MWS

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OBSOLETE

HUNTER

RESERVOIR
DOWTY AEROSPACE HYDRAULICS
Part No A8963YMKA and 08963YB01

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

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

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the channel prescribed for the purpose in:

AP100B-01, Order 0504 (RAF)

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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)

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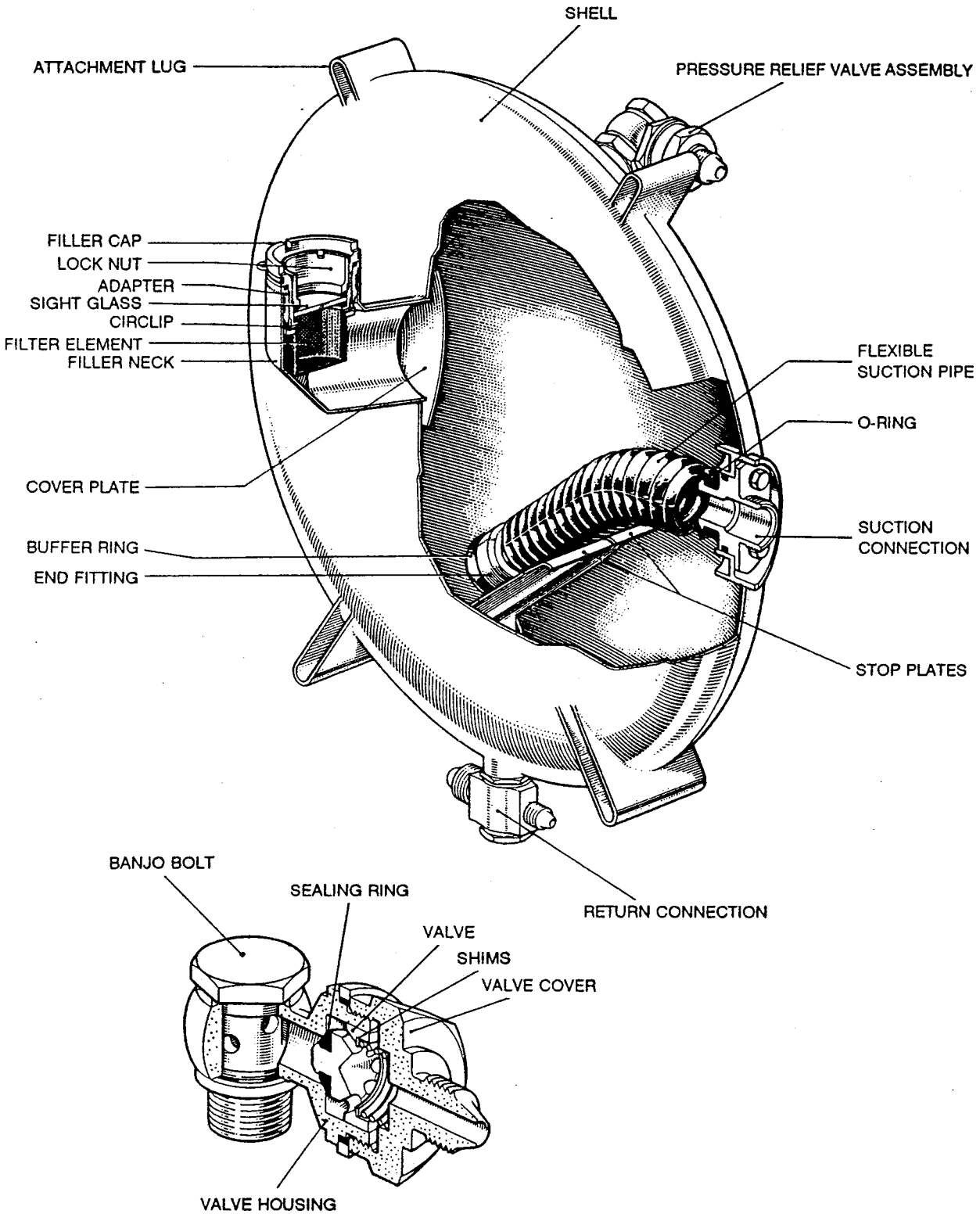

Fig 1 Reservoir

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 reservoir comprises an elliptical section shell fitted with a filler neck and filter, return and suction connections and a pressure relief valve assembly. A basic unit is described and illustrated and variants are given in the annexes.

Constructional description (Fig 1)

4 Two half-shells are welded together and provided with four lugs for attachment to the airframe. Adapters are welded into the shell for the pressure relief valve and the suction pipe connection. A further adapter, in the form of a short stack pipe is welded into the bottom of the shell for the return connection. Stop plates are provided internally to support the flexible suction pipe. The filler neck is also welded into the shell and an internal cover plate provided at this point acts as a baffle to prevent false readings on the sight glass.

5 An adapter welded into the filler neck is threaded for the filler cap and is shouldered to provide a stop for a gauze filter element which is retained by a circlip. The filler cap is screwed into the adapter against a rubber washer and houses a sight glass which is trapped between two sealing rings and secured by a lock nut. An anchor chain is provided with a tab for attachment to the airframe structure and is secured to a retaining ring located in a groove of the filler cap.

6 The suction pipe connection is fitted with an O-ring and is spigoted into its adapter to which it is secured by bolts and washers. One end of the flexible suction pipe is secured to the connection by an O-ring and the other end is secured likewise to an end fitting. A buffer ring fits into a groove of the end fitting and rests on the stop plates which support the suction pipe. The return connection consists of a two-way banjo, fitted with bonded seals and secured by a banjo bolt to the return adapter.

7 The pressure relief valve assembly consists of a valve housing and a valve cover screwed together against a bonded seal to house a spring-loaded valve, which is provided with fluid passages and fitted with a sealing ring which serves as a seating washer. Shims are fitted between the valve and the spring to adjust the relief pressure. The valve housing is secured to the adapter in the shell by a banjo bolt and sealed by bonded seals.

MAINTENANCE

Special tools and equipment

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

Part No	Description	Application
ST111-23	Tommy bar	Dismantling/Assembling
ST2827	Tubular key spanner	Dismantling/Assembling
ST947A	Circlip pliers	Dismantling/Assembling
–	Lotoxane (MIL-T-81533A)	Cleaning
–	White spirit (BS245)	Cleaning
–	Oil OM15 (DTD585)	Assembling
–	Grease XG287 (DEF STAN 91–53)	Assembling
–	Corrosion preventative PX1	Preservation
–	Locking wire (DTD189A)	Locking parts

Safety and maintenance notes

9 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)

WARNING

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

10 Discard all forms of sealing rings on removal from the unit.

10.1 Unscrew the banjo bolt and remove the return connection banjo, together with the bonded seals.

10.2 Remove the banjo bolt securing the pressure relief valve assembly, together with bonded seals.

10.3 Dismantle the pressure relief valve assembly by removing the valve cover and the bonded seal, then withdraw the spring, the shims and the valve from the valve housing. Remove the valve sealing ring.

10.4 Unscrew the filler cap from the filler neck and remove the rubber washer. Remove the retaining ring together with the anchor chain from the filler cap. Unscrew the lock nut using the tubular key spanner ST2827 and tommy bar ST111-23 and remove the sight glass and sealing rings.

10.5 Extract the circlip using circlip pliers ST947A and withdraw the filter element.

10.6 Remove the bolts, the plain washers and the tab washer and withdraw the suction pipe connection, together with the suction pipe assembly from the shell.

10.7 Remove both O-rings and the flexible suction pipe from the connection.

10.8 Remove the O-ring and withdraw the end fitting from the suction pipe. Remove the buffer ring.

CLEANING

▶ WARNING

(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. ◀

11 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

12 Visually examine all parts for damage and corrosion.

Superficial damage

13 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:

13.1 Not exceeding 0.500 in long.

13.2 Not exceeding 0.010 in deep.

13.3 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

14 Spring 500Y25

14.1 Number of working coils: 4

14.2 Wire size: 0.064 in (16 SWG)

14.3 Free length: 0.660 to 0.700 in

14.4 Check length: 0.360 to 0.390 in

14.5 Load at check length: 13.800 to 15.200 lbf.

Assembling (Fig 1)

15 Lightly lubricate all forms of sealing rings and threaded parts with clean oil OM15 prior to assembling.

15.1 Assemble the buffer ring to the end fitting and secure the end fitting in one end of the flexible suction pipe with the O-ring.

15.2 Assemble the sealing O-ring to the suction pipe connection. Secure the flexible suction pipe to the connection with an O-ring.

15.3 Insert the suction pipe into the shell, leading with the end fitting. The pipe must be supported by the stop plates. Secure the connection with the bolts, the plain washers and the tab washer.

15.4 Insert the gauze filter element into the filler neck and fit the circlip using circlip pliers ST947A. Ensure that the circlip is pressed fully into the groove.

15.5 Locate the sight glass between the two sealing rings in the filler cap and screw in the lock nut using tubular key spanner ST2827 and tommy bar ST111-23.

15.6 Fit the rubber washer, the retaining ring and the chain to the filler cap and screw the filler cap into the filler neck.

15.7 Assemble the pressure relief valve assembly.

15.7.1 Assemble the sealing ring to the valve.

15.7.2 Lightly coat the spring and the bearing surface of the valve with grease XG287.

15.7.3 Insert the valve into the valve housing, leading with the sealing ring and follow with the shims and the spring.

15.7.4 Assemble the bonded seal to the valve housing and screw on the valve cover.

15.8 Test the pressure relief valve assembly in accordance with the procedure detailed in paragraphs 17 and 18.

15.9 Put a bonded seal on each side of the valve housing of the pressure relief valve assembly and secure the assembly to the adapter with the banjo bolt.

15.10 Put a bonded seal to each face of the two-way banjo for the return connection and secure it to the appropriate adapter with the banjo bolt.

15.11 Test the reservoir in accordance with the procedure detailed in paragraph 19.

15.12 After satisfactory testing, the following parts must be positively locked together with wire:

15.12.1 Banjo bolt, valve housing and valve cover.

15.12.2 Bolts for suction pipe connection.

15.12.3 Return connection banjo bolt to adapter.

15.12.4 Filler cap to lug and lock nut to filler cap.

TESTING

Special tools and test equipment

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

Part No	Description	Application
-	Static hydraulic test rig	Apply hydraulic pressure
-	Compressed nitrogen supply	Apply gas pressure

Testing the unit (Fig 1)

17 Using the equipment specified in paragraph 16, carry out the following test procedures.

Pressure relief valve assembly test

18

18.1 Fit a test adapter with a 3/8 in BSP tapping to the pressure relief valve assembly banjo bolt. Screw a standard union into the adapter and connect the nitrogen supply line.

18.2 Apply a gradually increasing pressure. The valve should lift at a pressure between 35 and 42 lbf/in^2 and should re-seat at a minimum pressure of 25 lbf/in^2. To obtain this setting, shims should be fitted between the valve and spring as required.

18.3 After adjustment and satisfactory test, release the pressure and disconnect the nitrogen supply line. Continue the assembling, recommencing with sub-paragraph 15.9.

Reservoir test

19

19.1 Position the reservoir with the pressure relief valve assembly at the highest point. Connect the hydraulic test rig supply line to the suction connection and blank the return connection banjo.

CAUTION

The pressure applied when filling the reservoir must not exceed 63 lbf/in^2.

19.2 Pump in fluid until all air is expelled and fluid issues from the pressure relief valve assembly. Blank the pressure relief valve assembly outlet.

19.3 Raise the pressure to 63 lbf/in^2. Leakage must not occur. Release the pressure, disconnect the test rig supply line and drain the fluid from the reservoir.

19.4 With all other connections blanked, connect the nitrogen supply line to the suction connection and apply a pressure of between 35 and 42 lbf/in^2. Leakage must not occur. To facilitate this check, the unit should be immersed in water.

19.5 After satisfactory testing, release the pressure and disconnect the nitrogen supply line. Remove the blanking adapters and fit the appropriate protection caps. Continue the assembling recommencing with sub-paragraph 15.12.

Annex A

RESERVOIR

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part No A8963YMKA

Leading particulars

1 The leading particulars for this unit are as follows:

1.1	System fluid		Oil OM15 (DTD585)
1.2	Capacity (at filling condition):	Oil	392 in^3
		Nitrogen	136 in^3
1.3	Connections:	PRV	0.250 in BSP
		Suction	0.750 in BSP
		Return	0.500 in BSP
		Bypass	0.250 in BSP

Modification state

2 The information in this annex includes all appropriate modifications up to and including issue 11.

Introduction

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

Annex B

RESERVOIR

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part No 08963YB01

Leading particulars

1 The leading particulars for this unit are as follows:

1.1	System fluid		Oil OM15 (DTD585)
1.2	Capacity (at filling condition):	Oil	392 in^3
		Nitrogen	136 in^3
1.3	Connections:	PRV	0.250 in BSP
		Suction	0.750 in BSP
		Return	0.500 in BSP
		Bypass	0.250 in BSP

Modification state

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

Introduction

3 This unit is similar to that described and illustrated in the general text except that the reservoir shell assembly is manufactured from thinner gauge material.

PARTS CATALOGUE AND RELATED INFORMATION

FOR

RESERVOIR

DOWTY AEROSPACE HYDRAULICS - CHELTENHAM

Part No A8963YMKA and 08963YB01

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
AC4446	*										
AC4447	*										

* 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
AGS1186C	28F	5330-99-1358971	1-7		
AGS1186D	28F	5330-99-2077439	1-4		
AGS1186F	28F	5330-99-5311018	1-10		
AGS596B	28N	5340-99-9128965	1-16		
			1-40		
AGS596D	28N	5340-99-8011909	1-41		
AGS596F	28N	5340-99-1011735	1-42		
A8963YMKA	27QM		1		
A8963Y1			1-2		
A8963Y2		1650-99-4118074	1-39		
D2000Y28			1-1		
D4549Y22	27Q	5365-99-9718089	1-31		
D8963Y10	27Q	4730-99-1233685	1-6		
D8963Y19	27Q	4820-99-4118068	1-8		
SP14C	28W	5310-99-9128924	1-30		
SP266-28	27Q	5365-99-4118055	1-27		
SP522-129	27Q	5330-99-4118067	1-26		
SP597-23	27QA	5330-99-4118062	1-20		
SP833-45			1-23		
SP834		5340-99-9719082	1-24		
SP880B		5310-99-1075880	1-17		
			1-43		
SP880D		5310-99-9508683	1-44		
SP880F		5310-99-4172799	1-45		
SP885C42		5305-99-4118063	1-29		
SP900-18	27QA	5330-99-9570581	1-34		
			1-36		
SP900-25	27QA		1-33		
SP913-6	27Q	4720-99-4118073	1-35		
08963YB01	27QM	1650-99-4118075	1		
08963Y027			1-2A		
08963Y028		1650-99-4118076	1-39A		
08963Y030	27Q	1650-99-4118053	1-18		
1738Y4	27Q	5365-99-4118046	1-12		
300035035			1-46		
3998Y21	27Q	5365-99-4118061	1-22		
4513Y		5310-99-4118045	1-14		
4549Y23	27Q	1620-99-4674733	1-25		
4950Y20	27Q	5340-99-4118030	1-38		
4950Y21	27Q	1650-99-4118025	1-37		
500Y25	27Q	5360-99-4118047	1-11		
578Y22	27Q	1650-99-4118048	1-13		

INDEX OF PART NUMBERS

Part Number	DMC	Reference Number	Fig/Index	C of S or LM	FC
750060118			1-34A 1-36A		
750060125		5330-99-7210552	1-33A		
8269Y16			1-9		
8269Y19	27Q	1650-99-4118059	1-19		
8269Y20	27Q	6680-99-4118058	1-21		
8269Y21			1-28		
8963Y15			1-15		
8963Y20			1-5A		
8963Y21			1-15A		
8963Y24	27Q	4730-99-4118056	1-32		
8963Y8	27Q	4730-99-4118050	1-5		
8963Y9			1-3		

DETAILED PARTS LIST

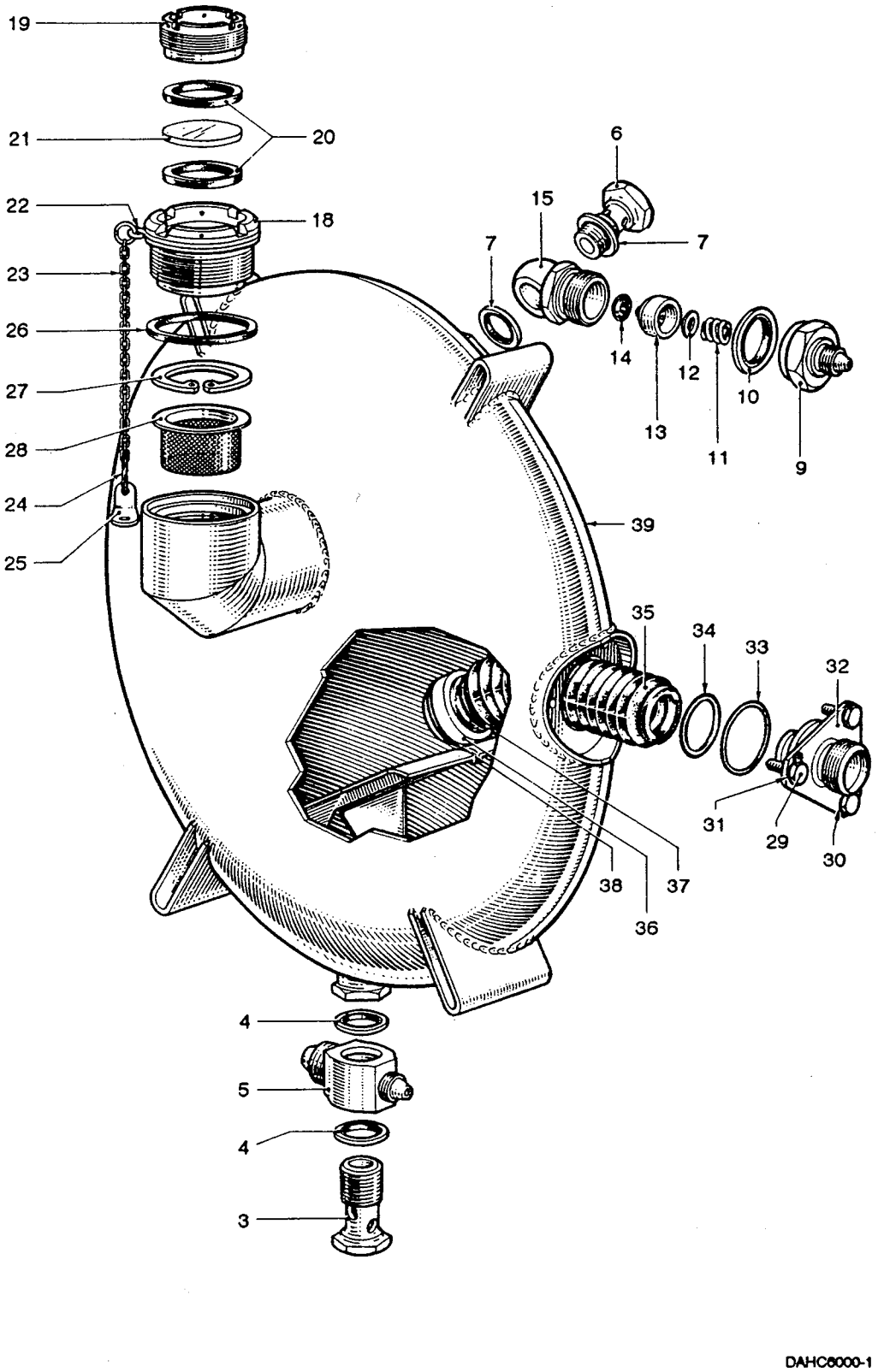

Fig 1 Reservoir

RESERVOIR

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1	A8963YMKA	Reservoir (Mod AC4447)		A	RF
1+	08963YB01	Reservoir (Mod AC4447)		B	RF
-1+	D2000Y28	. Transfer			1
-2+	A8963Y1	. Reservoir assembly		A	1
-2A+	08963Y027	. Reservoir assembly		B	1
-3	8963Y9	. . Bolt, banjo			1
-4	AGS1186D	. . Seal, bonded			2
-5	8963Y8	. . Banjo			1
	or	(Alternative)			
-5A+	8963Y20	. . Banjo			1
-6	D8963Y10	. . Bolt, banjo			1
-7	AGS1186C	. . Seal, bonded			2
-8+	D8963Y19	. . Valve assembly, pressure relief			1
-9	8269Y16	. . . Cover, valve			1
-10	AGS1186F	. . . Seal, bonded			1
-11	500Y25	. . . Spring			1
-12	1738Y4	. . . Shim			9 (max)
-13	578Y22	. . . Valve			1
-14	4513Y	. . . Ring, sealing			1
-15	8963Y15	. . . Housing, valve			1
	or	(Alternative)			
-15A+	8963Y21	. . . Housing, valve			1
-16+	AGS596B	. . . Cap, protection (Storage and transit)			1

+ Item not illustrated

RESERVOIR

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1-17+	SP880B	. . . Washer, sealing (Storage and transit)			1
-18	08963Y030	. . Cap, filler (Mod AC4446)			1
-19	8269Y19	. . Nut, lock			1
-20	SP597-23	. . Ring, sealing			2
-21	8269Y20	. . Glass, sight			1
-22	3998Y21	. . Ring, retaining			1
-23	SP833-45	. . Chain			1
-24	SP834	. . Ring, key			2
-25	4549Y23	. . Tab			1
-26	SP522-129	. . Washer, rubber			1
-27	SP266-28	. . Circlip			1
-28	8269Y21	. . Element, filter			1
-29	SP885C42	. . Bolt			3
-30	SP14C	. . Washer, plain			2
-31	D4549Y22	. . Washer, tab			1
-32	8963Y24	. . Connection			1
-33	SP900-25	. . O-ring			1
	or	(Alternative)			
-33A+	750060125	. . O-ring			1
-34	SP900-18	. . O-ring			1
	or	(Alternative)			
-34A+	750060118	. . O-ring			1
-35	SP913-6	. . Pipe			1
-36	SP900-18	. . O-ring			1
	or	(Alternative)			
-36A+	750060118	. . O-ring			1

+ Item not illustrated

RESERVOIR

Fig/ Index No	Part No	1 2 3 4 5 6 Nomenclature	Mnfrs NATO Code	Usage Code	Units per Assy
1-37	4950Y21	. . Fitting, end			1
-38	4950Y20	. . Ring, buffer			1
-39	A8963Y2	. . Shell assembly, reservoir		A	1
-39A+	08963Y028	. . Shell assembly, reservoir		B	1
-40+	AGS596B	. Cap, protection (Storage and transit)			1
-41+	AGS596D	. Cap, protection (Storage and transit)			1
-42+	AGS596F	. Cap, protection (Storage and transit)			1
-43+	SP880B	. Washer, sealing (Storage and transit)			1
-44+	SP880D	. Washer, sealing (Storage and transit)			1
-45+	SP880F	. Washer, sealing (Storage and transit)			1
-46+	300035035	. . . Plug, tubular (Storage and transit)			1

+ Item not illustrated