjacent existing part no to PS405-3.

REPAIR No.3

Repair to piston (fig.2)

Repair procedure

Scores on the chromium plated surface that penetrate the base metal are to be remedied by stripping the chromium and grinding to 0·862 in. diameter minimum. Diameter then to be built up with hard chromium plate and grinding back to 0·872 to 0·874 in. Surface finish before and after plating to be 8 micro-inches C.L.A. max. Mark repair number R321 diagram 1C(b) adjacent existing part no to PS405-3.

REPAIR No.4

Repair to eyebolt (fig.2)

Repair procedure

Damage or wear to the bush is to be remedied by renewal. Check ream on assembly 0·3745 to 0·3755 in. Mark repair number R321 diagram 1D adjacent existing part no to PS405-3.