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Hunter.

SELECTOR VALVE
DOWTY AEROSPACE HYDRAULICS
Part No 08808YB06 and 08808YB07

GENERAL AND TECHNICAL INFORMATION (-1)
PARTS CATALOGUE AND RELATED INFORMATION (-3)

BY COMMAND OF THE DEFENCE COUNCIL

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WARNINGS

(1) WHITE SPIRIT. THIS PUBLICATION CONTAINS PROCEDURES WHICH USE WHITE SPIRIT. REFER TO AP100B-10, DATA SHEET S2803.

(2) LOTOXANE. THIS PUBLICATION CONTAINS PROCEDURES WHICH USE LOTOXANE. REFER TO AP100B-10, DATA SHEET S2802.

(3) PREVENTATIVE PX1. THIS PUBLICATION CONTAINS PROCEDURES WHICH USE PREVENTATIVE PX1. REFER TO AP100B-10, DATA SHEET S3301.

GENERAL

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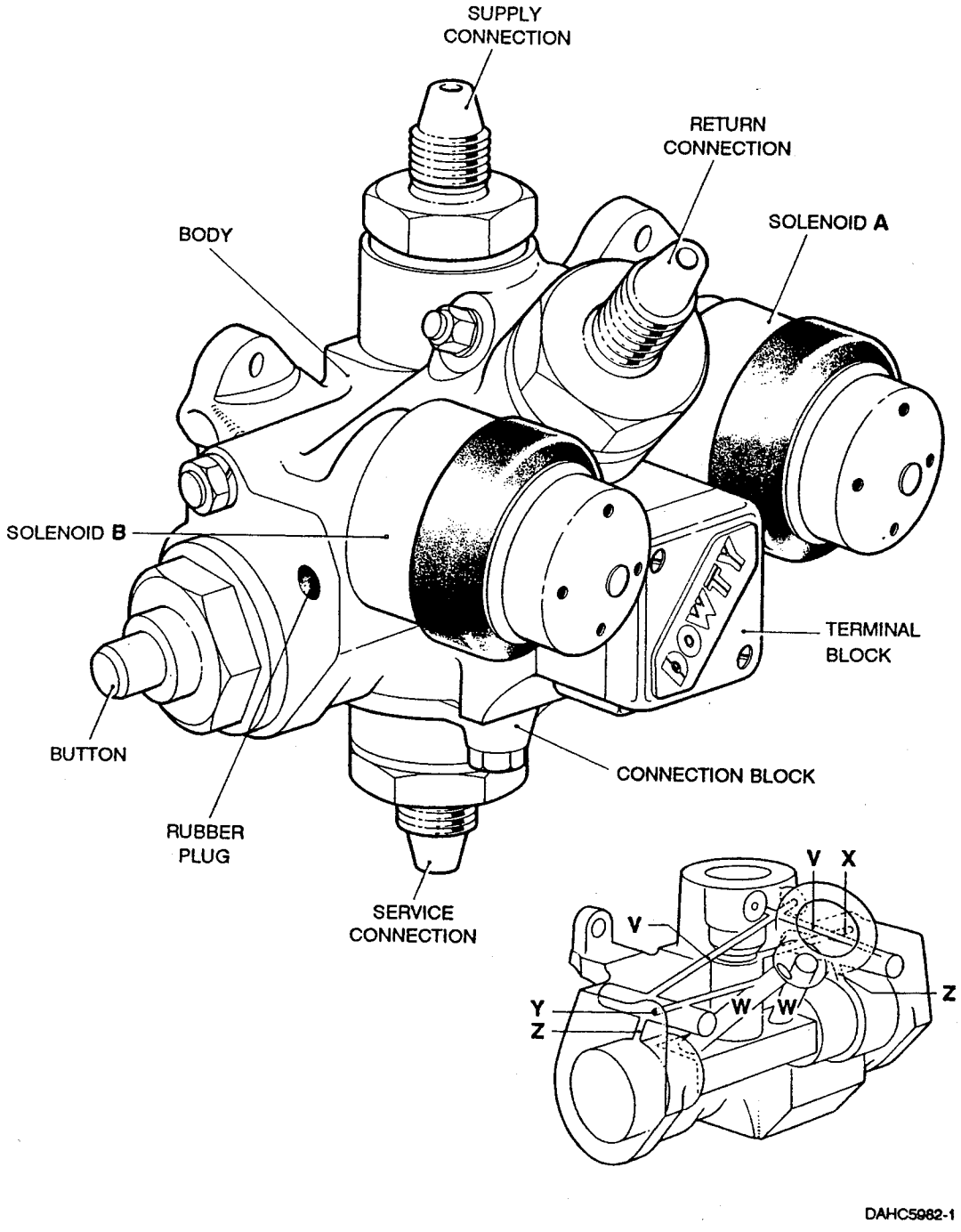


Fig 1 Selector valve

Leading particulars

1 Refer to the appropriate annex for the leading particulars.

Modification state

2 Refer to the appropriate annex for the relevant modification state.

Introduction

3 The selector valve is electrically-operated to direct the flow of fluid to a specific service or, alternatively, to permit fluid from the service to pass to return. The unit has no neutral position and the main flow of fluid is controlled by a slide valve, which is operated by the fluid pressure, diverted as required by two pilot valves each actuated by a solenoid.

4 For ground servicing purposes, a manually-operated button assembly is incorporated in the unit to facilitate movement of the slide valve without recourse to power operation. The unit described and illustrated in this publication is a basic type and variants are covered in the annexes.

Constructional description (Fig 1 and 2)

5 The body has fluid ducts and houses a slide valve and two solenoid operated pilot valve assemblies. The body also receives the supply and return connections. A connection block, fitted with an O-ring, is secured in the body by four bolts and receives the service connection. The connections are adapters fitted with bonded seals. The solenoids A and B are secured to the body by studs and sleeve nuts. A terminal block, located between the solenoids, is secured by screws. The drillings in the body are closed at their outer ends by blanking screws fitted with bonded seals.

6 The rectangular slide valve has a central slot and is positioned in the centre portion of the main bore. The slide valve is supported at the ends by two actuating pistons of different diameters which are fitted with O-rings, and the O-ring of the small piston is supported by an anti-extrusion ring. The large piston is located in the end of the main bore adjacent to solenoid A and the small piston which slides in a sealed sleeve, is positioned at the opposite end. A sealed end plug is screwed into the bore to retain the large piston. The button assembly, which is located at the end of the main bore adjacent to the small piston comprises a button, flanged at the inner end and sliding in a sealed housing screwed into the bore. Outward movement of the button is restricted by a button stop inserted in the housing, and the button passes out of the housing through an O-ring supported by an anti-extrusion ring.

7 A secondary bore from the supply connection boss to the connection block intersects the main bore, and oblique drillings W link the return connection to the ends of the slide valve bore. A spring in the secondary bore holds a filter assembly against a shoulder in the bore to prevent the ingress of dirt, and also loads a thimble, fitted with an O-ring, against the upper face of the slide valve. The connection block, machined with a slot, is polished to mate with the underside of the slide valve, and movement of the slide valve will allow either supply or return fluid to pass through the selector valve.

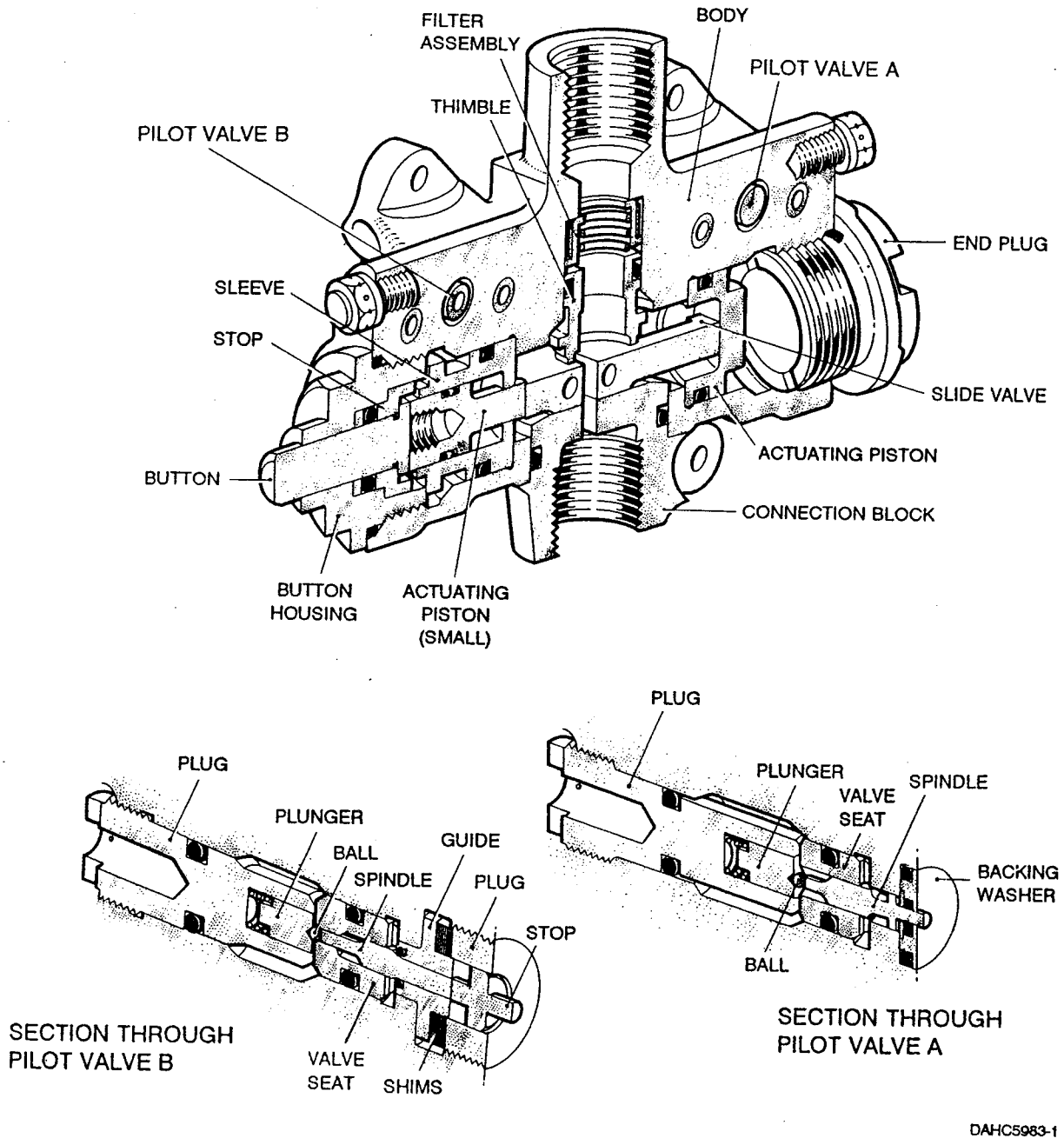


Fig 2 Selector valve assembly

8 The pilot valve assemblies are housed in parallel bores, at right-angles to the main bore; each bore having two annular grooves which individually connect to fluid ducts. The pilot valve assemblies each comprise a centrally-drilled valve seat and a plug which are grooved for O-rings. The inner end of the plug houses a spring-loaded plunger and both the plunger and the valve seat are countersunk on their opposing ends to provide alternative seatings for a ball located in the gap. The gap is connected to fluid ducts through one of the annular grooves.

9 The central drilling of the valve seat receives a spindle, the inner end of which is fluted and contacts the ball. The outer end of the spindle for the pilot valve A is flanged and passes through a backing washer fitted with two different sized O-rings to contact the plunger of the solenoid. The end of the spindle for pilot valve B is sealed and contacts a flanged stop in the bore of a plug. The plug is screwed into the body, against a guide with shims interposed. The stop contacts the plunger of the solenoid.

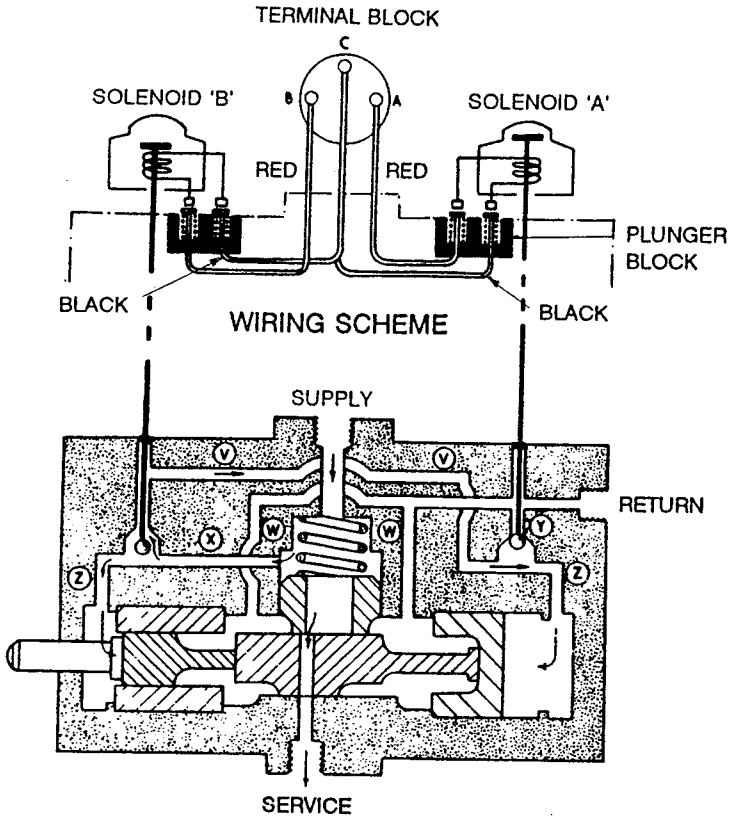
10 The two solenoids are located adjacent to the pilot valves and each is secured to the body by two studs and sleeve nuts. A terminal block, fitted between the solenoids and attached to the body by screws, is wired to two plunger blocks. Each plunger block is backed by an insulating mat and housed in a slot below the pilot valve. The leads of the terminal block pass to each plunger block through an insulating tube housed in the body and sealed at the ends by rubber plugs.

11 The plunger block is recessed for a spring through which the relevant lead of the terminal block passes. The spring acts against a ferrule which is attached to the end of the lead to provide a flexible contact with the contact of the solenoid. A protective metal cap is fitted over the rubber shroud of each solenoid to prevent inadvertent manual operation of these units when installed.

Functional description (Fig 3)

12 When a solenoid is energised, the slide valve is moved to one end of the main bore and remains in this position after the solenoid is de-energised and until the other solenoid is energised. Constant pressure is applied to the small actuating piston by supply fluid which passes from the supply connection, through the drilling X, the gap between the valve seat and the plug and, the drilling Z.

13 With solenoid A energised, its plunger pushes the spindle of the pilot valve to thrust the ball from the valve seat against the spring-loaded plunger. This allows fluid at the large actuating piston to flow through the drilling Z, the open valve seat and the drilling Y to the return connection. The pressure applied to the small actuating piston moves the slide valve along the bore to blank off the slot in the slide valve against the face of the connection block. The flow of supply fluid to the service connection is thus cut off, but return fluid at the service connection passes through the connection block, around the end of the slide valve and through one of the drillings W to the return connection. When solenoid A is de-energised, the solenoid plunger is withdrawn and the spring-loaded plunger of the pilot valve thrusts the ball onto the valve seat. The slide valve is held in the selected position by the pressure on the small actuating piston.



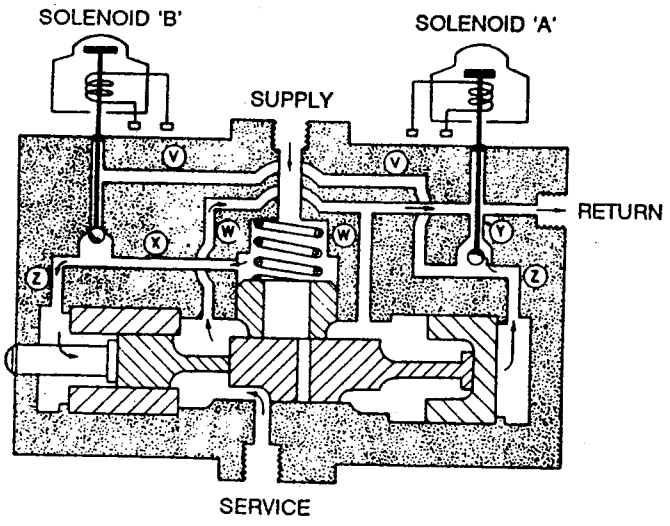


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Fig 3 Functional description

14 When solenoid B is energised, the movement of the solenoid plunger and the spindle thrusts the ball from the valve seat. Pressurised fluid flows from the supply connection through the drillings X and Z to the small actuating piston and also through the open valve seat, the drilling V, the gap between the valve seat the plug of the pilot valve A and, the drilling Z to the large actuating piston. The greater effective pressure on the large piston moves the slide valve to align its slot with the slot of the connection block, and supply fluid flows through the slide valve and the connection block to the service connection. Meanwhile, fluid displaced by the movement of the small piston has flowed through the drilling Z, along the drilling V and through the open valve seat to the main bore behind the larger piston. When solenoid B is de-energised, the solenoid plunger is withdrawn and the relevant ball is seated by the spring-loaded valve plunger. Fluid is trapped at the large actuating piston and the slide valve is locked in the selected position until a reverse selection is made, by energising solenoid A.

15 For ground servicing with the accumulator discharged, the unit may be operated without the necessity of running the aircraft engine, by carrying out the following procedure. Energise the solenoid A and depress the button to impart initial movement to the slide valve, then operate the hand pump of the ground test rig to complete the movement.

MAINTENANCE

Special tools and equipment

16 The following special tools, equipment and materials are required to carry out the maintenance procedures detailed.

Part No	Description	Application
ST1923	Assembly post	Assembling
ST1952	Assembly post	Assembling
ST1964	Assembly post	Assembling
ST1966	Spring compressor	Assembling
ST2081	Assembly post	Assembling
ST2757	Adapter	Assembling
–	Static hydraulic test rig	Assembly test
–	Electrical supply (16 Vdc)	Assembly test
–	Lotoxane (MIL-T-81533A)	Cleaning
–	White spirit (BS245)	Cleaning
–	Oil OM15 (DTD585)	Assembling
–	Grease XG287 (DEF STAN 91–53)	Assembling
–	Grease MS4	Assembling
–	Corrosion preventative PX1	Preservation
–	Locking wire (DTD189A)	Locking parts

Safety and maintenance notes

17 Safety and maintenance notes or other general safety/maintenance requirements appropriate to the equipment, or to the main equipment, must be complied with where relevant throughout the work detailed in this publication.

BAY MAINTENANCE

Dismantling (Fig 1 and 2)

WARNING

SPECIFIC INTERNAL DETAILS OF THIS UNIT ARE SUBJECT TO SPRING PRESSURE AND CARE MUST BE TAKEN WHEN DISMANTLING.

18 Discard all forms of sealing rings after removal from the unit.

18.1 Remove the supply, service and return connections together with the bonded seals.

18.2 Remove the sleeve nuts and withdraw the solenoid assemblies from the body. The solenoid assemblies should not be further dismantled.

18.3 Remove the bolts and the connection block from the body and remove the O-ring from the connection block.

18.4 Remove the end plug together with the O-ring and withdraw the large actuating piston from the body. Remove the O-ring from the actuating piston.

18.5 Unscrew the button housing and withdraw the button, the button stop, the O-ring and the anti-extrusion ring from the button housing. Remove the O-ring from the button housing.

18.6 Withdraw the small actuating piston and the sleeve from the body and remove the O-rings and the anti-extrusion ring.

18.7 Withdraw the slide valve.

18.8 Withdraw the thimble, the spring and the filter assembly and remove the O-ring from the thimble.

18.9 Remove the housing, the two O-rings, the backing washer and the flanged spindle of the pilot valve assembly A.

18.10 Remove peening from the plug and unscrew and remove the plug. Withdraw the stop, shims, guide, O-ring and spindle.

18.11 Remove the plugs of the pilot valve assemblies together with the springs and plungers, the balls and the valve seats. Extract the plungers and the springs from the plugs.

NOTE

Do not disturb the plunger blocks, the terminal block, the rubber plugs and the blanking screws unnecessarily.

CLEANING

▶ WARNINGS

(1) LOTOXANE. LOTOXANE IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

(2) PREVENTATIVE PX-1. PREVENTATIVE PX-1 IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION.

(3) WHITE SPIRIT. WHITE SPIRIT IS USED IN THE MAINTENANCE OF THIS EQUIPMENT. REFER TO THE WARNING IN THE PRELIMINARY PAGES OF THIS PUBLICATION. ◀

19 To enable all items to be visually examined for damage and wear, each part must be thoroughly cleaned ▶ using lotoxane or white spirit. 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 using temporary corrosion preventative PX1.

Examination and checking

20 Visually examine all parts for damage and corrosion. Check parts for permissible wear in accordance with fits and clearances, paragraph 24.

Superficial damage

21 Superficial damage in the form of external isolated scores, smooth dents and abrasions free from cracks are to be regarded as negligible provided that internal dimensions are not affected and the damage is within the following limits:

21.1 Not exceeding 0.500 in long.

21.2 Not exceeding 0.010 in deep.

21.3 Not less than 0.250 in from any hole or bearing surface.

NOTE

Burrs must be removed and sharp edges blended out. Minor scores and abrasions in non-sealing bores may be ignored provided that proud portions of the abrasion are removed.

Checking data

22 Spring 500Y371

22.1 Number of working coils: 2.5

22.2 Wire size: 0.0156 in

22.3 Free length: 0.105 to 0.125 in

22.4 Check length: 0.070 in

22.5 Load at check length: 0.6 to 1.0 lbf.

23 Spring 500Y585

23.1 Number of working coils: 3

23.2 Wire size: 0.064 in (16 SWG)

23.3 Free length: 0.460 to 0.480 in

23.4 Check length: 0.330 in

23.5 Load at check length: 9 to 11 lbf.

Fits and clearances (Fig 4)

24 Check that the dimensions are within the specified limits.

TABLE 1 FITS, CLEARANCES AND REPAIR TOLERANCES

Ref No on Fig 4	Parts and Description		Dimension New	Permissible Worn Dimension		Permissible Clearance		Remarks
				Interchangeable Assembly	Selective Assembly	New	Worn	
1	SPINDLE IN VALVE SEAT							
	Valve seat	i/d	0.09425 / 0.09325	0.09500	0.09575	0.00225 / 0.00525	0.00700	
	Spindle	o/d	0.09100 / 0.08900	0.08800	0.08725			
2	PISTON IN SLEEVE							
	Sleeve	i/d	0.50050 / 0.49950	0.50100	0.50150	0.00050 / 0.00250	0.00350	
	Piston	o/d	0.49900 / 0.49800	0.49750	0.49700			
3	PISTON IN BODY							
	Body	i/d	0.87575 / 0.87450	0.87630	0.87670	0.00075 / 0.00350	0.00450	
	Piston	o/d	0.87375 / 0.87225	0.87180	0.87130			
4	BUTTON IN BUTTON HOUSING							
	Button housing	i/d	0.37550 / 0.37450	0.37650	0.37650	0.00050 / 0.00250	0.00350	
	Button	o/d	0.37400 / 0.37300	-	-			
5	SPINDLE IN VALVE SEAT							
	Valve seat	i/d	0.09425 / 0.09325	0.09500	0.09575	0.00050 / 0.00250	0.00400	
	Spindle	o/d	0.09275 / 0.09175	0.09100	0.09025			

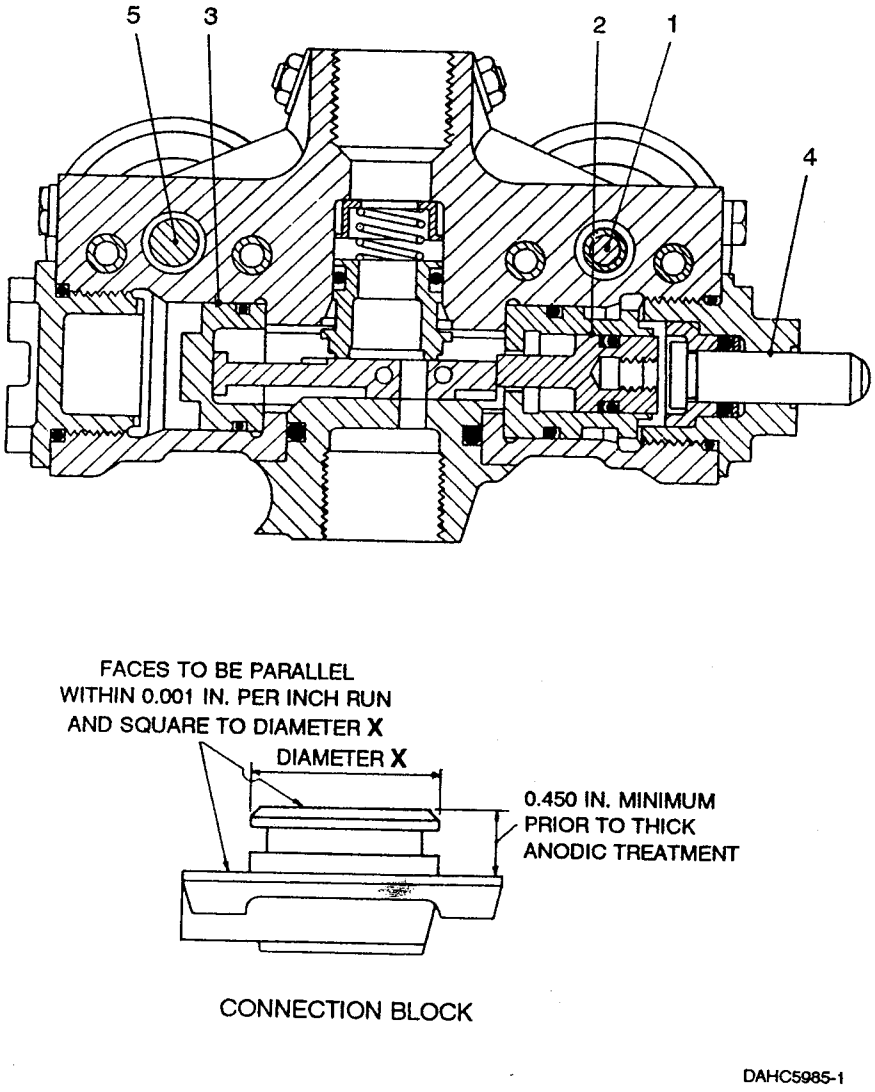

Fig 4 Fits and clearances

Assembling (Fig 1, 2, 5 and 6)

25 Lubricate all parts with clean oil OM15 before assembling the unit. Assemble leather backing rings with their rough faces adjacent to the appropriate O-ring.

25.1 Assemble an O-ring to the valve seat and to the plug of pilot valve A using assembly posts ST1952 and ST1923 respectively.

25.2 Insert the valve seat followed by a ball into the pilot valve bore. Insert the spring and the plunger into the plug and screw in the plug to retain the ball and valve seat.

25.3 Locate the flanged spindle to the pilot valve assembly for solenoid A and fit the backing washer, the two O-rings and the housing over the end of the spindle.

NOTE

Pilot valve B details will be assembled at a later stage.

25.4 Assemble the O-ring to the thimble and insert the filter assembly, the spring and the thimble into the body.

25.5 Refer to Figure 5 and proceed as follows:

25.5.1 Hold the thimble in place through the connection block aperture.

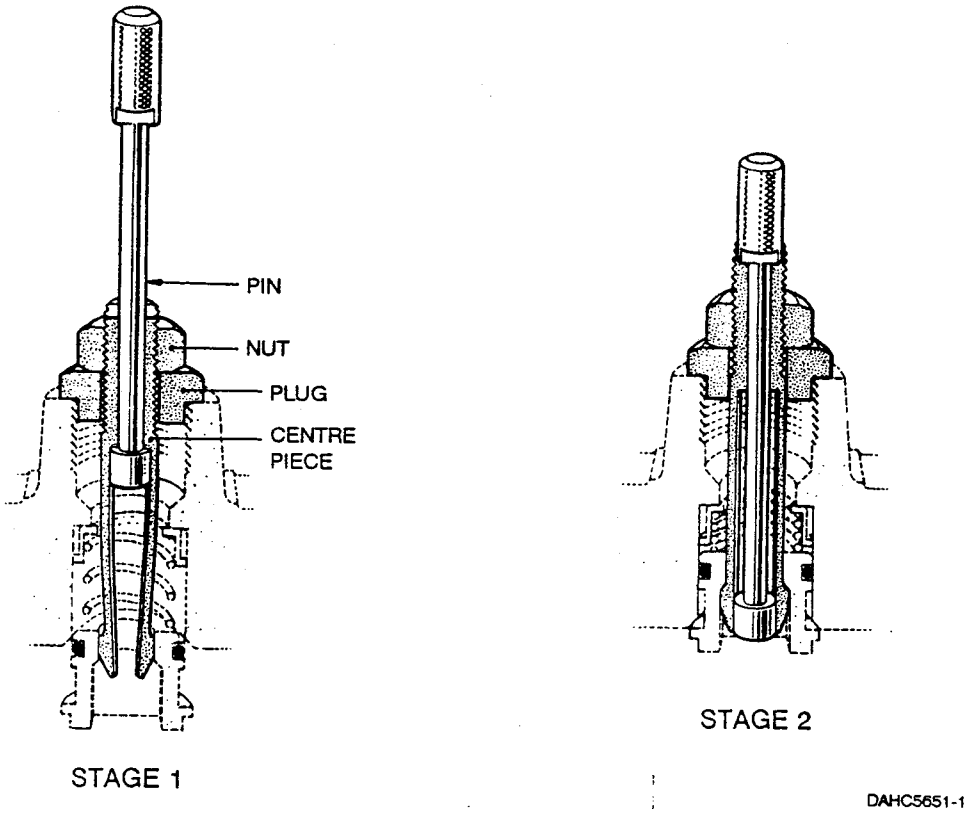

Fig 5 Use of spring compressor ST1966

25.5.2 Position the spring compressor ST1966 through the supply connection tapping and allow the prongs of the centre piece to engage with the shoulders of the thimble.

25.5.3 Push the pin into the centre piece to ensure that the prongs are held in contact with the shoulder.

25.5.4 Turn the nut to draw the thimble against the spring to allow for the insertion of the slide valve.

25.5.5 Locate the slide valve centrally under the thimble with the stemmed end adjacent to solenoid A.

25.5.6 Withdraw the pin to its fullest extent and remove the complete spring compressor by giving it a sharp pull.

25.6 Assemble the O-ring to the connection block and secure the connection block in the body with the four bolts.

25.7 Assemble the O-rings to the actuating pistons and the sleeve using assembly post ST1964. An anti-extrusion ring must also be fitted to the small actuating piston. If a new anti-extrusion ring is fitted, the feeder on the side of the ring must be cut off flush with the surface and the ring diagonally cut through to facilitate assembly to the actuating piston. The ring is then to be assembled with the flush surface nearest to the centre line of the unit when the actuating piston is assembled.

25.8 Locate the large actuating piston to the stemmed end of the slide valve. Assemble an O-ring to the end plug, using assembly post ST2081, and screw the end plug into the body using adapter ST2757 to a torque of 50 to 55 lbf ft.

25.9 Position the small actuating piston in the sleeve and locate the assembly to the other end of the slide valve.

25.10 Insert the anti-extrusion ring into the button housing followed by the O-ring. Assemble an O-ring to the outside diameter of the button housing using assembly post ST2081.

25.11 Insert the stop into the button housing and follow with the button, pushing the button through the button housing until the flanged end abuts the stop. Locate the assembly to the end of the body adjacent to pilot valve B and screw the button housing into the body to a torque of 50 to 55 lbf ft.

25.12 Assemble bonded seals to the supply, return and service connection adapters and screw them into their respective bosses.

25.13 Ensure that the contact faces of the solenoid assemblies and the body are clean.

25.14 Check for true engagement between the solenoid assemblies and the body so that correct transfer of heat is made from the solenoid assemblies to the body.

25.15 Refer to Figure 6 and coat each solenoid assembly mounting face with grease MS4.

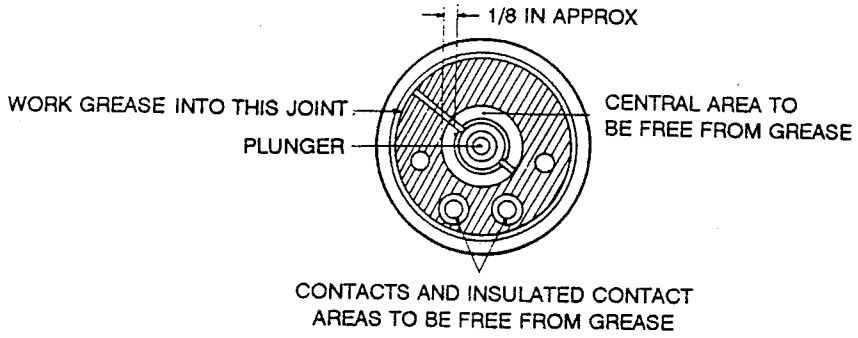

Fig 6 Solenoid greasing details

25.16 Check by electrical test that the leads between the terminal block assembly and the plunger block have been wired correctly.

NOTE

Solenoid assembly A is painted yellow to identify it from solenoid assembly B and it is important that it is assembled to pilot valve A as in Figure 1. If a new solenoid A is fitted, it is to be completely painted with one coat of yellow glossy synthetic enamel DTD827 or BSS381 after attachment to the selector body.

25.17 Position solenoid assembly A so that the contacts will meet those in the plunger block and insert the solenoid assembly studs in the body. Screw in the sleeve nuts from the opposite side to secure the solenoid assembly tightly against the body.

25.18 Assemble the O-ring to the valve seat using assembly post ST1952 and insert the valve seat into the bore of pilot valve B, followed by the ball.

25.19 Insert the spring, followed by the plunger, into the plug.

25.20 Assemble the O-ring to the plug using assembly post ST1923 and screw the plug into the body to retain the ball and valve seat.

25.21 Assemble the O-ring to the spindle and insert the spindle through the valve seat to oppose the ball, ensuring that the O-ring is correctly housed in the body.

25.22 Locate the shims over the larger spigot of the guide. The number of shims initially fitted should be sufficient to permit end float on the stop but it should not be necessary to fit shims of a total thickness exceeding 0.060 in.

25.23 Insert the guide, smaller spigoted end leading, into the body and over the spindle until the flange abuts the shoulders.

25.24 Pack the inside of the plug with grease XG287. Insert the stop, chamfered face leading, into the plug and screw the plug into the body. Do not lock the plug at this stage.

25.25 Connect a hand pump supply line to the supply connection of the selector valve and blank off the service connection. Connect a 16 Vdc electrical supply to the terminal block assembly and energise solenoid A.

25.26 Operate the hand pump applying a pressure of 4000 lbf/in^2 at the supply connection to hold the ball of the pilot valve assembly B on its seat. Maintain this pressure. Connect the supply line of a separate hand pump to the return connection. Maintaining the pressure at the supply connection, apply and maintain a pressure of between 350 and 450 lbf/in^2 at the return connection.

25.27 Measure the protrusion of the stop from the face of the selector valve body and note this dimension. Depress the stop and again measure its protrusion from the face of the body. Record the difference in the two readings and deduct 0.003 in from the result to obtain the end float, which must be within the limits of 0.003 to 0.007 in.

NOTE

To avoid lifting the ball off its seat, it is important that a load of 6 lbf is not exceeded when depressing the stop.

25.28 Release the pressure, first at the return connection and then at the supply connection. Unscrew the plug and remove shims equal in thickness to the figure obtained in parargraph 25.27 less 0.003 in.

25.29 Replace the plug and repeat paragraphs 25.26 and 25.27, checking that the end float is within the required limits, then release the pressures in the sequence stated in paragraph 25.28.

25.30 Disconnect the supply lines and remove the blanking plug from the service connection. Punch the adjacent metal of the body into the screw driver slots of the plug in two places to lock.

25.31 Assemble solenoid assembly B to the selector valve in accordance with the instructions as detailed in paragraph 25.17

25.32 After satisfactory test, wirelock the connections, the blanking screws, the end plug, the button housing, the sleeve nuts and the connection block bolts.

TESTING

Special tools and test equipment

26 The following special tools and test equipment are required to carry out the test procedures detailed.

Part No	Description	Application
-	Static hydraulic test rig (with two hand pumps and a power pump delivering 2 gal/min at 3700 lbf/in^2 and peaking at between 4000 and 4300 lbf/in^2)	Apply hydraulic pressure

Part No	Description	Application
-	Electrical supply (variable 16 to 28 Vdc)	Energise solenoids
-	500 Vdc insulation resistance test set	Insulation test
-	Blanking adapter (with bleed plug)	Testing
-	Slave jack	Testing
-	Electro-magnetic counters (Qty 2)	Testing

Testing the unit

27 In the event of internal leakage occurring during the subsequent tests, the operating condition of the selector valve is to be noted, whether the solenoid is energised or de-energised, and the calibration test detailed in paragraph 32 carried out under the same operating condition.

Electrical test

28 This test must be carried out before and after the subsequent tests. Connect the 500 Vdc insulation resistance test set across one connection terminal and the selector valve body. The insulation resistance should not be less than 20 megohms.

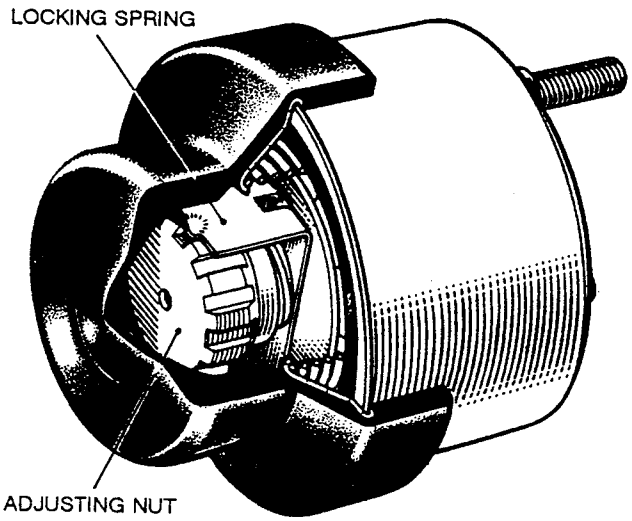

Fig 7 Location of solenoid plunger adjusting nut

Adjustments and pressure tests

29

29.1 Connect the supply line of the static hydraulic test rig to the supply connection, blank off the service connection and close the bleed plug of the blanking adapter. Remove the rubber shrouds from the solenoids and connect the electrical supply to the terminal block assembly. The power at the solenoids is to be 16 Vdc for these tests.

29.2 Energise both solenoids and slacken the pilot valve adjusting nuts (Fig 6). Apply a pressure of between 1000 and 2000 lbf/in^2 and screw down the adjusting nut of solenoid B until the ball of the pilot valve assembly is lifted from its seat; indicated by a drop in pressure. Raise the pressure again to between 1000 and 2000 lbf/in^2 and screw down the adjusting nut of solenoid A until the ball of the pilot valve assembly is lifted from its seat. This will be indicated by a release of pressure from the return connection.

NOTE

Indication of pilot valve opening will be facilitated by keeping the volume of fluid under pressure to a minimum, by the use of a short length of small diameter pipe for the test rig supply line. Also, screwing down the adjusting nut a further two clicks of the locking spring beyond the pilot valve cracking-open point, will ensure that the ball has fully left the seat.

29.3 With both solenoids energised, unscrew solenoid A adjusting nut sufficiently to permit a pressure of 2000 lbf/in^2 to be applied at the supply connection. Screw down the adjusting nut of solenoid A until the ball of the pilot valve is lifted from its seat. This will be indicated by the release of pressure from the return connection. Ensure that the locking spring is engaged in a serration of the adjusting nut and then screw the nut down a further ten clicks of the spring.

NOTE

For operations 29.3 and 29.4, it is important that the respective solenoid adjusting nuts are screwed down just sufficiently to cause a drop in pressure before screwing them down the requisite number of clicks of the locking spring.

29.4 With both solenoids energised, unscrew solenoid B adjusting nut sufficiently to permit a pressure of 2000 lbf/in^2 to be applied at the supply connection. Screw down the adjusting nut of solenoid B until the ball of the pilot valve is lifted from its seat. This will be indicated by a release of pressure from the return connection. Ensure that the locking spring is engaged in a serration of the adjusting nut and then screw the nut down a further seven clicks of the spring.

29.5 De-energise the solenoids and adjust the electrical supply to between 21 and 23 Vdc.

29.6 Apply a pressure of 3500 lbf/in^2 and energise solenoid A. Then energise solenoid B, when the slide valve should operate to select supply to service; indicated by a drop in pressure and a flow of fluid from the return connection. De-energise solenoid A. Apply and maintain a pressure of 3500 lbf/in^2 at the supply connection.

29.7 De-energise solenoid B and then re-energise immediately. The pilot valve must operate. Check this operation by ascertaining that the air gap between the core and armature of solenoid B when energised is zero. To make this check, rotate the solenoid adjusting nut by hand when frictional resistance will be felt, indicating a zero air gap. De-energise solenoid B and release the pressure.

29.8 Reduce the voltage to 16 Vdc. Apply a pressure of 5200 lbf/in^2 and energise solenoid A. Energise solenoid B and the pressure should be released through the return connection. De-energise solenoid A and apply a pressure of 5200 lbf/in^2. Energise solenoid A and the pressure should be released through the return connection. De-energise solenoid B and apply a pressure of 500 lbf/in^2 to ensure that the slide is in the fully OFF position. Release the pressure.

29.9 With solenoid A energised, open the bleed plug at the service connection. Slowly apply a pressure of 300 lbf/in^2 and then gradually increase it to 6600 lbf/in^2. Leakage must not occur. Release the pressure and de-energise solenoid A.

CAUTION

The hydraulic pressure must not exceed 5200 lbf/in^2 with solenoid B energised.

29.10 Close the bleed plug at the service connection, energise solenoid B and apply a pressure of 200 lbf/in^2. Open the bleed plug and the pressure should be released from the service connection. Close the bleed plug and slowly apply a pressure of 300 lbf/in^2, gradually increasing it to 5200 lbf/in^2. Leakage from the return connection must not occur. De-energise solenoid B and gradually increase the pressure to 6600 lbf/in^2. Leakage from the return connection must not occur. Release the pressure.

29.11 Energise solenoid A and apply a pressure of 200 lbf/in^2. Open the bleed plug and there should be no flow of fluid from the service connection. Increase the pressure to between 1850 and 2000 lbf/in^2 and maintain this pressure. Connect the supply line of the second hand pump to the return connection. Operate the pump and fluid should flow freely from the service connection. Close the bleed plug at the service connection and slowly raise the pressure at the return connection to 100 lbf/in^2, then increase it gradually to 1500 lbf/in^2. Leakage must not occur. Release the pressure, first at the return connection and then at the supply connection. De-energise solenoid A, disconnect the supply lines and remove the blanking adapter from the service connection.

Power rig test

30 During these tests, the fluid temperature must not exceed 45°C. The electrical supply to the solenoids is to be 24 to 28 Vdc.

30.1 Connect the selector valve to the power rig with the service connection connected to the anchored end of any convenient slave jack. Connect the supply line of the power rig to the piston rod end of the slave jack.

30.2 Operate the selector valve for 500 slave jack cycles. One cycle is the extending and closing of the slave jack with the pump building up to the peak pressure at the end of each stroke.

30.3 Compare the slave jack cycles and solenoid operations recorded on the separate electro-magnetic counters to ascertain whether any malfunctioning of the pilot valves has occurred.

30.4 Energise solenoid B to extend the slave jack, allow the pump to build up to peak pressure and then de-energise solenoid B. Permit the pump to run for a minimum period of three minutes, during which time there must be no reversal of selection. Disconnect the line from the return connection. Leakage must not occur. Reconnect the line to the return connection.

30.5 Energise solenoid A to close the slave jack, allow the pump to build up to peak pressure and then de-energise solenoid A. Permit the pump to run for a minimum period of three minutes during which time there must be no reversal of selection. Energise solenoid A and disconnect the line from the return connection. Leakage must not occur. De-energise solenoid A.

30.6 Before removing the selector valve from the power rig, reduce the voltage to 16 Vdc and check for satisfactory operation.

Static rig checks

31

31.1 Connect the supply line of the static hydraulic test rig to the supply connection and re-check the setting and adjustment of the pilot valves as detailed in paragraphs 29.3 and 29.4. Readjust if necessary.

31.2 Repeat the tests as detailed in paragraphs 29.5 to 29.11, but in operations 29.9 and 29.10, do not apply pressures in excess of 5200 lbf/in^2.

31.3 Energise solenoid A, apply a pressure of 20 lbf/in^2 and depress the button at the end of the selector body. The button should be depressed as far as possible.

31.4 With solenoid A energised, open the bleed plug at the service connection and slowly apply a pressure of 300 lbf/in^2, increasing it gradually to 6600 lbf/in^2. Leakage must not occur. Release the pressure and de-energise the solenoid.

31.5 After final tests, re-tighten the end plug and the button housing applying a torque load of 50 to 55 lbf ft.

Internal leakage calibration

32 This check is only to be carried out in the event of internal leakage occurring during the preceding tests.

32.1 With the test rig supply line connected to the supply connection and the service connection blanked off, connect a short length of pipe to the return connection.

32.2 Apply and maintain a pressure of 300 to 500 lbf/in^2 and operate the unit to place the slide in the position at which leakage has occurred. When leakage from the return connection has ceased or fallen below a rate of 0.55 cc/min, increase the pressure to 1000 lbf/in^2 and measure the rate of leakage from the return connection at this pressure. This must not exceed 1.30 cc/min. Increase the pressure to 4000 lbf/in^2 and then to 6600 lbf/in^2. Measure the rate of leakage at each pressure increase specified, or at any intermediate pressure stage, the same leakage rate will apply.

32.3 Release the pressure and remove the pipe from the return connection.

32.4 Finally, perform the operations detailed in paragraph 25.32.

Annex A

SELECTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

PART NUMBER 08808YB06

Leading particulars

1 Leading particulars of this unit are as follows:

1.1	System fluid	Oil OM15 (DTD585)
1.2	Connections	3 x 0.250 in BSP
1.3	Solenoids:	
	Rating	24 Vdc continuous
	Consumption	0.4 Amp max

Modification state

2 The information in this annex includes all appropriate modifications up to and including issue 20.

Introduction

3 This unit is identical to the type described and illustrated in the general text.

Annex B

SELECTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

PART NUMBER 08808YB07

Leading particulars

1 Leading particulars of this unit are as follows:

1.1	System fluid	Oil OM15 (DTD585)
1.2	Connections	4 x 0.250 in BSP
1.3	Solenoids:	
	Rating	24 Vdc continuous
	Consumption	0.4 Amp max

Modification state

2 The information in this annex includes all appropriate modifications up to and including issue 24.

Introduction

3 This unit is similar to the type described and illustrated in the general text but differs in that the return connection consists of a banjo secured between bonded seals by a banjo adapter screwed into an adapter in the body creating two return connections.

Testing

4 An additional blanking plug is required to blank one of the return connections. The additional blanking plug should be fitted at the commencement of the tests and removed at their conclusion.

PARTS CATALOGUE AND RELATED INFORMATION

FOR

SELECTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part No 08808YB06 and 08808YB07

MODIFICATION RECORD

Mod No	AL No	Mod No	AL No	Mod No	AL No	Mod No	AL No	Mod No	AL No	Mod No	AL No
AC5592	*										

* Incorporated in initial issue of Catalogue
NA Mod not applicable to this Catalogue
C Mod cancelled
AS Amendment Sheet

PARTS CATALOGUE AND RELATED INFORMATION (TOPIC 3)

MEMORANDUM OF INSTRUCTIONS

Demands

1 Requirements for demands are:

1.1 The demand must quote the appropriate Reference Number for each item. Unreferenced parts are not normally provisioned as spares and demands for such items must quote the maker's Part Number and the name and type of the equipment. The location of each part within the equipment should be clearly indicated.

1.2 Demands are to be prepared in accordance with the procedure laid down in AP 830 Volume 1 or BR4.

Local manufacture

2 Parts annotated 'LM' are to be manufactured from local resources. If the manufacture of such items is beyond the capacity of the Unit, the demand is to be endorsed 'Unable to manufacture locally'.

Major repair

3 'MR' indicates that an item is required for major repair purposes only and will not normally be held in store by Units other than those authorised to undertake major repair of the equipment.

Units per assembly

4 The number quoted is the quantity required per next higher assembly in the position shown except 'attaching parts' which quote the quantity required to attach one item. The letters 'AR' in the 'Units per Assy' column indicate that the quantity is 'as required'. Where applicable the quantity normally fitted is shown as a nominal figure, eg (Nom 3). Where an item is listed only for reference purposes the letters 'RF' are quoted.

Classification of equipment

5 The Class of Store is indicated by a single letter as laid down in AP 830 Volume 1 or BR4.

Fitting code (FC)

6 The FC is indicated by one of the following letters and is only quoted against parts which are not directly interchangeable:

V Open up holes on assembly
W Partially assembled
X Ream or machine on assembly
Y Drill or drill and tap on assembly
Z Trim on assembly

Obsolescent stock

7 An asterisk in the 'Part No' column indicates that no further purchases of the item will be made but the part is to be used until stocks are exhausted.

Modifications

8 When items are affected by a modification the 'Mod No' is quoted in the description. Modifications incorporated in the catalogue are listed in the Modification Record.

Manufacturers NATO code

9 The NATO supply code for manufacturers is an alpha-numeric code for non-US based approved manufacturers and a numeric code for US based approved manufacturers. Manufacturers details related to a specific code are contained in the following publications available from DCA, Kentigern House, 65 Brown Street, Glasgow G2 8EX.

99-H4-1 Name to Code
99-H4-2 Code to Name

Usage code

10 The usage code column is normally left blank indicating full applicability of all items. Where a code letter is shown, it indicates that all items with that letter form part of the same assembly or sub-assembly.

INDEX OF PART NUMBERS

Part Number	DMC	Reference Number	Fig/Index	C of S or LM	FC
BALL, 1/16 IN DIA			1-49		
SCREW, PARKER KALON, 0 x 1/8 IN DIA			1-57		
AGS1129B	28F	4730-99-9439533	1-5		
AGS1186B		5330-99-9428453	1-4		
AGS1186D		5330-99-2077439	1-2		
AGS1186-3		5330-99-8274247	1-53		
AGS1214B			1-3		
AGS17541A	5K	5305-99-1361876	1-67		
AGS596B	28N	5340-99-9128965	1-69		
			1-69A		
A43A24	28S	5305-99-9446553	1-68		
C5151YMK117	5CW	5945-99-4400579	1-10		
C5702Y3	27Q	4820-99-4117817	1-13		
GD1309B1-2	27QA	5330-99-5802881	1-36		
GD1309B5		5330-99-4143327	1-35		
GD2071-8			1-22		
DN1334Z	5CW	5945-99-4401726	1-11		
D5149Y	27Q	4820-99-4117772	1-62		
D5149Y2			1-65		
D5149Y3	27Q	5940-99-4117773	1-63		
SP826-1C	27Q	5305-99-1031567	1-12		
SP880B		5310-99-1075880	1-70		
			1-70A		
SP885C38		5305-99-1246377	1-52		
SP885C46	27Q	5305-99-5805348	1-54		
SP900-10	27QA	5330-99-5802282	1-31		
SP900-1-2	27QA	5330-99-9235819	1-43		
SP900-13	27QA	5330-99-1013063	1-18		
			1-29		
SP900-20	27QA	5330-99-9143527	1-14		
SP900-3	27QA	5330-99-9440406	1-46		
SP900-7	27QA	5330-99-9431638	1-26		
SP917-8	27Q	5365-99-4702710	1-21		
07471Y008		4730-99-5808695	1-15		
08808YB05			1-7		
08808YB06		4820-99-4117840	1		
08808YB07	27QM	4820-99-4117815	1		
08808Y002		4820-99-4117818	1-60		

INDEX OF PART NUMBERS

Part Number	DMC	Reference Number	Fig/Index	C of S or LM	FC
08808Y004			1-56		
08808Y025			1-8		
100020194			1-24		
100020195			1-20		
100020196			1-23		
100100604			1-42		
100100605			1-41		
100100606			1-40		
100100607			1-39		
1220Y34	27QM	5325-99-5802912	1-66		
20000Y244		9905-99-5802913	1-59		
2000Y117		9905-99-4143343	1-58		
3300Y367	27Q	5306-99-4140014	1-6		
3300Y808A	78BA	1440-99-9016745	1-33		
4595Y11	27Q	1650-99-5805435	1-19		
4595Y5	27Q	1650-99-5805436	1-28		
4595Y6	27Q	1650-99-5808389	1-25		
4595Y7	27Q	1650-99-5808390	1-17		
4600Y13		1650-99-5805433	1-30		
4600Y5	27Q	5330-99-5805351	1-55		
4600Y38	78BA	5330-99-5805328	1-27		
4600Y8	78BA	1440-99-9016744	1-50		
4748Y3	27Q	4820-99-4117834	1-44		
4748Y4	27Q	4820-99-4666527	1-51		
4748Y5	27Q	4820-99-4117828	1-48		
4748Y6	27Q	4820-99-4117827	1-45		
500Y371			1-47		
500Y585		5360-99-5805352	1-32		
5119Y5C			1-61		
5149Y14		5330-99-4117775	1-64		
5149Y7		5330-99-4117774	1-64A		
7439Y4	27Q	1650-99-5808685	1-34		
7439Y5	27Q	5310-99-5805336	1-37		
7439Y6		1650-99-4143338	1-38		
7439Y7	27Q	5310-99-5805337	1-9		
7471Y4	27Q	5330-99-5802896	1-16		
750060103	27QA	5330-99-9440406	1-46A		
750060107		5330-99-7141034	1-26A		
750060110			1-31A		
750060113		5330-99-7166673	1-18A		
			1-29A		

INDEX OF PART NUMBERS

Part Number	DMC	Reference Number	Fig/Index	C of S or LM	FC
750060120		5330-99-7141036	1-14A		
750150105		5330-99-8021606	1-35A		
750310108			1-22A		
751060606			1-43A		
751150606			1-36A		
99521			1-1		
			1-1A		

DETAILED PARTS LIST

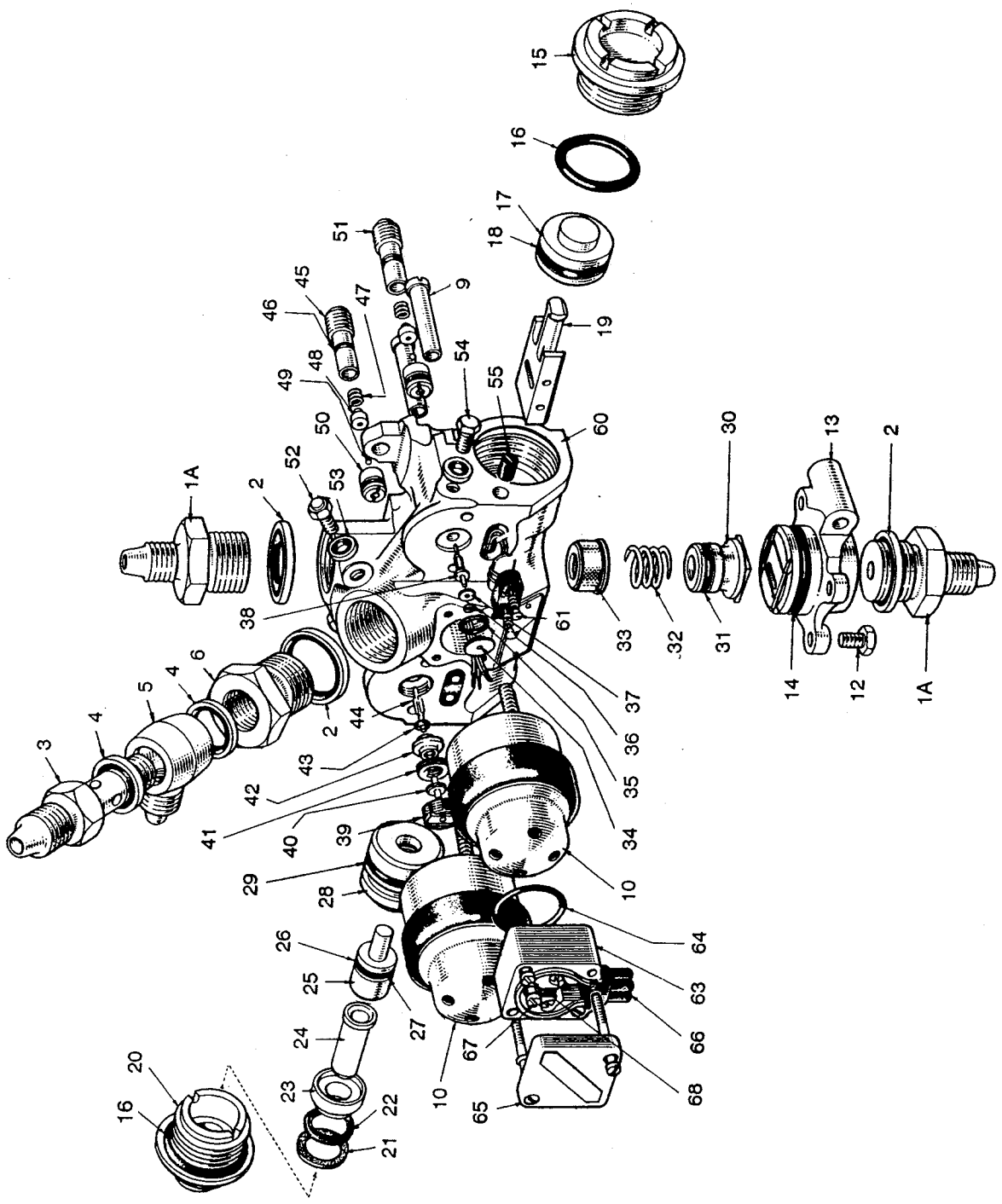

Fig 1 Selector valve

SELECTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1+	08808YB06	Valve, selector (Mod AC5592)		A	RF
1	08808YB07	Valve, selector (Mod AC5592)		B	RF
-1+	99521	. Adapter		A	3
-1A	99521	. Adapter		B	2
-2	AGS1186D	. Seal, bonded			3
-3	AGS1214B	. Adapter, banjo		B	1
-4	AGS1186B	. Seal, bonded		B	2
-5	AGS1129B	. Banjo		B	1
-6	3300Y367	. Adapter		B	1
-7+	08808YB05	. Valve assembly, selector			1
-8+	08808Y025	. . Selector sub-assembly			1
-9	7439Y7	. . . Nut, sleeve			4
-10	C5151YMK117	. . . Solenoid assembly (Mod AC5592)			2
		Spares for:			
-11+	DN1334Z	. . . . Shroud			2
-12	SP826-1C	. . . Bolt			4
-13	C5702Y3	. . . Block, connection			1
-14	SP900-20	. . . O-ring			1
	or	(Alternative)			
-14A+	750060120	. . . O-ring			1
-15	07471Y008	. . . Plug, end			1
-16	7471Y4	. . . O-ring			2
-17	4595Y7	. . . Piston, actuating			1

+ Item not illustrated

SELECTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1-18	SP900-13 or	. . . O-ring (Alternative)			1
-18A+	750060113	. . . O-ring			1
-19	4595Y11	. . . Valve, slide			1
-20	100020195	. . . Housing, button			1
-21	SP917-8	. . . Ring, anti-extrusion			1
-22	GD2071-8 or	. . . O-ring (Alternative)			1
-22A+	750310108	. . . O-ring			1
-23	100020196	. . . Stop, button			1
-24	100020194	. . . Button			1
-25	4595Y6	. . . Piston, actuating			1
-26	SP900-7 or	. . . O-ring (Alternative)			1
-26A+	750060107	. . . O-ring			1
-27	4600Y38	. . . Ring, anti-extrusion			1
-28	4595Y5	. . . Sleeve			1
-29	SP900-13 or	. . . O-ring (Alternative)			1
-29A+	750060113	. . . O-ring			1
-30	4600Y13	. . . Thimble			1
-31	SP900-10 or	. . . O-ring (Alternative)			1
-31A+	750060110	. . . O-ring			1
-32	500Y585	. . . Spring			1
-33	3300Y808A	. . . Filter assembly			1
-34	7439Y4	. . . Housing			1
-35	GD1309B5 or	. . . O-ring (Alternative)			1
-35A+	750150105	. . . O-ring			1

+ Item not illustrated

SELECTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1-36	GD1309B1-2 or	. . . O-ring (Alternative)			1
-36A+	751150606	. . . O-ring			1
-37	7439Y5	. . . Washer, backing			1
-38	7439Y6	. . . Spindle			1
-39	100100607	. . . Plug			1
-40	100100606	. . . Stop			1
-41	100100605	. . . Shim			20 (max)
-42	100100604	. . . Guide			1
-43	SP900-1-2 or	. . . O-ring (Alternative)			1
-43A+	751060606	. . . O-ring			1
-44	4748Y3	. . . Spindle			1
-45	4748Y6	. . . Plug			1
-46	SP900-3 or	. . . O-ring (Alternative)			4
-46A+	750060103	. . . O-ring			4
-47	500Y371	. . . Spring			2
-48	4748Y5	. . . Plunger			2
-49	ND	. . . Ball, 1/16 in dia			2
-50	4600Y8	. . . Seat, valve			2
-51	4748Y4	. . . Plug			1
-52	SP885C38	. . . Screw, blanking			2
-53	AGS1186-3	. . . Seal, bonded			4
-54	SP885C46	. . . Screw, blanking			2
-55	4600Y5	. . . Plug, rubber			2
-56+	08808Y004	. . Body sub-assembly			1

+ Item not illustrated

SELECTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1-57+	ND	. . . Screw, Parker Kalon, 0 x 1/8 in dia			4
-58+	2000Y117	. . . Nameplate			1
-59+	20000Y244	. . . Plate, identification			1
-60	08808Y002	. . . Body			1
-61	5119Y5C	. . Block assembly, plunger			2
-62+	D5149Y	. . Block assembly, terminal			1
-63	D5149Y3	. . . Block, terminal			1
-64	5149Y14	. . . O-ring (for use with terminal block marked TX) (Alternative)			1
-64A+	or 5149Y7	. . . O-ring (for use with terminal block marked T or without marking)			1
-65	D5149Y2	. . . Cover assembly			1
-66	1220Y34	. . . Grommet			1
-67	AGS17541A	. . . Screw and washer			3
-68	A43A24	. . . Screw, cheesehead			2
-69+	AGS596B	. Cap, dust (Storage and transit)		A	3
-69A+	AGS596B	. Cap, dust (Storage and transit)		B	4
-70+	SP880B	. Washer, sealing (Storage and transit)		A	3
-70A+	SP880B	. Washer, sealing (Storage and transit)		B	4

+ Item not illustrated