AP 105B-05113-13

April 91
▶ (Superseding AP 105B-05113-1 ◀
and Superseding Relevant Pages
of AP 4515B Vol 3 Pt 1 Chap 5)

NON-RETURN VALVES DOWTY AEROSPACE GLOUCESTER Part Nos. D4673Y, D5213Y, D5220Y, D5230Y and D5240Y

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

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Prepared by Dowty Aerospace Gloucester Ltd.,
Cheltenham Road, Gloucester, England

Publications authority: ATP/MOD(PE)

Service users should send their comments through the channel prescribed for the purpose in:

AP 100B-01, ORDER 0504 (RAF)

WARNINGS

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH

MAKE SURE YOU KNOW THE SAFETY PRECAUTIONS AND FIRST AID

INSTRUCTIONS BEFORE YOU USE A HAZARDOUS SUBSTANCE

REFER TO COSHH ASSESSMENT

READ THE LABEL ON THE CONTAINER IN WHICH THE SUBSTANCE IS SUPPLIED

READ THE DATA SHEET APPLICABLE TO THE SUBSTANCE IN AP 100B-10 AND JSP(F) 395 (AS APPROPRIATE)

OBEY THE LOCAL ORDERS AND REGULATIONS

WARNINGS

(1) MANUAL HANDLING. CONSULT MANUAL HANDLING ASSESSMENTS BEFORE MOVING ANY EQUIPMENT WHERE THERE IS A RISK OF INJURY.

GENERAL

CONTENTS

Leading particulars

1 Refer to the appropriate annex for the relevant leading particulars.

Modification state

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

Introduction

3 This component is a simple spring-loaded non-return valve, that is mounted by its pipe connections.

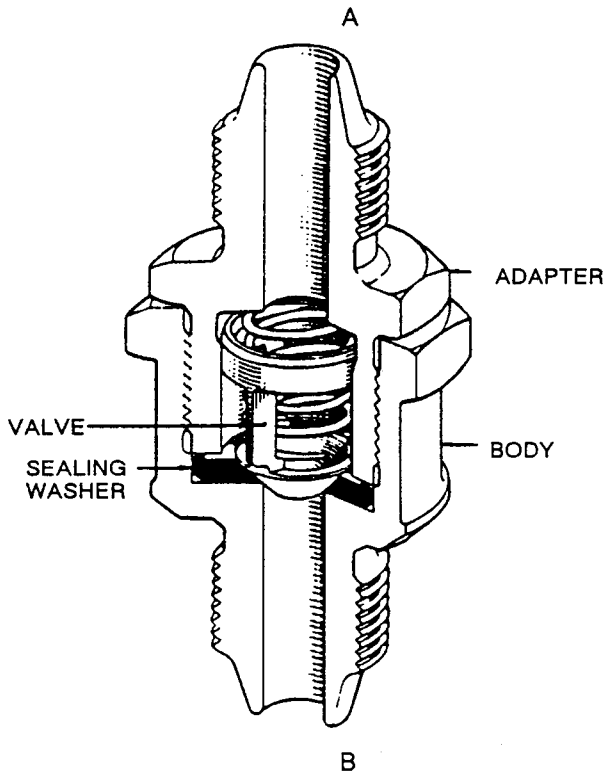

Fig 1 Non-return valve

Constructional description (Fig 1)

4 The non-return valve consists of an adapter and a body, each formed with a pipe connection and screwed together to house a spring loaded valve. A sealing washer is positioned between the two screwed parts and acts as a valve seat.

Functional description (Fig 1)

5 Fluid entering the non-return valve at B lifts the valve off the seat, against the spring, and flows through the radial holes in it to emerge from the non-return valve at A. Pressure applied at A holds the valve on its seat, preventing any fluid flow through B.

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	Cleaning
-	Oil OM15 (DTD585)	Assembling
-	Corrosion preventative PX1	Preservation
-	Locking wire (DTD189A)	Locking parts

Safety and servicing notes

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

ROUTINE BAY SERVICING

Dismantling (Fig 1)

WARNING

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

8 Discard the sealing washer on removal from the unit.

8.1 Unscrew the adapter from the body and remove the spring, the valve and the sealing washer.

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 are to 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

12 Spring data

12.1 Refer to the appropriate annex for the spring data.

Assembling (Fig 1)

WARNING

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

13 Lightly lubricate the sealing washer with oil OM15 before assembling into the body.

13.1 Insert the sealing washer into the body, with the inner chamfer facing outermost.

13.2 Insert the spring and the valve into the cover.

13.3 Screw the adapter tightly into the body and check that the minimum lift of the valve is 0.080 in. This may be achieved by using a bar of suitable diameter or a depth gauge inserted into the bore of connection B.

13.4 Complete the testing procedure detailed in paragraph 15.

13.5 When all tests have been satisfactorily completed, wirelock the adapter to the body.

TESTING

Special tools and test equipment

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

Part No	Description	Application
-	Static hydraulic test rig	Testing
-	Compressed nitrogen supply	Testing

Testing (Fig 1)

15 Using the equipment specified in paragraph 14, carry out the following test procedure.

15.1 Connect the test rig supply line to connection B and apply a gradually increasing pressure. Fluid should flow freely from connection A at a maximum pressure of 5 lbf/in^2.

15.2 Blank off connection A and gradually apply 6000 lbf/in^2. Leakage must not occur. Release the pressure, remove the blanking cap and disconnect the supply line.

15.3 Connect the supply line to connection A and gradually apply a pressure of 25 lbf/in^2 increasing it to 6000 lbf/in^2. Leakage must not occur. Release the pressure and disconnect the supply line.

NOTE

Slight leakage is permissible below a pressure of 25 lbf/in^2 but leakage must not exceed 0.37 cm^3/min at a pressure of 10 lbf/in^2.

Annex A

NON-RETURN VALVE

DOWTY AEROSPACE GLOUCESTER

Part No D4673Y

Leading particulars

1 Leading particulars are as follows:

Hydraulic fluid	Oil OM15
Connections:	
A	0.500 in BSP
B	0.375 in BSP

Modification state

2 The information in this annex includes all modifications up to and including issue 5.

Description

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

Checking data

4 Spring 500Y374

4.1 Number of working coils: 7

4.2 Wire size: 0.022 in (24 SWG)

4.3 Free length: 0.78 to 0.81 in

4.4 Check length: 0.60 to 0.62 in

4.5 Load at check length: 0.11 to 0.17 lbf

Annex B

NON-RETURN VALVE

DOWTY AEROSPACE GLOUCESTER

Part No D5213Y

Leading particulars

1 Leading particulars are as follows:

Hydraulic fluid	Oil OM15
Connections:	
A	0.125 in BSP
B	0.125 in BSP

Modification state

2 The information in this annex includes all modifications up to and including issue 1.

Description

3 This unit is similar to the type described and illustrated in the general text except for the connection sizes, the spring specification, dimensional details and the requirement of a nitrogen test (refer to paragraph 5).

Checking data

4 Spring 500Y696

4.1 Number of working coils: 9

4.2 Wire size: 0.0136 in (29 SWG)

4.3 Free length: 0.650 to 0.680 in

4.4 Check length: 0.540 to 0.560 in

4.5 Load at check length: 0.05 to 0.07 lbf

Nitrogen test

5 Carry out the following test procedure after completion of the test detailed in paragraph 15 of the general text.

5.1 With the fluid drained from the unit, connect the nitrogen supply line to connection A and immerse the unit in oil OM15.

5.2 Gradually apply a pressure of 300 lbf/in^2. Leakage must not occur above a pressure of 25 lbf/in^2.

5.3 Increase the nitrogen pressure to 3000 lbf/in^2. Leakage must not occur. Release the pressure, remove the unit from the fluid and disconnect the nitrogen supply line.

Annex C

NON-RETURN VALVE

DOWTY AEROSPACE GLOUCESTER

Part No D5220Y

Leading particulars

1 Leading particulars are as follows:

Hydraulic fluid	Oil OM15
Connections:	
A	0.250 in BSP
B	0.250 in BSP

Modification state

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

Description

3 This unit is similar to the type described and illustrated in the general text except for the connection sizes, spring specification and dimensional details.

Checking data

4 Spring 500Y373

4.1 Number of working coils: 9

4.2 Wire size: 0.0136 in (29 SWG)

4.3 Free length: 1.18 to 1.22 in

4.4 Check length: 0.61 to 0.63 in

4.5 Load at check length: 0.10 to 0.12 lbf

Annex D

NON-RETURN VALVE

DOWTY AEROSPACE GLOUCESTER

Part No D5230Y

Leading particulars

1 Leading particulars are as follows:

Hydraulic fluid	Oil OM15
Connections:	
A	0.375 in BSP
B	0.375 in BSP

Modification state

2 The information in this annex includes all modifications up to and including issue 6.

Description

3 This unit is similar to the type described and illustrated in the general text except for the connection sizes, spring specification and dimensional details.

Checking data

4 Spring 500Y374

4.1 Number of working coils: 7

4.2 Wire size: 0.022 in (24 SWG)

4.3 Free length: 0.78 to 0.81 in

4.4 Check length: 0.60 to 0.62 in

4.5 Load at check length: 0.11 to 0.17 lbf

Annex E

NON-RETURN VALVE

DOWTY AEROSPACE GLOUCESTER

Part No D5240Y

Leading particulars

1 Leading particulars are as follows:

Hydraulic fluid	Oil OM15
Connections:	
A	0.500 in BSP
B	0.500 in BSP

Modification state

2 The information in this annex includes all modifications up to and including issue 9.

Description

3 This unit is similar to the type described and illustrated in the general text except for the connection sizes, the spring specification and dimensional details.

Checking data

4 Spring 500Y422

4.1 Number of working coils: 4

4.2 Wire size: 0.022 in (24 SWG)

4.3 Free length: 1.28 to 1.23 in

4.4 Check length: 0.37 in

4.5 Load at check length: 0.38 to 0.43 lbf

PARTS CATALOGUES AND RELATED INFORMATION

FOR

NON-RETURN VALVES

DOWTY AEROSPACE GLOUCESTER

Part Nos D4673Y, D5213Y,

D5220Y, D5230Y and D5240Y

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
AC2649	*										
AC3122	*										
AC3475	*										

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

PARTS CATALOGUES AND RELATED INFORMATION (TOPIC 3)

PREFACE

Demands

1 Requirements for demands are:

1.1 The demand must quote the appropriate Vocabulary Section and Reference/Stock Number for each item. Unreferenced parts are not normally provisioned as spares and demands for such items must quote the Vocabulary Section, 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 to 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, e.g. (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 AP830 Volume 1 or BR4.

Condition of supply (Interchangeability Code)

6 Condition of Supply 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 Nomenclature. Modifications incorporated in the catalogue are listed in the Modification Record.

Usage code

9 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	Vocab Sect	NATO Stock No Ref No or LM	Fig/ Index No
AGS596A	28N	5340-99-912-8964	1-8B
AGS596B	28N	5340-99-912-8965	1-8C
AGS596C	28N	5340-99-914-3884	1-8
AGS596D	28N	5340-99-801-1909	1-8A
D4673Y	27Q	4820-99-411-7763	1
D5213Y	27Q	4820-99-411-7446	1
D5220Y	27Q	4820-99-411-7448	1
D5230Y			1
D5240Y			1
2000Y107			1-6
2000Y15		5340-99-417-0071	1-5
4673Y2	27Q	4730-99-411-7764	1-1
500Y373			1-2B
500Y374			1-2
500Y422	27Q	5360-99-414-0004	1-2C
500Y696	27Q	5360-99-411-7447	1-2A
5210Y10	27Q	4730-99-411-7434	1-1A
5210Y6	27Q	5310-99-470-4632 FC3	1-4A
5210Y7	27Q	4820-99-411-7439	1-3B
5210Y9	27Q	4820-99-411-7435	1-7A
5220Y2	27Q	4730-99-519-5962	1-1B
5220Y3	27Q	4820-99-411-7450	1-7B
5220Y6	27Q	5310-99-971-7658 FD1	1-4B
5220Y7	27Q	4820-99-411-7452	1-3C
5220Y8	27Q	4820-99-411-7453	1-3D
5230Y2	27Q	4730-99-417-5693	1-1C
5230Y3	27Q	1620-99-417-5739	1-7
5230Y6	27Q	5330-99-411-7460	1-4
5230Y7			1-3
5230Y8	27Q	4820-99-411-7459	1-3A
5240Y2			1-1D
5240Y3	27Q	4820-99-414-0001	1-7C
5240Y6	27Q	4820-99-414-0006	1-3E
5240Y8			1-3F
5240Y9	27Q	5310-99-901-6219	1-4C

DETAILED PARTS LIST

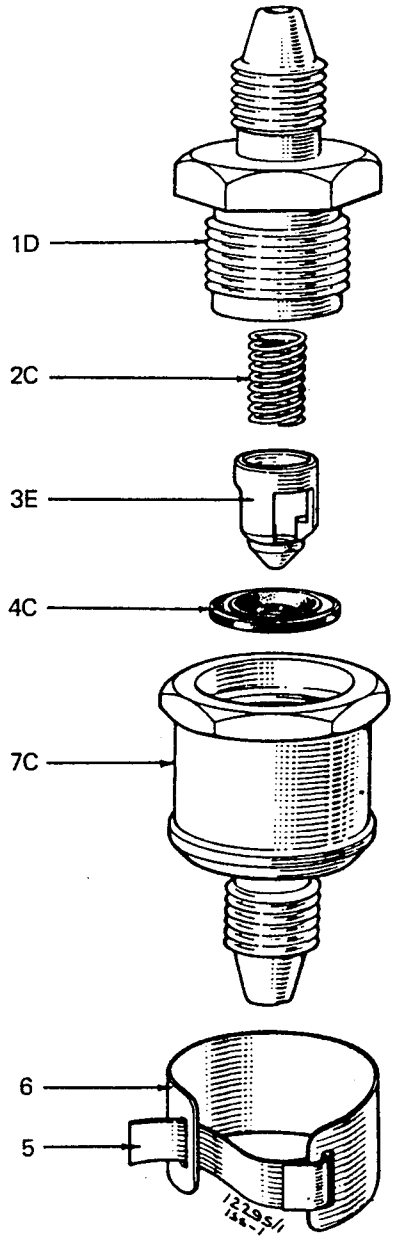

Fig 1 Non-return valve

NON-RETURN VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Usage Code	Units per Assy
1+	D4673Y	Valve, non-return	A	RF
1+	D5213Y	Valve, non-return (Mod AC3475)	B	RF
1+	D5220Y	Valve, non-return	C	RF
1+	D5230Y	Valve, non-return (Mod AC3122)	D	RF
1	D5240Y	Valve, non-return (Mod AC2649)	E	RF
-1+	4673Y2	. Adapter	A	1
-1A+	5210Y10	. Adapter	B	1
-1B+	5220Y2	. Adapter	C	1
-1C+	5230Y2	. Union	D	1
-1D	5240Y2	. Adapter	E	1
-2+	500Y374	. Spring	AD	1
-2A+	500Y696	. Spring	B	1
-2B+	500Y373	. Spring	C	1
-2C	500Y422	. Spring	E	1
-3+	5230Y7 or	. Valve	AD	1
-3A+	5230Y8	. Valve	AD	1
-3B+	5210Y7	. Valve	B	1
-3C+	5220Y7 or	. Valve	C	1
-3D+	5220Y8	. Valve	C	1
-3E	5240Y6 or	. Valve	E	1
-3F+	5240Y8	. Valve	E	1
-4+	5230Y6	. Washer, sealing	AD	1
-4A+	5210Y6	. Washer, sealing	B	1

+ Item not illustrated

NON-RETURN VALVE

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Usage Code	Units per Assy
1-4B+	5220Y6	. Washer, sealing	C	1
-4C	5240Y9	. Washer, sealing	E	1
-5	2000Y15	. Strap		1
-6	2000Y107	. Nameplate		1
-7+	5230Y3	. Body	AD	1
-7A+	5210Y9	. Body	B	1
-7B+	5220Y3	. Body	C	1
-7C	5240Y3	. Body	E	1
-8+	AGS596C	. Cap, dust (Storage and transit)	A D	1 2
-8A+	AGS596D	. Cap, dust (Storage and transit)	A E	1 2
-8B+	AGS596A	. Cap, dust (Storage and transit)	B	2
-8C+	AGS596B	. Cap, dust (Storage and transit)	C	2

+ Item not illustrated

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