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TWO-WAY RESTRICTOR VALVE DOWTY AEROSPACE HYDRAULICS Part Nos 06102YA02 and 06102YA03

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

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

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GENERAL

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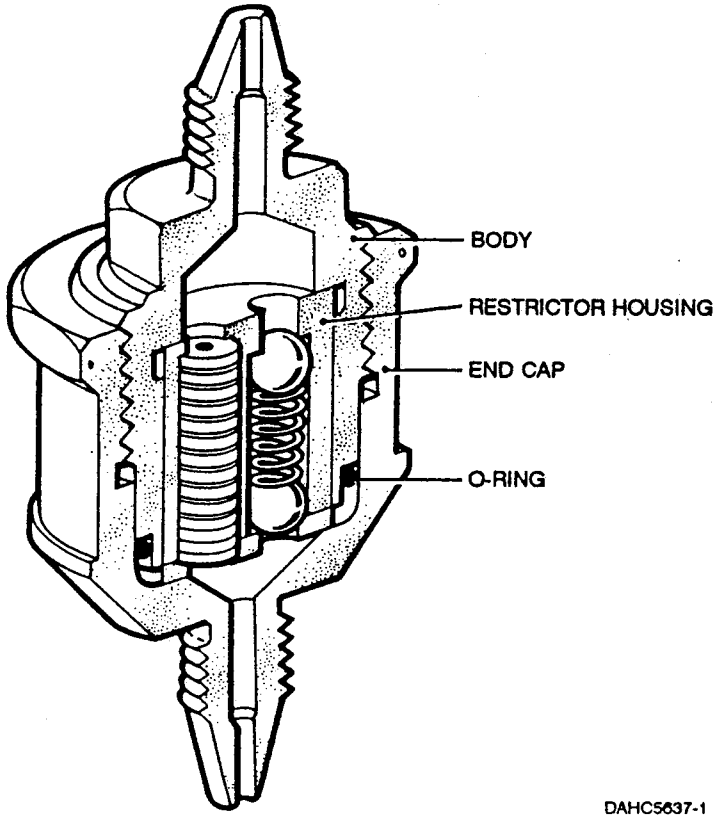

Fig 1 Two-way restrictor valve

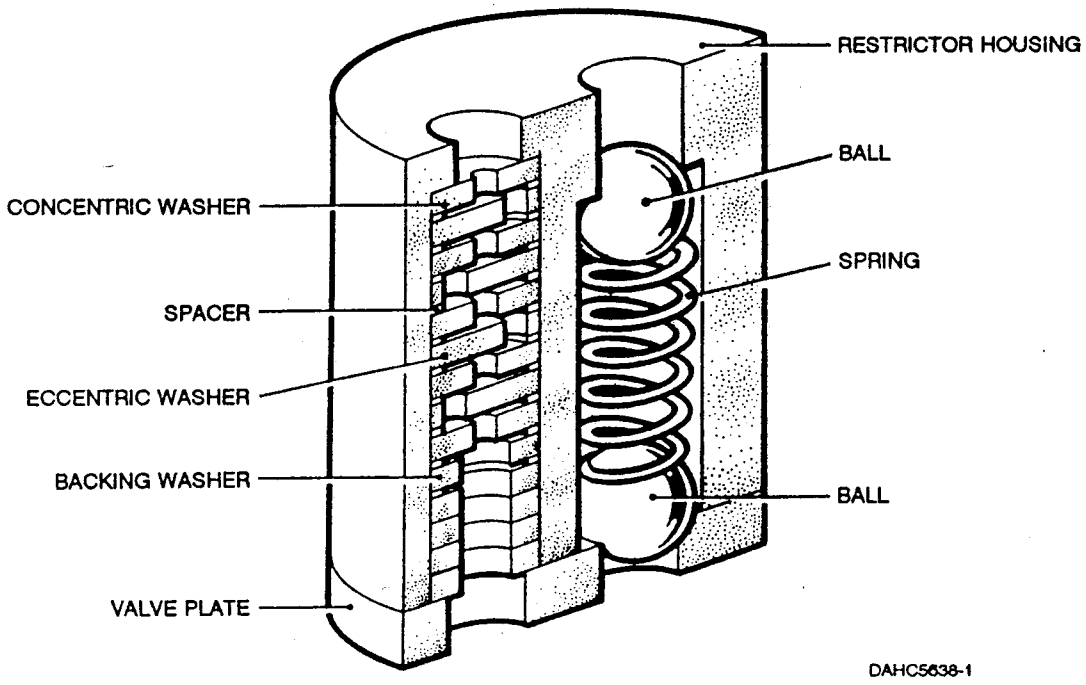

Fig 2 Restrictor assembly

Leading particulars

1 Refer to the relevant annex for the leading particulars.

Modification state

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

Introduction

3 This unit permits a restricted flow of fluid in both directions. A basic type is described and illustrated in the general text and variations are covered in the annexes.

Constructional description (Fig 1 and 2)

4 The unit consists of a body and an end cap each formed with pipe connections at the outer ends and screwed together to house a restrictor assembly of concentric and eccentric washers and two balls spring-loaded away from each other against their respective seats in the valve housing.

5 The restrictor and ball assemblies are accommodated in parallel bores of a restrictor housing and retained by a valve plate secured by two countersunk screws. The restrictor pack comprises seven concentric and six eccentric washers interposed by spacers with the remaining gap in the restrictor housing filled with backing washers and/or spacers to ensure the restrictor assembly is firmly held when the valve plate is fitted.

Functional description (Fig 1 and 2)

6 When fluid enters the unit through either connection, the ball valve assembly permits flow only through the restrictor assembly thus giving the restricted flow condition desired.

MAINTENANCE

Special tools and equipment

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

Part No	Description	Application
-	Trichloroethane (TS367D)	Cleaning
-	White spirit (BS245)	Cleaning
-	Oil OM15 (DTD585)	Assembling

Part No	Description	Application
-	Corrosion preventative PX1	Preservation
-	Locking wire (DTD189A)	Locking parts

Safety and maintenance notes

8 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 EXERCISED WHEN DISMANTLING.

9

9.1 Unscrew and remove the end cap from the body, withdraw the restrictor housing and remove and discard the O-ring.

9.2 Unscrew and remove the countersunk screws and the valve plate.

9.3 Withdraw the two balls and spring. Withdraw the backing washers, eccentric washers, spacers and concentric washers.

Cleaning

WARNING

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

10 To enable all items to be visually examined for damage and wear, each part must be thoroughly cleaned using the appropriate 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 using temporary corrosion preventative PX1.

Examination and checking

11 Visually examine all parts for damage and corrosion.

Superficial damage

12 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:

12.1 Not exceeding 0.500 in long.

12.2 Not exceeding 0.010 in deep.

12.3 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

13 Spring 127Y5

13.1 Number of working coils: 13

13.2 Wire size: 0.020 in (25 SWG)

13.3 Free length: 0.550 in

13.4 Check length: 0.300 in

13.5 Load at check length: 0.954 to 1.046 lbf.

Assembling (Fig 1)

14 Lubricate the parts with clean oil OM15 before assembling the unit.

14.1 Position the restrictor assembly in the restrictor housing by first inserting a concentric washer followed by a spacer, an eccentric washer and another spacer. Continue this sequence of assembly until seven concentric and six eccentric washers have been fitted.

14.2 Assemble backing washers and spacers as required to complete the restrictor assembly. With all parts inserted, there should be a slight protrusion above the restrictor housing to ensure the restrictor assembly is firmly held when the valve plate is fitted.

14.3 Insert a ball, the spring and the remaining ball in the restrictor housing and secure with the valve plate and countersunk screws.

14.4 Position the restrictor housing in the body with the valve plate facing outermost. Fit the O-ring to the body and screw the end cap tightly over the body.

14.5 After satisfactory testing, the body and the end cap must be wirelocked together.

TESTING

Special tools and test equipment

15 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 power pump)	Apply hydraulic pressure

Testing the unit (Fig 1)

16 Ensure the unit is hydraulically full and bled free of air. Using the equipment specified in paragraph 15, carry out the following test procedure:

16.1 Connect the hand pump supply line of the static hydraulic test rig to the body connection and blank off the end cap connection. Apply a pressure of 4950 lbf/in^2. Leakage must not occur. Release the pressure.

16.2 Disconnect the hand pump supply and connect the power pump supply line to the body connection. Remove the blank from the end cap.

16.3 Operate the pump to give a flow through the valve at a pressure of 1700 lbf/in^2. The rate of flow, at a fluid temperature of 30 to 40°C must be 0.32 to 0.35 gal/min. Stop the power pump and disconnect the supply line.

Annex A

TWO-WAY RESTRICTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

PART NUMBER 06102YA02

Leading particulars

1 Leading particulars of this unit are as follows:

1.1	System fluid	Oil OM15 (DTD585)
1.2	Connections	0.125 in BSP

Modification state

2 The information in this annex includes all appropriate modifications up to and including issue 8.

Introduction

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

Annex B

TWO-WAY RESTRICTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

PART NUMBER 06102YA03

Leading particulars

1 Leading particulars of this unit are as follows:

1.1	System fluid	Oil OM15 (DTD585)
1.2	Connections	0.125 in BSP

Modification state

2 The information in this annex includes all appropriate modifications up to and including issue 8.

Introduction

3 This unit is similar to the type described and illustrated in the general text, but differs in that the restrictor housing has only one bore which houses the restrictor assembly. Therefore the Assembly/Disassembly instructions regarding the ball valve assembly should be disregarded.

PARTS CATALOGUE AND RELATED INFORMATION

FOR

TWO-WAY RESTRICTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part Nos 06102YA02 and 06102YA03

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
AC4432	*										

* 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, 7/32 IN DIA			1-9		
AGS596A	28N	5340-99-9128964	1-16	C	
A33B8	28S	5305-99-9995325	1-7	C	
SP880A			1-17		
SP900-14	27QA	5330-99-9428417	1-6	C	
06102YA02	27Q	4820-99-4117629	1	L	
06102YA03	27Q	4820-99-4117632	1	L	
06102Y003			1-15A		
06102Y022			1-3		
06102Y023			1-3A		
127Y5	27Q	5360-99-4117607	1-10	C	
133Y3	27Q	5310-99-4117608	1-11	C	
133Y4	27Q	5310-99-4117609	1-14	C	
133Y6	27Q	4820-99-4117610	1-13	C	
2000Y108			1-2A		
2000Y15		5340-99-4170071	1-1	C	
2000Y75			1-2		
3204Y12			1-8		
3204Y6			1-15		
4140Y2			1-5		
4140Y3			1-4		
6102Y2	27Q	5365-99-4117614	1-12	C	
750060114	27QA	5330-99-9428417	1-6A	C	

DETAILED PARTS LIST

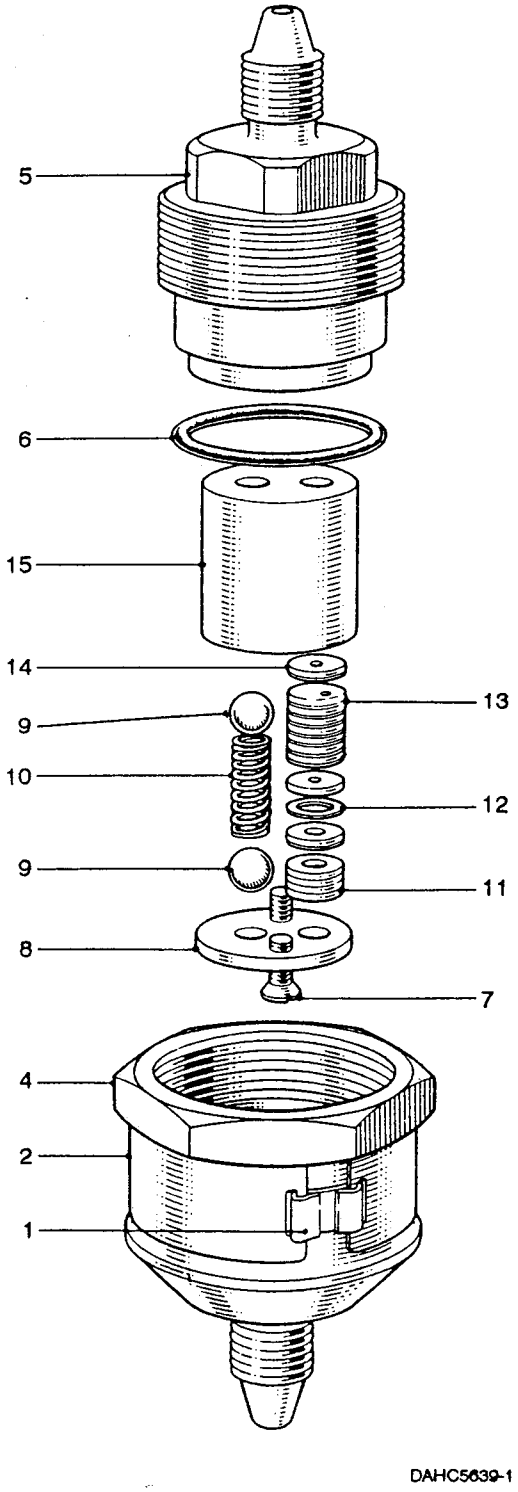

Fig 1 Two-way restrictor valve

TWO-WAY RESTRICTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1	06102YA02	Valve, two-way restrictor (Mod AC4432)		A	RF
1+	06102YA03	Valve, two-way restrictor (Mod AC4432)		B	RF
-1	2000Y15	. Strap			1
-2	2000Y75	. Nameplate			1
	or	(Alternative)			
-2A+	2000Y108	. Nameplate			1
-3+	06102Y022	. Restrictor assembly		A	1
-3A+	06102Y023	. Restrictor assembly		B	1
-4	4140Y3	. . Cap, end			1
-5	4140Y2	. . Body			1
-6	SP900-14	. . O-ring			1
	or	(Alternative)			
-6A+	750060114	. . O-ring			1
-7	A33B8	. . Screw, c'sk head			2
-8	3204Y12	. . Plate, valve			1
-9	ND	. . Ball, 7/32 in dia		A	2
-10	127Y5	. . Spring		A	1
-11	133Y3	. . Washer, backing			A/R
-12	6102Y2	. . Spacer			A/R
-13	133Y6	. . Washer, eccentric			6
-14	133Y4	. . Washer, concentric			7
-15	3204Y6	. . Housing, restrictor		A	1
-15A+	06102Y003	. . Housing, restrictor		B	1
-16+	AGS596A	. . Cap, dust (Storage and transit)			2
-17+	SP880A	. . Washer, sealing			2

+ Item not illustrated