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RESTRICTOR VALVE
DOWTY AEROSPACE HYDRAULICS
Part No 06104YA01

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

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

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AP100B-01, Order 0504 (RAF)

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GENERAL

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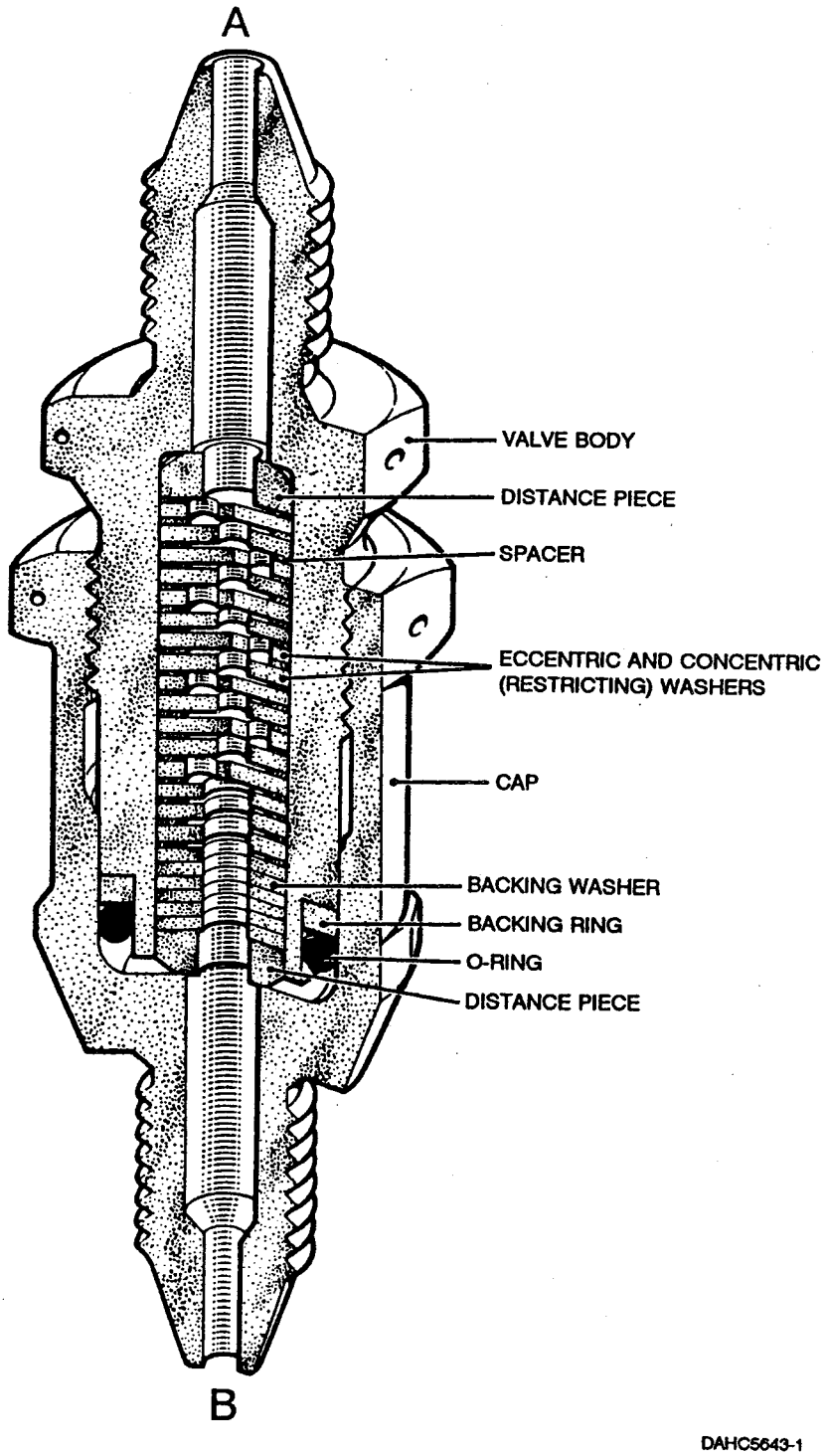

Fig 1 Restrictor valve

Leading particulars

1 Leading particulars for the unit are as follows:

1.1	System fluid	Oil OM15 (DTD585)
1.2	Flow rate	0.32 to 0.35 gal/min at 1700 lbf/in^2
1.3	Connections	0.125 in BSP

Modification state

2 The information in this publication includes all appropriate modification up to and including issue 2.

Introduction

3 This valve provides the means of restricting the flow of fluid in a hydraulic circuit in both directions.

Constructional description (Fig 1)

4 The restrictor valve consists of a valve body in which a number of eccentric and concentric (restricting) washers, spacers, backing washers and two distance pieces are housed. These are all retained by a cap which screws onto the body securing an O-ring and backing ring, sealing the two parts together. Both the valve body and cap have integral pipe connections and hexagonal shoulders.

5 The two types of restricting washers are drilled, one type concentrically and the other eccentrically. A number of these are fitted in the body alternately, with spacers interposed to form a labyrinth. The remaining space in the body is filled by concentrically drilled backing washers and two distance pieces.

MAINTENANCE

Special tools and equipment

6 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
-	Corrosion preventative PX1	Preservation
-	Locking wire (DTD189A)	Locking parts

Safety and maintenance notes

7 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)

8

8.1 Remove the locking wire and unscrew the cap from the valve body.

8.2 Remove the O-ring and backing ring and extract the internal assembly consisting of distance pieces, backing washers, eccentric and concentric (restricting) washers and spacers.

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.

9 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

10 Visually examine all parts for damage and corrosion.

Superficial damage

11 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:

11.1 Not exceeding 0.500 in long.

11.2 Not exceeding 0.010 in deep.

11.3 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.

Assembling (Fig 1)

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

12.1 Insert a distance piece, chamfer leading, into the valve body.

12.2 Insert a spacer, an eccentric washer, a spacer and a concentric washer into the valve body in that order, then continue in the same order to assemble a total of 7 eccentric and 6 concentric washers.

12.3 Fill the remaining space in the valve body with backing washers and/or spacers as required, ending with a distance piece, chamfer outwards.

12.4 Press the pack into the valve body with a finger and check that the distance piece protrudes 0.015 to 0.030 in. This ensures that the pack is firmly held when the cap is screwed onto the valve body.

NOTE

It may be necessary to adjust the number of concentric and eccentric (restricting) washers to obtain the required rate of flow on test.

12.5 Assemble the backing ring followed by the O-ring onto the valve body, then screw on and tighten the cap to the body.

12.6 On completion of satisfactory tests wirelock the cap to the valve body.

TESTING

Special tools and test equipment

13 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)

14 Ensure the unit is hydraulically full and bled free of air. Using the equipment specified in paragraph 13, carry out the following test procedure:

14.1 Connect the supply line of the static hydraulic test rig to connection A. Blank off connection B and apply a pressure of 4950 lbf/in^2. Leakage must not occur. Release the pressure and remove the blank.

14.2 Connect the supply line of the test rig power pump to connection A. Adjust the power pump to set up a flow through the unit at a pressure of 1700 lbf/in^2. The rate of flow at this pressure at a temperature of 30 to 40°C must be 0.32 to 0.35 gal/min. Stop the pump and disconnect the supply line from the unit.

14.3 Repeat operation 14.2 with the power pump supply line connected to connection B.

PARTS CATALOGUE AND RELATED INFORMATION

FOR

RESTRICTOR VALVE

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part No 06104YA01

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
AC4747	*										
AC5910	*										

* 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
AGS596A	28N	5340-99-9128964	1-14	C	
SP880A	27QA	5330-99-1029282	1-13	C	
SP900-8	27QA	5330-99-9439918	1-5	C	
SP905-8			1-6		
06104YA01	27Q	4820-99-4117634	1	L	
06104Y001			1-3		
06104Y002			1-12		
06104Y003			1-4		
06104Y004			1-7		
100002222	27Q	1650-99-4702774	1-2A	C	
133Y3	27Q	5310-99-4117608	1-8	C	
133Y4	27Q	5310-99-4117609	1-11	C	
133Y6	27Q	4820-99-4117610	1-9	C	
2000Y15		5340-99-4170071	1-1	C	
2000Y75			1-2		
6102Y2	27Q	5365-99-4117614	1-10	C	
750060108	27QA	5330-99-9439918	1-5A	C	

DETAILED PARTS LIST

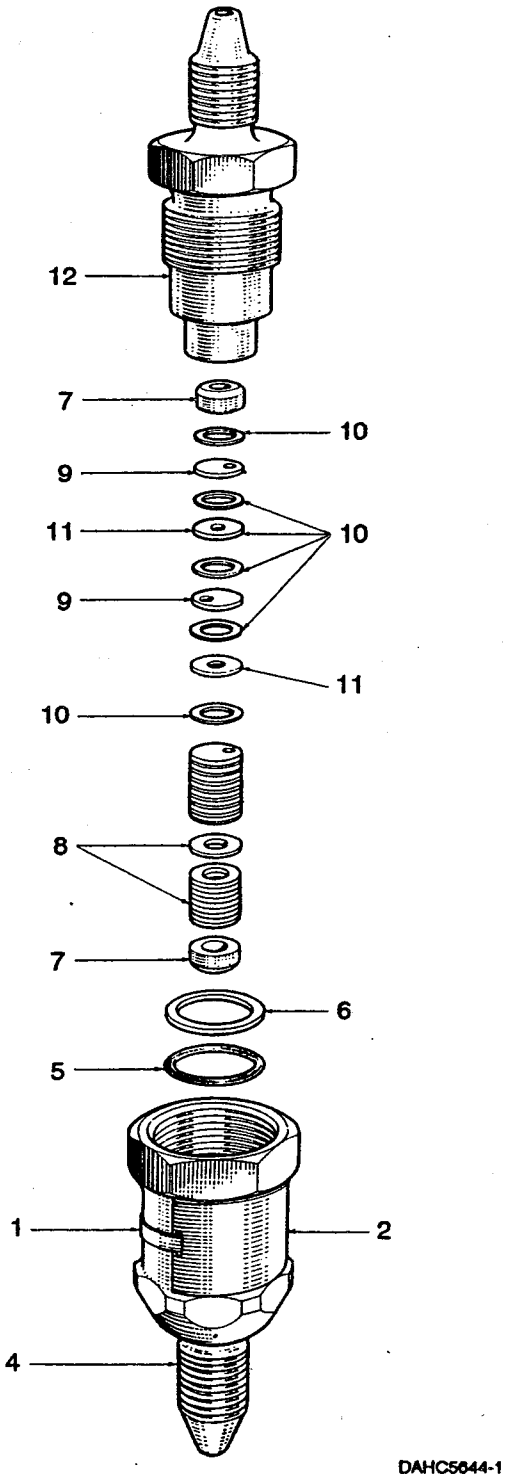

Fig 1 Restrictor valve

RESTRICTOR VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1	06104YA01	Valve, restrictor (Mod AC4747)			RF
-1	2000Y15	. Strap			1
-2	2000Y75	. Nameplate (Pre Mod AC5910)			1
-2A+	100002222	. Nameplate (Mod AC5910)			1
-3+	06104Y001	. Valve assembly, restrictor			1
-4	06104Y003	. . Cap			1
-5	SP900-8 or	. . O-ring (Alternative)			1
-5A+	750060108	. . O-ring			1
-6	SP905-8	. . Ring, backing			1
-7	06104Y004	. . Piece, distance			2
-8	133Y3	. . Washer, backing			AR
-9	133Y6	. . Washer, eccentric			7
-10	6102Y2	. . Spacer			AR
-11	133Y4	. . Washer, concentric			6
-12	06104Y002	. . Body, valve			1
-13+	SP880A	. Washer, sealing (Storage and transit)			2
-14+	AGS596A	. Cap, dust (Storage and transit)			2

+ Item not illustrated