DE&S Secretariat [redacted] Land Equipment

DESSEC-PolSec LE-JSC-WPNS@mod.uk

Defence Equipment & Support
Maple 0a #2043
MOD Abbey Wood
Bristol BS34 8JH

[redacted]

[redacted]

21-Apr-17 Our Reference:FOI2017/04199

[redacted]

Thank you for your e-mail of 30th March 2017 requesting the following information:

> *I have just purchased the below pictured ex MoD 680ltr (150gallon) Water Carriage Pack form your disposal agents RAMCO. Could you please supply any information you may hold regarding its fitment to the Sankey and/or Penman Engineering 0.75 tonne and Reynolds Boughton or similar 1.75 tonne cargo trailers. It is the User Manuals or Operating Information that I am primarily interested in. I do have an older User Manual publication which is hopelessly out of date and the Army Publication Code is 60377 if that assists.*

I am treating your correspondence as a request for information under the Freedom of Information Act 2000 (FOIA).

A search for the information has now been completed within the Ministry of Defence (MOD), and I can confirm that all the information in scope of your request is held.

The information you have requested can be found attached below.

If you are not satisfied with this response or you wish to complain about any aspect of the handling of your request, then you should contact me in the first instance. If informal resolution is not possible and you are still dissatisfied then you may apply for an Independent Internal Review by contacting the Information Rights Compliance Team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any request for an Internal Review must be made within 40 working days of the date on which the attempt to reach informal resolution has come to an end.

If you remain dissatisfied following an Internal Review, you may take your complaint to the Information Commissioner under the provisions of section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not investigate your case until the MOD Internal Review Process has been completed. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website, http://www.ico.org.uk.

Yours Sincerely

[redacted]

[redacted]
DE&S Secretariat Land Equipment

4610-B-110-201
3rd Edition dated June 09
(Superseding 2nd Edition dated Jul 03)

WATER CARRIAGE PACK MK2
680 LITRE (150 GAL)

OPERATING INFORMATION

This publication contains information covering the requirements of Categories 2.0, 4.1, 6.0 at information levels 1 and categories 3.0, 5.1, 5.2, 7.1 at information levels 1 and 2.

Sponsored for use in the
UNITED KINGDOM MINISTRY OF DEFENCE
AND ARMED FORCES
by

BFU IPT
U01E9

Publication Authority:
DIRECTOR GENERAL SAFETY AND ENGINEERING-TECHNICAL INFORMATION GROUP
KCZM6

CONDITIONS OF RELEASE

~~This information is released by the UK Government for Defence purposes only.~~

~~This information must be afforded the same degree of protection as that afforded to information of an equivalent security marking originated by the recipient Government or as required by the recipient Government's security regulations.~~

~~This information may be disclosed only within the Defence Department of the recipient Government, except as otherwise authorized by the Ministry of Defence (Army).~~

This information may be subject to privately owned rights.

~~THIS DOCUMENT IS THE PROPERTY OF HER BRITANNIC MAJESTY'S GOVERNMENT, and is issued for the information of such persons only as need to know its contents in the course of their official duties. Any person finding this document should hand it in to a British forces unit or to a police station for its safe return to the Ministry of Defence, (DDef Sy), Main Building, Whitehall London, SW1A 2HB, with particulars of how and where found. THE UNAUTHORIZED RETENTION OR DESTRUCTION OF THIS DOCUMENT IS AN OFFENCE UNDER THE OFFICIAL SECRETS ACTS OF 1911-1989. (When released to persons outside Government service, this document is issued on a personal basis. The recipient to whom it is entrusted in confidence, within the provisions of the Official Secrets Acts 1911-1989, is personally responsible for its safe custody and for seeing that its contents are disclosed only to authorized persons).~~

AMENDMENT RECORD

Amdt No.	Incorporated by (Signature)	Date
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

Amdt No.	Incorporated by (Signature)	Date
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		

CONTENTS

PREFACE

Sponsor: BFU IPT
Project No.: BFU/WO/7565
File Ref:

Publication Authority: DGS&E-TIG

INTRODUCTION

1 Service users should forward any comments on this publication through the channels prescribed in Army Equipment Support Publication (AESP) 0100-P-011-013. An AESP Form 10 is provided at the end of this publication; it should be photocopied and used for forwarding comments on this AESP.

2 AESPs are issued under UK MoD authority and where AESPs specify action is to be taken, the AESP will of itself be sufficient authority for such action and also for the demanding of the necessary stores, subject to the provisions of Para 3 below.

3 The subject matter of this publication may be affected by Defence Instructions and Notices (DIN), Standard Operating Procedures (SOP) or by local regulations. When any such instruction, order or regulation contradicts any portion of this publication it is to be taken as the overriding authority.

RELATED AND ASSOCIATED PUBLICATIONS

Related publications

4 The Octad for the subject equipment consists of the publications shown opposite. All references are prefixed with the first eight digits of this publication. The availability of the publications can be checked by reference to the relevant Group Index (see AESP 0100-A-001-013).

Category/Sub-category			Information Level			
			1 User/ Operator	**2 Unit Maintenance**	**3 Field Maintenance**	**4 Base Maintenance**
1	0	Purpose and Planning Information	101	101	101	101
	1	Equipment Support Policy Directive	111	111	111	111
2	0	Operating Information	201	201	*	*
	1	Aide-Memoiré	*	*	*	*
	2	Training Aids	*	*	*	*
3		Technical Description	201	201	*	*
4	1	Installation Instructions	*	*	*	*
	2	Preparation for Special Environments	*	*	*	*
5	1	Failure Diagnosis	201	201	*	*
	2	Maintenance Instructions	201	201	*	*
	3	Inspection Standards	*	*	*	*
	4	Calibration Procedures	*	*	*	*
6		Maintenance Schedule	201	*	*	*
7	1	Illustrated Parts Catalogue	201	201	*	*
	2	Commercial Parts List	*	*	*	*
	3	Complete Equipment Schedule, Production	741	741	*	*
	4	Complete Equipment Schedule, Service Edition (Simple Equipment)	*	*	*	*
	5	Complete Equipment Schedule, Service Edition (Complex Equipment)	*	*	*	*
8	1	Modification Instructions	*	*	*	*
	2	General Instructions, Special Technical Instructions and Servicing Instructions	*	*	*	*
	3	Service Engineered Modification Instructions (RAF only)	*	*	*	*

* Category/sub-category not published

Associated publications

5 The following associated publications should be read in conjunction with this publication:

Reference	Title
JWP 4 - 01.1	Water
2330-H-300-201	Trl Cargo 3t GS 2 Whd

HAZARDOUS SUBSTANCES

6 Before using any hazardous substance or material, the user must be conversant with the safety precautions and first aid instructions:

6.1 On the label of the container it was supplied in.

6.2 On the material data safety sheet.

6.3 In local Safety Orders and Regulations.

WARNINGS AND CAUTIONS

WARNINGS

7 The following WARNINGS are applicable to this equipment:

(1) HEALTH HAZARD. IF NO ARRANGEMENTS ARE PROVIDED FOR EMERGENCY FILTRATION OR PURIFICATION OF RAW WATER, THE TANKS MUST ONLY BE FILLED AT DESIGNATED POTABLE WATER SOURCE.

(2) HEALTH HAZARD. ONLY DETASTE THE WATER IMMEDIATELY PRIOR TO CONSUMPTION. DETASTED WATER IS OPEN TO CONTAMINATION.

(3) HEALTH HAZARD. TANKS MUST NOT BE FILLED WITH WATER FROM BRACKISH OR SEA (SALT) SOURCES.

(4) HEALTH HAZARD. DETASTED WATER MUST BE CONSUMED WITHIN 24 HOURS.

(5) HEALTH HAZARD. DO NOT LEAVE COVER OFF WATER TANK LONGER THAN NECESSARY TO AVOID CONTAMINATION OF CONTENTS.

(6) HEALTH HAZARD. AFTER STORAGE ENSURE DISINFECTION IS CARRIED OUT IN ACCORDANCE WITH CHAPTER 4 PAGE 6 PARAGRAPH 16 & 17.

(7) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE TANK RESTRAINT FRAME WHICH WEIGHS 42 KG (92.4 LB).

(8) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE EMPTY WATER TANK WHICH WEIGHS 45 KG (99 LB).

(9) PERSONAL INJURY. WHEN INSTALLING/REMOVING THE RESTRAINT FRAME ALWAYS LIFT AT THE AREAS MARKED 'LIFT' TO AVOID FINGER ENTRAPMENT.

(10) PERSONAL INJURY. NEVER LIFT THE WATER TANK UNLESS COMPLETELY EMPTY.

(11) PERSONAL INJURY. THE INSULATION JACKET WEIGHS 90.7 KG (200 LB) A MINIMUM OF THREE PERSONS ARE REQUIRED TO FIT THE INSULATION JACKET.

(12) PERSONAL INJURY. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) MUST BE WORN DURING LIFTING OPERATIONS.

(13) HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING CALCIUM HYPOCHLORITE. READ SAFETY DATA SHEET PRIOR TO USE.

(14) HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING SODIUM THOSULPHATE PENTAHYDRATE. READ SAFETY DATA SHEET PRIOR TO USE.

(15) HARMFUL SUBSTANCE. IN CASES WHERE TOXIC SUBSTANCES ARE KNOWN TO HAVE PASSED THROUGH THE FILTER ASSEMBLY, THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING THE FILTER ELEMENTS.

(16) UNSTABLE LOAD. ONLY TRANSPORT THE WATER CARRIAGE PACK EMPTY OR COMPLETELY FULL.

(17) GASOLINE. DUE CONSIDERATION SHOULD BE GIVEN TO THE HIGHLY FLAMMABLE NATURE OF GASOLINE. CARELESSNESS IN ITS USE MAY RESULT IN SERIOUS BURNS.

(18) PERSONAL SAFETY. FIRING ARTILLERY AT RANGES OF 500 YARDS OR LESS, AND FIRING RIFLE GRENADES OR ANTI-TANK ROCKETS SHOULD BE FROM COVER.

CAUTIONS

8 The following CAUTIONS are applicable to this equipment:

(1) EQUIPMENT DAMAGE. When installing the water tank into a trailer/vehicle, ensure that no loose objects or protuberances are present on the trailer bed or vehicle floor.

(2) EQUIPMENT MALFUNCTION. When fitting the tank filler hole cover, ensure that the ring - clamp is fitted the correct way up.

(3) EQUIPMENT MALFUNCTION. Ensure that the mating faces of the quick - disconnect hose coupling are clean and that the neoprene seals are in good condition.

ABBREVIATIONS AND SYMBOLS

ABBREVIATIONS

9 The following abbreviations are used in this publication:

AESP	Army Equipment Support Publication
BFU IPT	Battlefield Utility Integrated Project Team
CES	Complete Equipment Schedule
CSE	Combat Support Equipment
CSS	Combat Support Systems
DEC	Director Equipment Capability
DGS&E	Director General Safety and Engineering
ECI	Equipment Care Inspection
EFR	Equipment Failure Report
EMER	Electrical Mechanical Engineering Regulations
ESM	Equipment Support Manager
ESPD	Equipment Support Policy Directive
HSIS 2	Hazardous Stores Information System 2
IPT	Integrated Project Team

ISD	In Service Date
LSD	Logistic Support Date
MEI	Mandatory Equipment Inspections
N/A	Not applicable
PDS	Post Design Services
PPE	Personal Protective Equipment
REME	Royal Electrical Mechanical Engineer
RLC	Royal Logistic Corp
ST&TE	Special Tools and Test Equipment
WCP	Water Carriage Pack

SYMBOLS

10 There are no symbols used in this publication.

CHAPTER 1

GENERAL DESCRIPTION

CONTENTS

ROLE

1 The purpose of the 680 litre (150 gal) Water Carriage Pack (WCP) is to enable drinking water to be stored and transported safely in field conditions. The available installation equipment enables the WCP to be installed into the following vehicles:

1.1 The single WCP – Lightweight 1.1 tonne GS Cargo Trailer & 0.75 tonne GS Trailer.

1.2 The single WCP - TUM Landrover.

1.3 The twin WCP Two x 680 litres (150 gal) carried on the 1.75 tonne GS Trailer & 3 tonne GS Cargo Trailer.

FACILITIES AND GENERAL DATA

2 The WCP equipment comprises a polythene water tank, a tank restraint frame and associated restraining equipment, and various operational equipment items. Operational items include a 4-way dispensing manifold for the general filling of water containers (e.g. water bottles), a jerrycan nozzle assembly for filling jerrycans and larger volume containers, and a length of flat hose for remote dispensing/draining purposes. Equipment items for installations and operation are supplied in a valise. A general view of a single WCP installation into a 0.75 tonne GS trailer is shown in Fig 1 and a twin WCP installation into a 1.75 tonne GS trailer is shown in Fig 2.

3 For producing water from raw, non-saline sources ancillary pumping and filtration equipment is provided and detailed in AESP 4610-B-110-201-Chapter 6.

4 To prevent the water from freezing when the WCP is used in Arctic temperature conditions, a thermal insulation kit is available as detailed in Chapter 7 of this publication.

Fig 1 Single WCP installed in a 0.75 tonne GS (wide track) trailer - general view

Fig 2 Twin WCP installed in a 1.75 tonne GS trailer - general view

General data

5 The general weights and measures for the single WCP and twin WCP installation kits are given in Table 1.

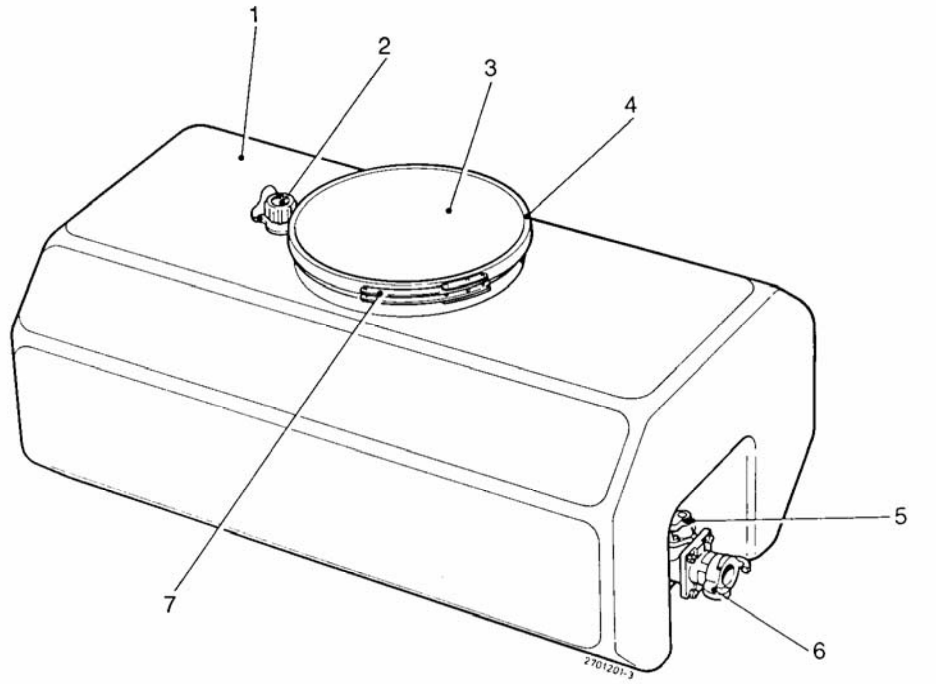
TABLE 1 GENERAL DATA

Serial (1)	Description (2)	Parameter (3)
	TANK ASSEMBLY	
1	Capacity	680 litre (150 gallon)
2	Overall dimensions:	
	2.1 Length	1474 mm (58 in.)
	2.2 Width	870 mm (34 in.)
	2.3 Height	720 mm (28 in.)
	2.4 Thickness	7.5 mm (0.3 in.)
	2.5 Weight:	
	2.5.1 Empty	45 kg (99 lb)
	2.5.2 Full	725 kg (1599 lb)
	TANK RESTRAINT FRAME	
3	Overall dimensions:	
	3.1 Length	1589 mm (62.6 in.)
	3.2 Width (no blocks)	919 mm (36.2 in.)
	3.3 Width (short blocks)	1123 mm (44.2 in.)
	3.4 Width (long blocks)	1255 mm (49.4 in.)
	3.5 Height	675 mm (26.6 in.)
	3.6 Weight	42 kg (92.4 Ib)
	VALISE ACCESSORIES	
	Single installation	
4	Overall dimensions:	
	4.1 Length	800 mm (31.5 in.)
	4.2 Width	120 mm (4.7 in.)
	4.3 Height	350 mm (13.8 in.)
	4.4 Weight (full valise)	17 Kg (37.5 Ib)
	VALISE ACCESSORIES	
	Twin installation	
5	Overall dimensions:	
	5.1 Length	800 mm (31.5 in.)
	5.2 Width	120 mm (4.7 in.)
	5.3 Height	350 mm (13.8 in.)
	5.4 Weight (full valise)	24 Kg (53 Ib)

EQUIPMENT DESCRIPTION

Water tank assembly

6 The water tank (Fig 3) is manufactured of tough, rigid polyethylene with flat sides and base. An access hole in the top surface of the tank offers easy access for cleaning, maintenance and filling purposes. The access hole polyethylene cover (Fig 3 (3)) is secured by a clamp (Fig 3 (4)), which is released by a toggle - action clip (Fig 3 (7)). Behind the access hole is a vent/filler cap (Fig 3 (2)) which is partially unscrewed for tank venting when water is dispensed, and is removed completely for filling with a narrow hose. A ball type outlet valve with an on/off operating handle (Fig 3 (5)), is located at the front of the tank. The valve is terminated with a quick-disconnect coupling (Fig 3 (6)), which is designed to connect to similar couplings fitted to the operational equipment items.

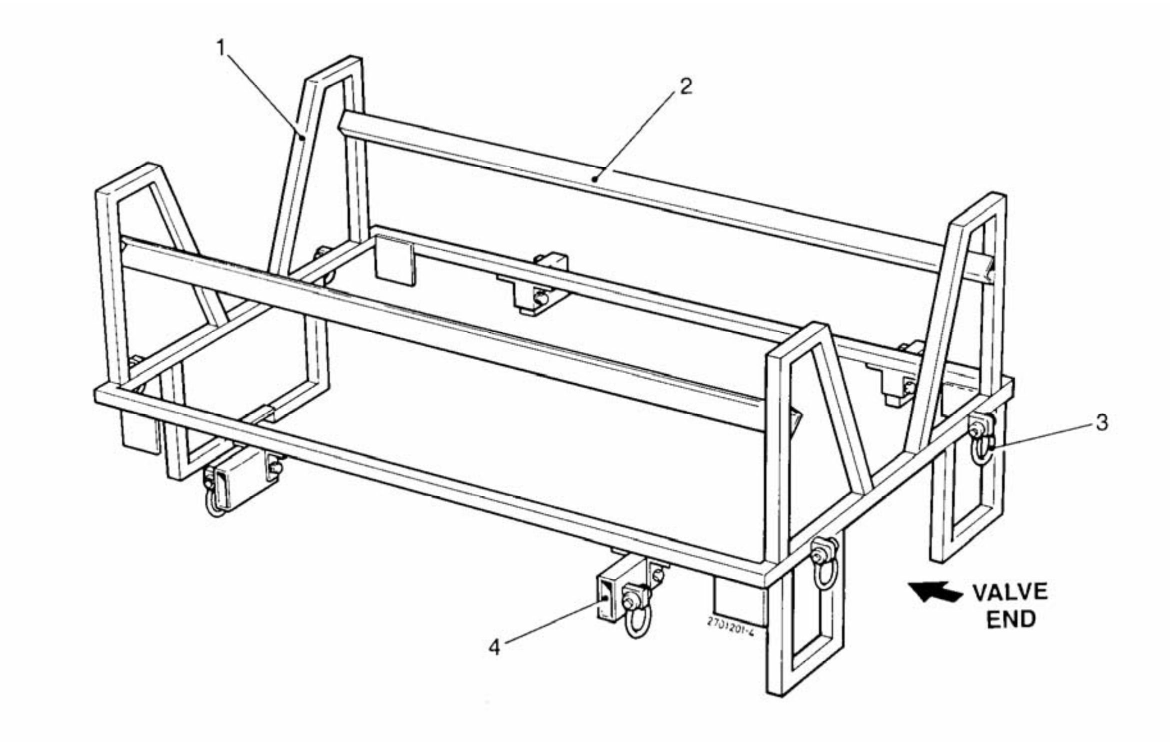


1 Water tank
2 Tank vent/filler cap
3 Access hole cover
4 Access hole cover clamp
5 Outlet valve operating handle
6 Quick-disconnect hose coupling
7 Access hole cover clamp toggle-action clip

Fig 3 Water tank assembly

Tank restraint frame

7 The tank restraint frame (Fig 4) is manufactured from 40 mm (1.6 in.) square section, mild steel and incorporates eight tie-down shackles (Fig 4 (3)), two at each end and two on each side. When installed in the carrying vehicle, the frame is fitted over the tank, which is restrained within the frame by the two top cross members (Fig 4 (2)). Depending on the type of carrying vehicle, the frame is restrained by tie-rods and or rope lashings between the frame and vehicle shackles. The shackles located on the long sides of the frame are fitted to the frame assembly via four, mild steel, removable restraining blocks (Fig 4 (4)). When the frame is installed in 0.75 tonne trailers, the restraining blocks butt against the trailer wheel boxes to position the frame correctly and prevent movement.

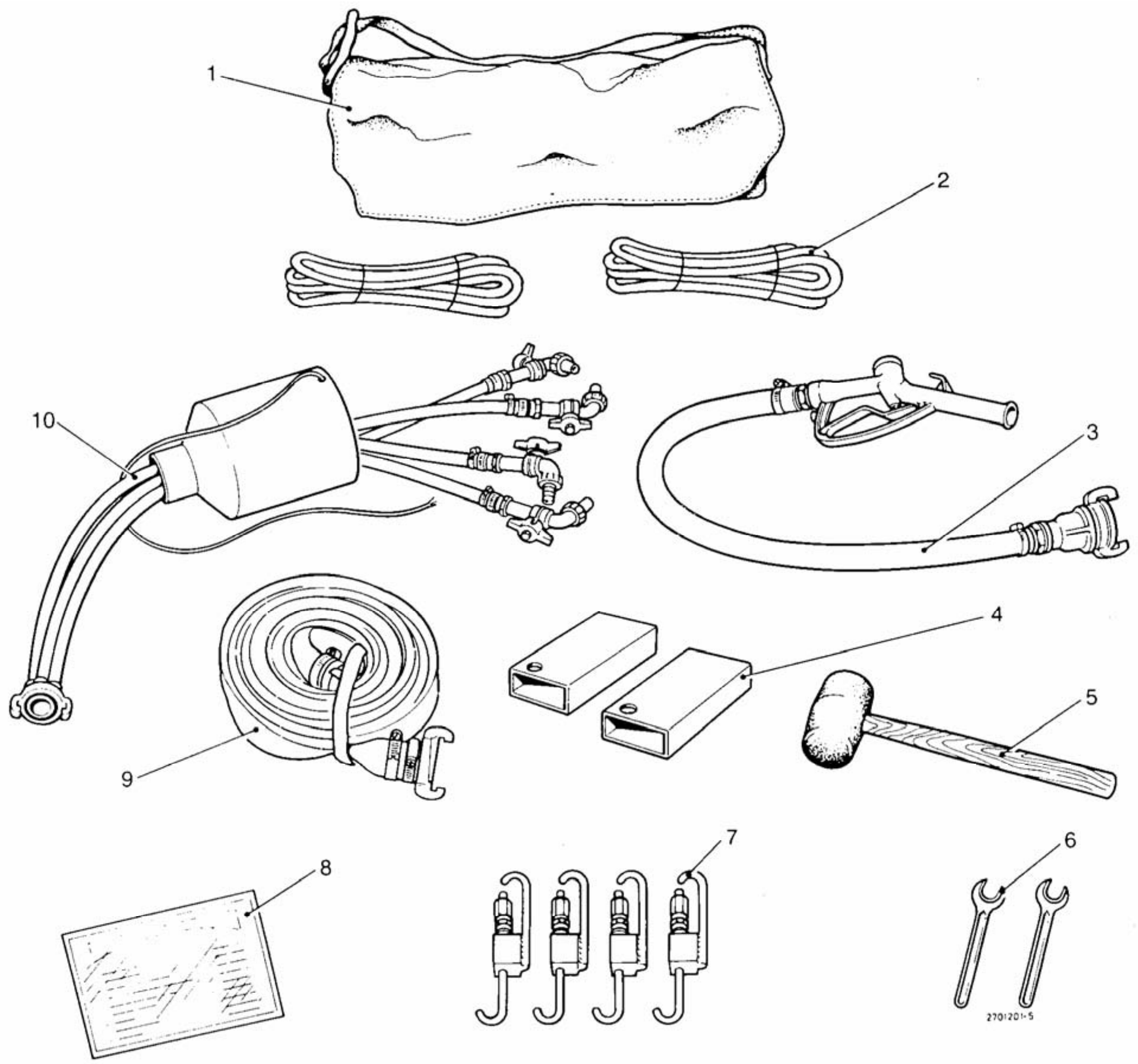


1 Tank restraint frame
2 Top cross member
3 Shackle
4 Restraining block

Fig 4 Tank restraint frame

SINGLE WCP INSTALLATION/OPERATIONAL EQUIPMENT

8 The operating equipment and the installation equipment required for installing a single WCP into either, the 0.75 tonne GS trailer or the TUM Landrover are contained in a single valise. The valise contents are shown in Fig 5.



1	Valise	6	Spanners
2	Plaited polyester rope	7	Tie-rod assemblies
3	Jerrycan nozzle assembly	8	Valise contents list
4	Wide track trailer blocks	9	Lay-flat hose
5	Rubber hammer	10	Dispensing manifold

Fig 5 Valise contents for a single WCP installation

Dispensing manifold

9 The dispensing manifold (Fig 5 (10)) comprises a brass manifold coupling (quick disconnect) with four 13 mm (0.5 in.) hose pillars, four one metre lengths of 13 mm (0.5 in.) bore, non-toxic braided, clear pvc hose, four water dispensing taps and a polyethylene holster. The four lengths of hose are connected to the manifold coupling and taps with worm drive hose clips. For operational use, the manifold coupling is connected directly to the tank valve coupling. When the WCP is not in use or is being prepared for transit, the holster slides over the taps to protect them from damage. The holster cord is used to anchor the holster plus taps to a convenient tying point.

Jerrycan nozzle assembly

10 The jerrycan nozzle assembly (Fig 5 (3)) comprises a quick-disconnect hose coupling, a 1 m (39.4 in.) length of 30 mm (1 in.) bore, non toxic braided, clear pvc hose and a jerrycan nozzle. For operational use, the quick-disconnect coupling is connected directly to the water tank valve coupling.

Lay-flat hose

11 The lay-flat hose (Fig 5 (9)) assembly comprises a 9.1 m (30 ft) length of 38 mm (1.5 in.) bore hose with a quick-disconnect coupling at each end. This hose may be used for draining the tank, or for dispensing water remote from the tank.

Tie-rod assemblies

12 The four adjustable tie-rod assemblies (Fig 5 (7)) are used to restrain the frame for a single WCP installation in the 0.75 tonne GS trailer.

Rope

13 Two lengths of plaited polyester rope (Fig 5 (2)) are used for restraining the frame for a single installation into the TUM Landrover.

Restraining blocks

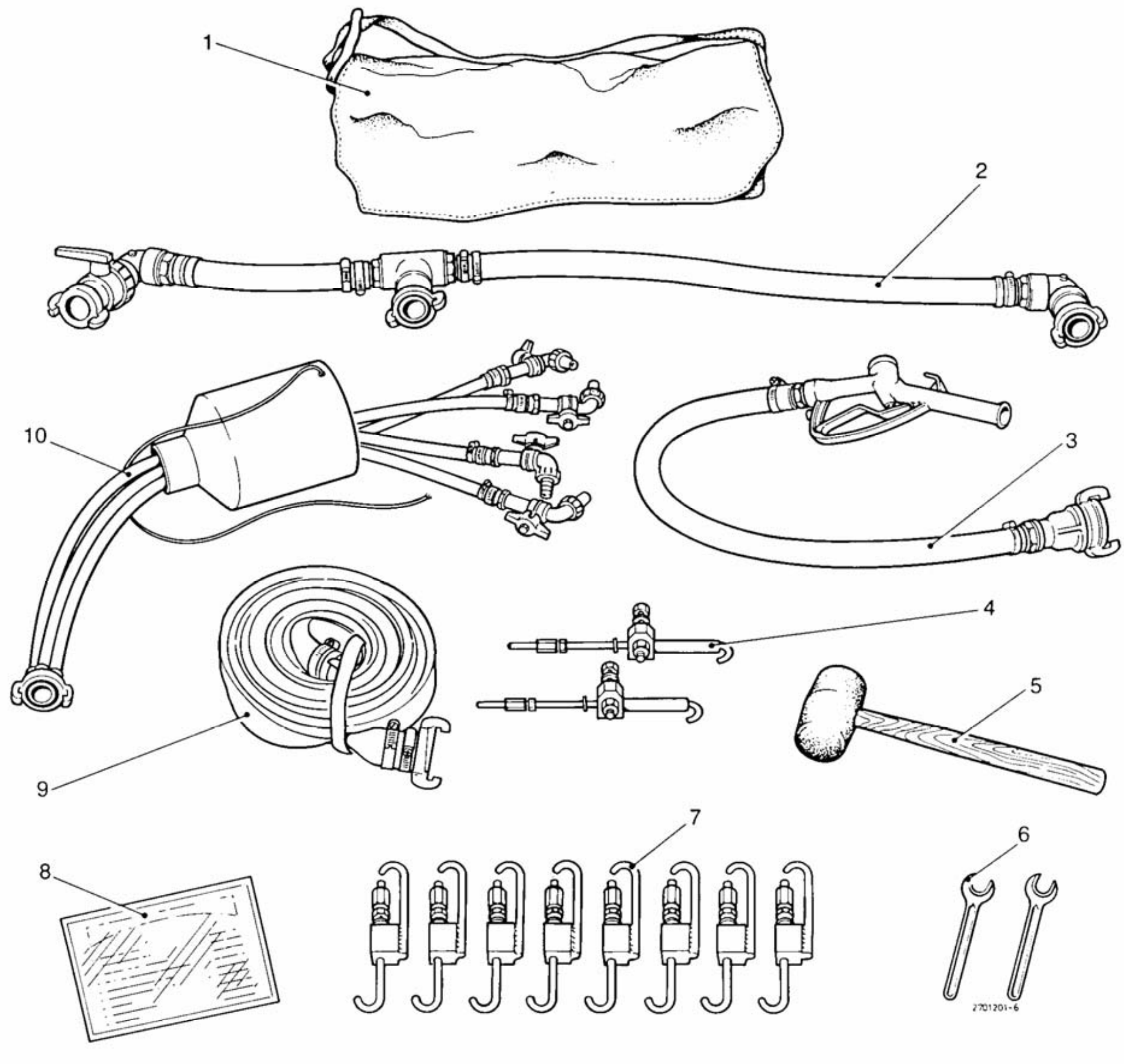
14 The two restraining blocks (Fig 5 (4)) are used to restrain the frame for a single WCP installation in the 0.75 tonne GS (wide track) trailer. These longer blocks replace the two rear most blocks on the left and right-hand sides of the frame.

Tools

15 The two spanners (Fig 5 (6)) are used to release stiff quick-disconnect couplings.

TWIN WCP INSTALLATION/OPERATIONAL EQUIPMENT

16 The operating equipment and the installation equipment required for installing a twin WCP into the 1.75 tonne GS are contained in a single valise. The valise contents are shown in Fig 6.



1	Valise	6	Spanners
2	Plaited polyester rope	7	Tie-rod assemblies
3	Jerrycan nozzle assembly	8	Valise contents list
4	Wide track trailer blocks	9	Lay-flat hose
5	Rubber hammer	10	Dispensing manifold

Fig 6 Valise contents for a single WCP installation

Tank inter-connector assembly

17 The Tank inter-connector assembly (Fig 6 (2)) interconnects between the two water tank outlets and provides a valve tap terminated with a quick-disconnect coupling for connection to dispensing equipment. A 38 mm (1.5 in.) BSP elbow section, terminated with a quick-disconnect coupling, connects to the forward tank outlet valve, and a 38 mm (1.5 in.) BSP tee section, fitted with a quick-disconnect coupling connects to the rear tank outlet valve. A 920 mm (36 in.) length of 38 mm (1.5 in.) bore section, pvc hose is connected between the forward tank elbow section and rear tank tee section by worm drive clips. Similarly, a 340 mm (13.4 in.) length of the same type of hose is connected between the other side of the tee section and a second elbow section. The water outlet valve (plus quick-disconnect coupling) is connected to the other side of the elbow section.

Dispensing manifold

18 The dispensing manifold (Fig 6 (10)) comprises a brass manifold coupling (quick disconnect) with four 13 mm (0.5 in.) hose pillars, four one metre lengths of 13 mm (0.5 in.) bore, non-toxic braided, clear pvc hose, four water dispensing taps and a polyethylene holster. The four lengths of hose are connected to the manifold coupling and taps with worm drive hose clips. For operational use, the manifold coupling is connected directly to the tank valve coupling. When the WCP is not in use or is being prepared for transit, the holster slides over the taps to protect them from damage. The holster cord is used to anchor the holster plus taps to a convenient tying point.

Jerrycan nozzle assembly

19 The jerrycan nozzle assembly (Fig 6 (3)) comprises a quick-disconnect hose coupling, a 1 m (39.4 in.) length of 30 mm (1 in.) bore, non toxic braided, clear pvc hose and a jerrycan nozzle. For operational use, the quick-disconnect coupling is connected directly to the water tank valve coupling.

Lay-flat hose

20 The lay-flat hose (Fig 6 (9)) assembly comprises a 9.1 m (30 ft) length of 38 mm (1.5 in.) bore hose with a quick-disconnect coupling at each end. This hose may be used for draining the tank, or for dispensing water remote from the tank.

Tie-rod assemblies

21 There are ten tie-rod assemblies provided for restraining the two frames. The two centre tie-rod assemblies (Fig 6 (4)) are for restraining the frames at the points where they are joined, and the eight smaller tie-rod assemblies (Fig 6 (7)) are for the remaining points of restraint.

Tools

22 The purpose of the two spanners (Fig 6 (6)) and rubber hammer (Fig 6 (5)) are to release stiff quick-disconnect couplings.

CHAPTER 2

WCP INSTALLATIONS

CONTENTS

INTRODUCTION

1 This chapter describes how to install:

1.1 A single WCP 0.75 tonne GS (wide track) trailer.

1.2 A single WCP TUM Landrover.

1.3 A twin installation into a 3 tonne Cargo GS trailer.

1.4 A twin WCP 1.75 tonne GS trailer.

2 A minimum of two persons are required to carry out each trailer installation. A minimum of three persons are required to carry out the TUM Landrover installation.

SINGLE WCP INSTALLATION INTO A 0.75 TONNE GS (WIDE TRACK) TRAILER

Installation procedure

3 The equipment provided for converting a 0.75 tonne GS (wide track) trailer into a water carrying vehicle is shown in Chapter 1 Fig 5.

4 To install a single WCP into a 0.75 tonne GS (wide track) trailer (Fig 6), proceed as follows:

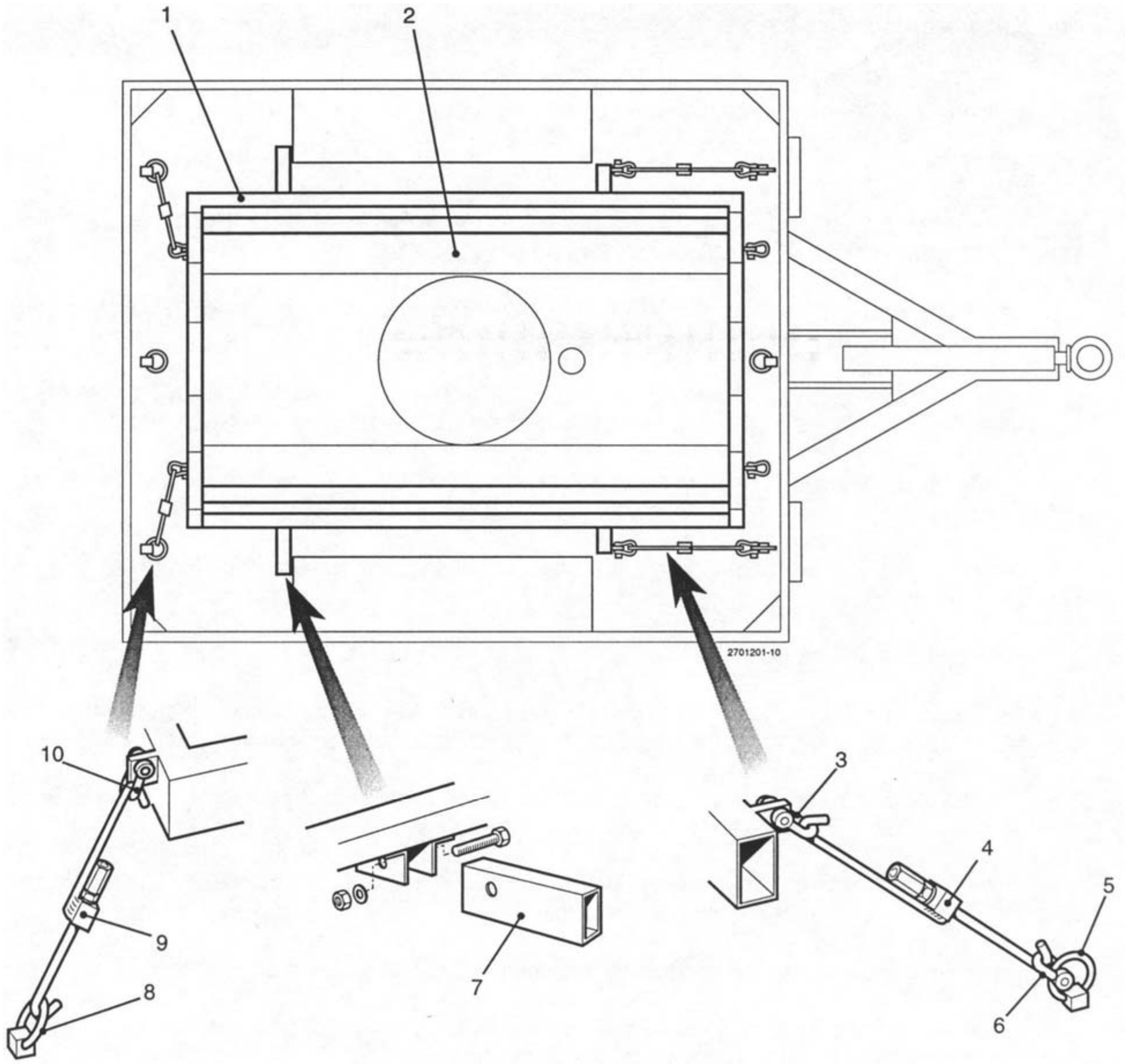
WARNINGS

(1) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE EMPTY WATER TANK WHICH WEIGHS 45 KG (99 LB).

(2) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE TANK RESTRAINT FRAME WHICH WEIGHS 42 KG (92.4 LB).

(3) PERSONAL INJURY. WHEN INSTALLING/REMOVING THE RESTRAINT FRAME, ALWAYS LIFT IT AT THE AREAS MARKED 'LIFT' TO AVOID FINGER ENTRAPMENT.

4.1 Apply the handbrake and lower the front and rear trailer stabiliser jacks.



1 Restraint frame	6 Shackle (removed from short block)
2 Water tank	7 Long restraint block
3 Restraint block shackle	8 Trailer floor ring
4 Tie-rod assembly	9 Tie-rod assembly
9 Trailer floor ring	10 Frame shackle

Fig 6 Single WCP installed in a 0.75 tonne GS (wide track) trailer

4.2 Remove the loose wooden framework floor, if fitted, and ensure that no metal flanges protrude from the floor.

4.3 Lift the water tank (Fig 6 (2)) into the trailer and locate it towards the front of the trailer, with the outlet valve facing rearwards.

4.4 Remove the two rear most restraint blocks from the restraint frame and fit the two longer blocks (Fig 6 (7)) in the same locations. Orientate the fixing bolts so that the washers and nuts are rearward facing.

4.5 With the tank restraint frame orientated as indicated in Fig 6, lower the frame over the tank so that the longer frame restraint blocks butt against the rear end of the trailer wheel boxes. The longer blocks prevent forward movement of the frame.

4.6 Remove the shackles from the two short restraint blocks previously removed, and fit them to the trailer floor rings in the front comers of the trailer (Fig 6 (6)).

4.7 Fit tie-rod assemblies (Fig 6 (4)) between the front restraint block shackles and the two front frame shackles. Adjust the tie-rod assemblies to tension the long frame restraint blocks against the wheel boxes.

4.8 Fit tie-rod assemblies (Fig 6 (9)) between the two rear mounted frame shackles and the rear end trailer floor rings. Adjust the tie-down assemblies to tension the frame.

4.9 The installed tank can now be filled (Chap 3) and/or transported to the field location.

TWIN WCP INSTALLATION INTO A 1.75 TONNE GS TRAILER

Installation procedure

5 The equipment provided for converting a 1.75 tonne GS trailer into a water carrying vehicle is shown in Chapter 1, Fig 6.

6 To install a twin WCP into a 1.75 tonne GS trailer (Fig 7), proceed as follows:

WARNINGS

(1) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE EMPTY WATER TANK WHICH WEIGHS 45 KG (99 LB).

(2) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE TANK RESTRAINT FRAME WHICH WEIGHS 42 KG (92.4 LB).

(3) PERSONAL INJURY. WHEN INSTALLING/REMOVING THE RESTRAINT FRAME, ALWAYS LIFT AT THE AREAS MARKED 'LIFT' TO AVOID FINGER ENTRAPMENT.

6.1 Apply the hand brake, adjust the jockey wheel to level the trailer and lower the trailer rear stabiliser jack.

6.2 Remove the loose wooden framework floor, if fitted, and ensure that no metal flanges protrude from the floor.

6.3 Remove the tailboard and the two side boards from the trailer.

6.4 Lift one water tank (Fig 7 (4)) into the trailer and locate it across and at the front of the trailer, with the outlet valve facing towards the left-hand side (trailer viewed from rear).

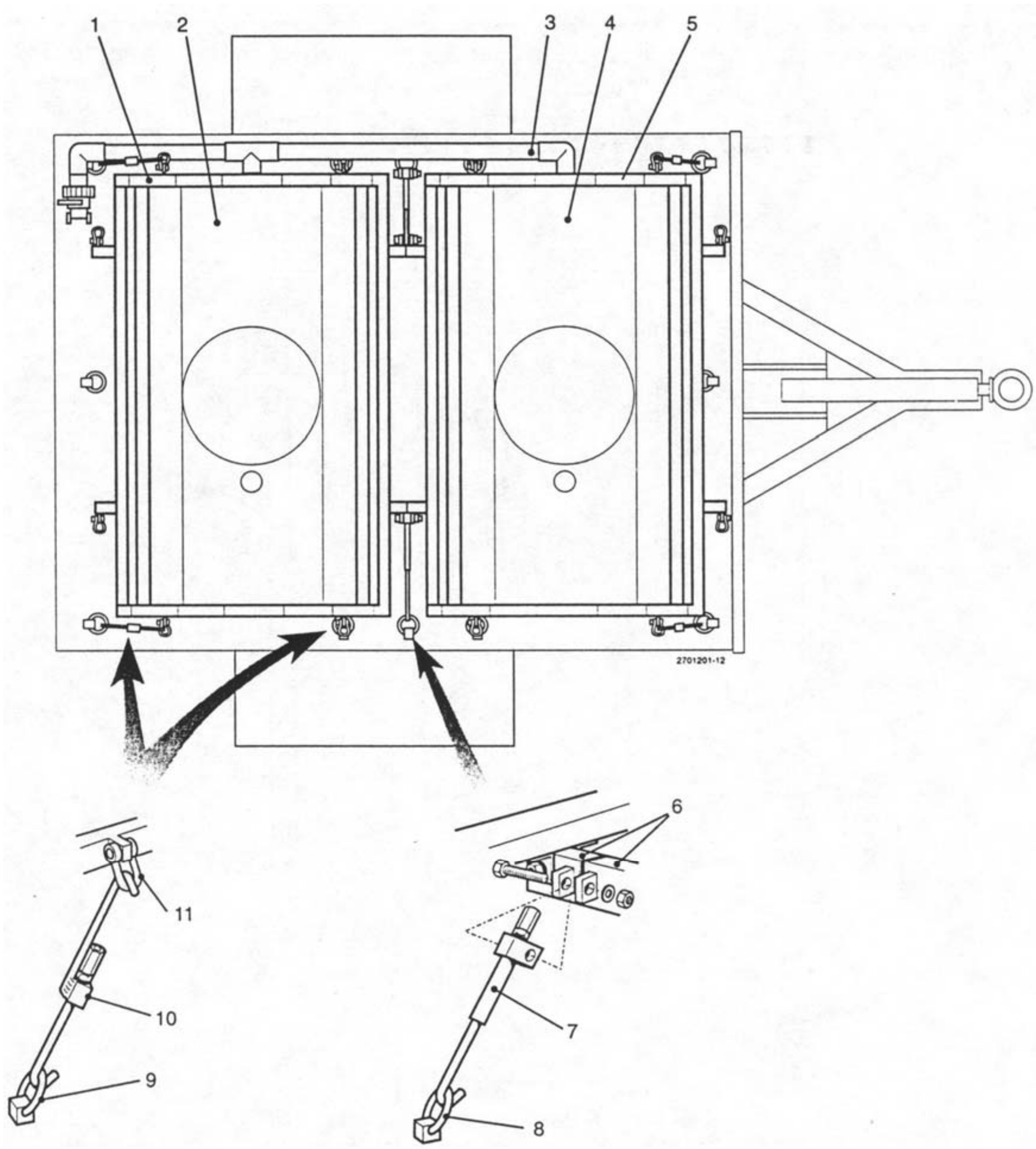
6.5 Lift the second water tank (Fig 7 (2)) into the trailer and locate it next to the first tank, with the outlet valve facing towards the left-hand side (trailer viewed from rear).

6.6 Viewing from the front end marked ('valve end') of the second frame, remove the shackles from the restraint blocks on the left-hand side of the frame.

6.7 Observing correct orientation, lower the frame (Fig 7 (5)) over the forward tank.

6.8 Viewing from the front end (marked 'valve end') of the second frame, remove the shackles from the restraint blocks on the right-hand side of the frame.

6.9 Observing correct orientation, lower the frame (Fig 7 (1)) over the rearward tank and align the restraint blocks where the two frames meet.



1	Rearward restraint frame	7	Centre tie-rod assembly
2	Rearward water tank	8	Trailer floor ring
3	Tank inter-connector assembly	9	Trailer floor ring
4	Forward water tank	10	Tie-rod assembly
5	Forward restraint frame	11	Frame shackle
6	Restraint blocks		

Fig 7 Twin WCP installation into a 1.75 tonne GS trailer

6.10 Connect the frames together by fitting the two centre tie-rod assemblies (Fig 7 (7)) to the restraint blocks on the two frames. Use the bolt fixings supplied with the centre tie-rods. Connect the other ends of the centre tie-rod assemblies to the trailer floor rings (Fig 7 (8)).

6.11 Fit tie-rod assemblies (Fig 7 (10)) between the frames and trailer floor rings at the eight points shown. Adjust and tighten all tie-rod assemblies evenly until the restraint frames are held securely.

6.12 Lay the tank inter-connector assembly (Fig 7 (3)) in the trailer in front of the tanks, as shown.

6.13 Connect the quick-disconnect coupling fitted to the elbow section to the outlet valve on the forward located tank. It is essential that the coupling joint is made secure by tapping the coupling with the rubber hammer provided.

6.14 Connect the quick-disconnect coupling fitted to the tee section to the outlet valve on the rearward located tank. It is essential that the coupling joint is made secure by tapping the coupling with the rubber hammer provided.

6.15 Ensure that the inter-connector assembly valve is closed and open both tank outlet valves.

6.16 Refit the trailer sides and tailboard making sure that they are locked in position.

6.17 The installed tank can now be filled (Chap 3) and/or transported to the field location.

TWIN WCP INSTALLATION INTO A TRAILER CARGO 3 TONNE GS 2 WHD

Embodiment instructions

7. This instruction details the procedures to be followed to install a twin WCP into a 3 tonne Cargo GS Trailer, using the new contents of a twin valise or the existing installation components used on the 1.75 tonne GS Trailer in conjunction with parts supplied with the trailer.

7.1 To modify the centre tie rod assembly, first dismantle the centre tie-rod assembly (Fig 2 item 7) and retain the sliding block, nuts and washer. Discard the 2 existing tie-rod 'J' bolts. Reassemble 2 centre tie-rod assemblies using 'long' tie-rod 'J' bolts (fig 3 item A) and retained sliding block, nuts and washer.

7.2 To modify the tie-rod assembly, first dismantle (fig 2 item 10) and retain the sliding block, nuts and washer. Discard the 8 existing tie-rod 'J' bolts. Reassemble 8 tie-rod assemblies using 'short' tie-rod 'J' bolts (fig 3 item B) and retained sliding block, nuts and washer.

WARNINGS

(1) PERSONNEL HAZARD. WHEN PARKING OR WORKING ON THE TRAILER, ENSURE THAT THE AREA IS AS FLAT AND AS FIRM AS POSSIBLE.

(2) PERSONNEL HAZARD. UNCOUPLED TRAILERS ARE ONLY 'BRAKED' WHEN THE RED 'PARK' BUTTON IS APPLIED (PULLED OUT).

(3) PERSONNEL HAZARD. THE LEVELLING JACKS AND THE JOCKEY WHEEL MUST BE CORRECTLY DEPLOYED TO ENSURE THE STABILITY OF THE TRAILER WHEN NOT COUPLED TO THE PRIME MOVER.

(4) PERSONNEL HAZARD. LEVELLING JACKS ARE TO BE DEPLOYED TO APPROXIMATELY 50MM (2 INCHES) FROM GROUND TO PREVENT TRAILER TIPPING DURING COUPLING OR UNCOUPLING PROCEDURE.

(5) PERSONNEL HAZARD. CARE MUST BE TAKEN WHEN REMOVING/REPLACING HEAD/TAILBOARDS OR SIDE PANEL ASSEMBLIES. THESE ITEMS ARE HEAVY. TWO PERSONS WILL BE REQUIRED FOR THESE TASKS.

(6) PERSONNEL HAZARD. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE EMPTY WATER TANK WHICH WEIGHS 45 KG (99 LB).

(7) PERSONNEL HAZARD. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE TANK RESTRAINT FRAME WHICH WEIGHS 42 KG (92.4 LB).

(8) PERSONNEL HAZARD. WHEN INSTALLING/REMOVING THE RESTRAINT FRAME, ALWAYS LIFT AT THE AREAS MARKED 'LIFT' TO AVOID FINGER ENTRAPMENT.

TWIN WATER CARRIAGE PACK INSTALLATION IN TRAILER CARGO 3 TONNE GS 2 WHD.

8. Install the water carriage pack as follows:

8.1 Ensure the park brake is correctly applied as described in chapter 3 of AESP 2330-H-300-201.

8.2 Ensure jockey wheel and levelling jacks have been correctly deployed if uncoupled from the prime mover to ensure trailer stability as described in chapter 3 of AESP 2330-H-300-201.

8.3 Remove tailboard, headboard and sideboards as described in chapter 3 of AESP 2330-H-300-201.

8.4 Lift one water tank into the trailer and locate it across and at the front of the trailer, with the outlet valve facing towards the left-hand side (trailer viewed from rear).

8.5 Lift the second water tank into the trailer and locate it next to the first tank, with the outlet valve facing towards the left-hand side (trailer viewed from rear).

8.6 Viewing from the front end marked ('valve end') of the second frame, remove the shackles from the restraint blocks on the left-hand side of the frame.

8.7 Observing correct orientation, lower the frame over the forward tank.

8.8 Viewing from the front end (marked 'valve end') of the second frame, remove the shackles from the restraint blocks on the right-hand side of the frame.

8.9 Observing correct orientation, lower the frame over the rearward tank and align the restraint blocks where the two frames meet.

8.10 The configuration of all tie-rod assemblies used for the restraint of Twin Water Carrier pack in the trailer cargo 3T GS 2WHD is shown in Figure 3, ensuring that the centre tie-rod assemblies are secured hand tight before the short tie-rods are fitted. (This ensures correct alignment of load securing eye).

8.11 Engage all tie-rods before tightening any nuts. Tighten nuts fully using spanners supplied in CES. Adjust and tighten all tie-rod assemblies evenly until the restraint frames are held securely.

8.12 Lay the tank inter-connector assembly (Fig 7 (3)) in the trailer in front of the tanks, as shown.

8.13 Connect the quick-disconnect coupling fitted to the elbow section to the outlet valve on the forward located tank. It is essential that the coupling joint is made secure by tapping the coupling with the rubber hammer provided.

8.14 Connect the quick-disconnect coupling fitted to the tee section to the outlet valve on the rearward located tank. It is essential that the coupling joint is made secure by tapping the coupling with the rubber hammer provided.

8.15 Ensure that the inter-connector assembly valve is closed and open both tank outlet valves.

8.16 Refit the trailer headboard, tailboard and sideboards as described in chapter 3 of AESP 2330-H-300-201.

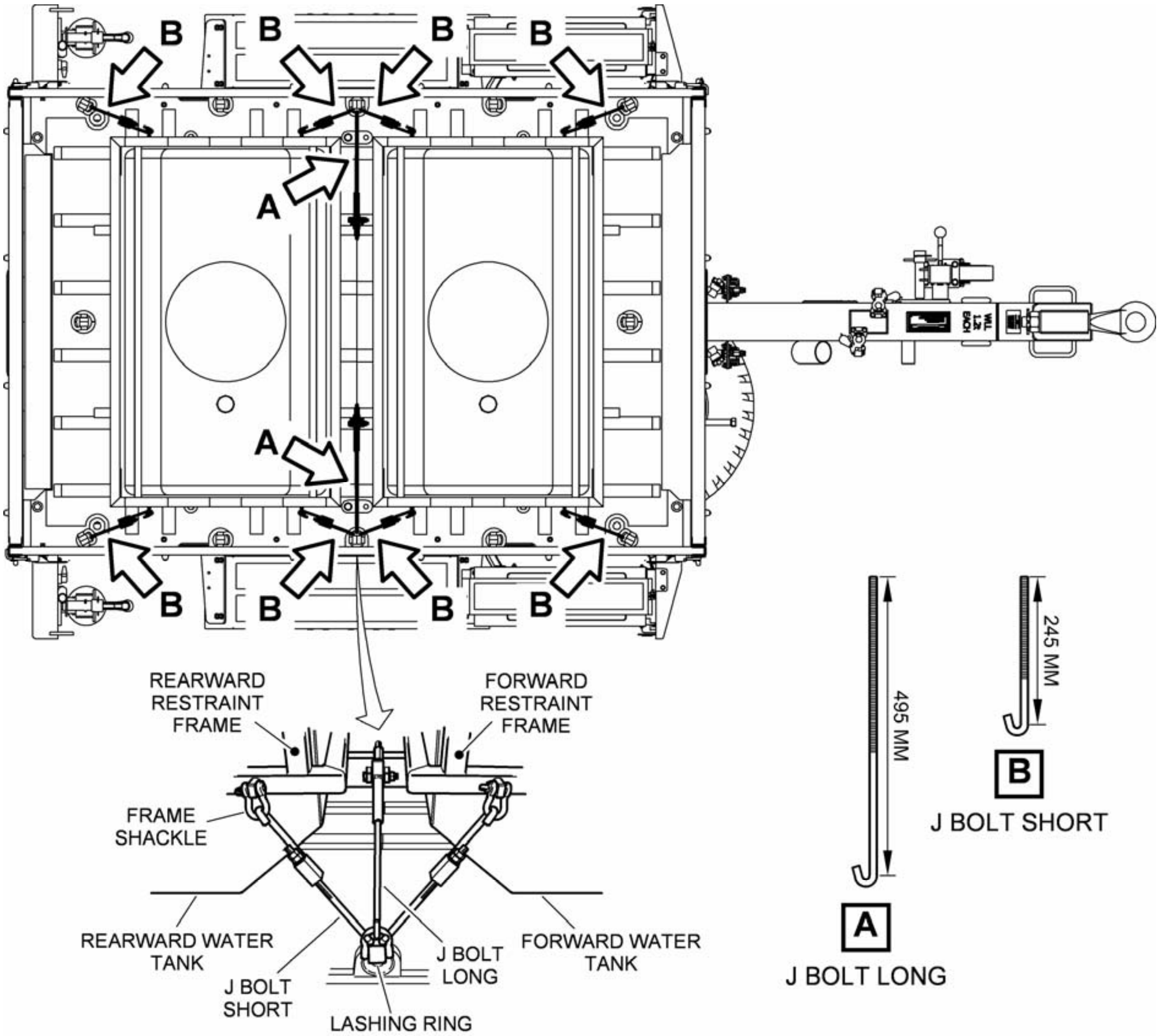


Figure 3 - Restraint configuration for Twin Water Carrier Pack (TWCP) on trailer cargo 3T GS 2 WHD

SINGLE WCP INSTALLATION INTO A TUM LANDROVER

Installation procedure

9 The equipment provided for converting a TUM Landrover into a water carrying vehicle is shown in Chapter 1, Fig 5.

10 To install a single WCP into a TUM Landrover (Fig), proceed as follows:

WARNINGS

(1) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE EMPTY WATER TANK WHICH WEIGHS 45 KG (99 LB).

(2) PERSONAL INJURY. A MINIMUM OF TWO PERSONS ARE REQUIRED TO LIFT THE TANK RESTRAINT FRAME WHICH WEIGHS 42 KG (92.4 LB).

(3) PERSONAL INJURY. WHEN INSTALLING/REMOVING THE RESTRAINT FRAME, ALWAYS LIFT AT THE AREAS MARKED 'LIFT' TO AVOID FINGER ENTRAPMENT.

10.1 Remove the restraint blocks plus shackles from the sides of the restraint frame.

10.2 Lower the tailboard (Fig (1)) until it is held by its supporting cables.

10.3 With the outlet valve facing rearwards, lift the water tank (Fig (2)) on to the tailboard and slide the tank partially into the truck.

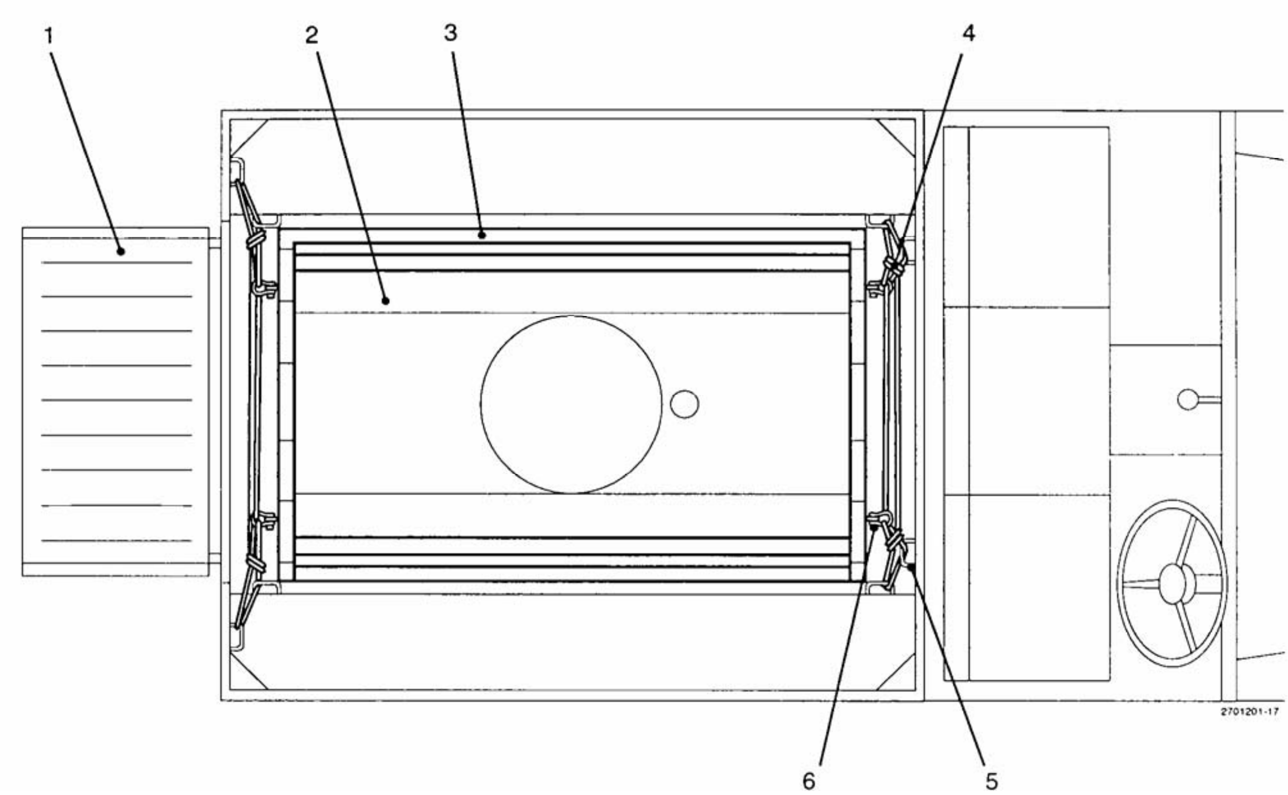
10.4 While two (or more) persons hold the frame (valve end rearwards) above the tank, a third person must slide the tank out of the truck a sufficient amount so that the frame can be lowered over it.

10.5 Slide the tank plus frame into the truck and position them as shown.

10.6 Working from the driving cab, use one rope (Fig (4)) to lash the front end of the frame securely to the vehicle as shown.

10.7 Using the other rope lash the rear end of the frame securely to the vehicle, as shown.

10.8 The installed tank can now be filled (Chap 3) and/or transported to the field location.



1 Truck tailboard
2 Water tank
3 Restraint frame
4 Plaited polyester rope
5 Truck cleat
6 Frame shackle

Fig 4 Single WCP installation into a TUM Landrover

CHAPTER 3

OPERATING INFORMATION

CONTENTS

INTRODUCTION

1 This chapter describes how to use the installed WCP equipment. The operating procedures provided are applicable to both single and twin installations.

2 The person in a unit or formation with delegated responsibility for the specified equipment, who is also competent and experienced in that role, is responsible for ensuring that the operations detailed in this Chapter are properly carried out.

3 For operational information on the associated water pumping and filtering and thermal insulation ancillary equipment, refer to Chapters 6 and 7, respectively.

4 The equipment must undergo periodic physical checks and maintenance activities in accordance with the procedures given in Chapter 4.

FILLING THE WATER TANK

WARNINGS

(1) HEALTH HAZARD. IF NO ARRANGEMENTS ARE PROVIDED FOR EMERGENCY FILTRATION OR PURIFICATION OF RAW WATER, THE TANKS MUST ONLY BE FILLED AT A DESIGNATED POTABLE WATER SOURCE.

(2) HEALTH HAZARD. AFTER STORAGE ENSURE DISINFECTION IS CARRIED OUT IN ACCORDANCE WITH CHAPTER 4 PARAGRAPH 16.

(3) UNSTABLE LOAD. ONLY TRANSPORT THE WATER CARRIAGE PACK EMPTY OR COMPLETELY FULL.

Filling via the access hole

5 To fill the tank(s) via the access hole (Fig 1), proceed as follows:

5.1 Release the access cover by operating the toggle-clip on the clamp and lift off the access cover with clamp.

5.2 Insert one end of the lay-flat hose into the access hole and couple the other end to the ancillary pumping equipment.

5.3 Fill at designated potable water point.

5.4 When the tank is full, refit the access cover and clamp.

NOTE

When fitting the access cover clamp ensure that the flat edge of the clamp is uppermost (1).

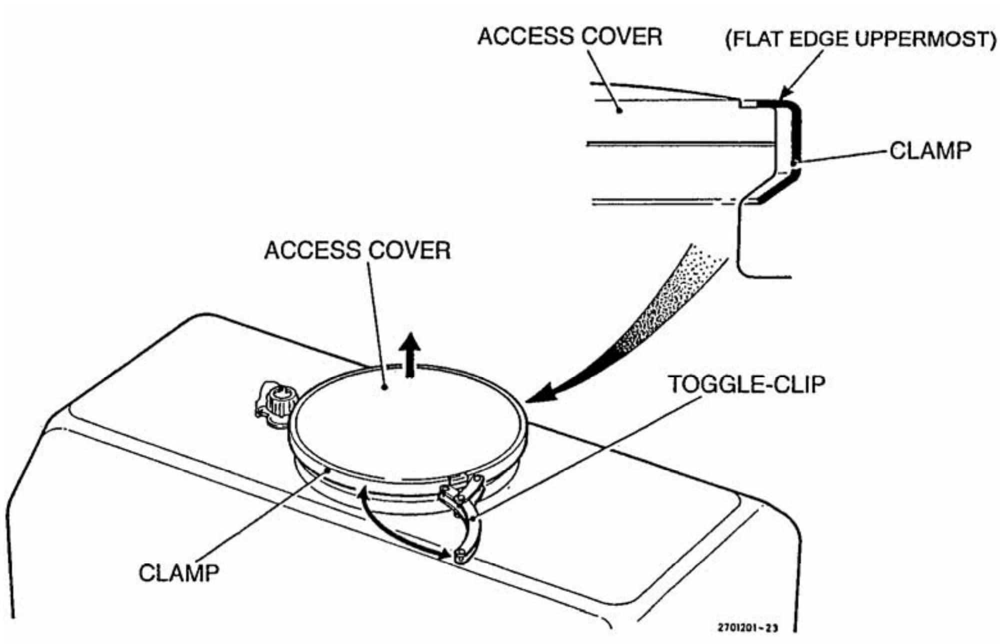


Fig 8 Access cover removal/replacement

Filling using the ancillary pumping and filtration equipment

6 The method for filling the tank using the ancillary pumping and filtration equipment is provided in Chapter 6 of this AESP.

DRAWING OFF WATER

NOTES

(1) The outlet valve references in the following procedure are applicable to the tank outlet valve for single WCP installations and the tank inter-connector assembly outlet valve for twin WCP installations.

(2) If the outlet valve or water dispensing equipment is frozen, obtain water from the tank access hole.

(3) Water left in hoses can become stale and unpalatable. If equipment is not going to be used for several hours, all hoses containing drinking water should be drained if circumstances permit, otherwise, allow to run to waste before drawing off water to drink.

7 To draw off water from the WCP, proceed as follows:

7.1 Unscrew the tank vent cap(s) by six turns.

7.2 Connect the required water dispensing equipment (i.e. water dispensing manifold or jerrycan nozzle assembly) to the outlet valve. For dispensing remote to the WCP connect lay-flat hose to outlet valve and connect dispensing equipment to lay-flat hose.

7.3 Open the outlet valve.

7.4 To draw off water using the 4-way dispensing manifold, turn on the appropriate number of dispensing taps.

7.5 To draw off water using the jerrycan nozzle assembly, insert the nozzle into the receptacle and operate the jerrycan nozzle trigger.

DRAINING A TANK

NOTES

(1) Avoid draining large quantities of water onto the ground in areas frequented by personnel or vehicles.

(2) The outlet valve references in the following procedure are applicable to the tank outlet valve for single WCP installations and the tank inter-connector assembly outlet valve for twin WCP installations.

8 To drain water from the tank(s), proceed as follows:

8.1 If possible, park the vehicle on a gradient with the outlet valve facing downhill.

8.2 Open the outlet valve and turn on all manifold taps.

NOTE

Use the lay-flat hose to route the water to a more suitable draining area.

8.3 When the water ceases to flow, and the WCP is trailer mounted, tilt the trailer to allow the remaining water to be drained out. If the WCP is truck mounted or a twin installation, release the tank restraint frame and tilt the water tank.

8.4 If the tank(s) is/are not to be filled for a considerable time, any residue in the tanks should be removed via the access hole (Chapter 4).

COLD WEATHER PRECAUTIONS

9 In very low temperature conditions, store the WCP under cover or, if the temperature is extremely low, drain the tank(s).

9.1 For operation in Arctic conditions, the thermal insulation kit should be fitted (Chapter 7).

CHAPTER 4

MAINTENANCE

CONTENTS

Para

INTRODUCTION

1 This chapter contains procedures for carrying out routine maintenance operations and parts replacement. It is the authority for carrying out all scheduled maintenance tasks on the subject equipment and takes precedence over any other conflicting publication.

2 The person in a unit or formation with delegated responsibility for the specified equipment, who is also competent and experienced in that role, is responsible for ensuring that the operations detailed in this Maintenance Schedule are properly carried out. The operations are only to be carried out by personnel that have attended the Unit Environmental Health Duties course. The aforementioned responsible person may also order any operation to be carried out more frequently than specified, if conditions under which the equipment is operated render it necessary.

3 Scheduled Maintenance is to be carried out at intervals specified in Table 2, 2 and 3 of this chapter.

4 Serial numbers left blank in the tables may be taken up by amendment action at a later date.

WARNINGS, CAUTIONS AND MAINTENANCE NOTES

5 Before any maintenance task is carried out, the WARNINGS, CAUTIONS and Maintenance Notes must be read and understood.

ROUTINE MAINTENANCE SCHEDULE

6 The maintenance tasks listed in Table 2 to 4 must be carried out at the intervals specified. This schedule applies to both installed WCPs and stored WCP equipment.

NOTE

Storage is deemed to be any period when the equipment is not in continuous use.

TABLE 2 ROUTINE MAINTENANCE SCHEDULE

Serial (1)	Maintenance task (2)	Period (3)
1	Physical inspection	Daily before use
2	Water tank cleaning	After use
3	Water tank disinfection	After storage, before use

TABLE 3 OUT OF PHASE MAINTENANCE

Serial (1)	Maintenance task (2)	Period (3)
1	Water tank cleaning/disinfecting	Immediate if tank is thought to have become contaminated during use

TABLE 4 OUT OF USE MAINTENANCE

Serial (1)	Maintenance task (2)	Period (3)
1	Physical inspection	6 Monthly

7 The items listed in Table 5 are the equipment items and materials required to carry out the maintenance procedures detailed in this chapter.

TABLE 5 EQUIPMENT AND MATERIALS

Serial (1)	Description (2)	Use (3)	NATO Stock No. (NSN) (4)
1	Brush	Cleaning inside water tank	F1B 7920-99-943-2865
2	Calcium Hypochlorite (Granular 65%)	Disinfection of water	H1CI 6810-99-611-3812
3	Sodium Thiosulphate Pentahydrate crystals	Neutralisation of Hypochlorite Solution	H1CI 6505-99-660-2760
4	Measure, plastic graded	Measurement of Chemicals	NIV (See NOTE 1 below)
5	Safety Data Sheets	Information Relating to Hazardous Chemicals	Refer to NOTE 2 below

NOTES

(1) Item 4 in Table 5 is to be sourced locally.

(2) If chemical safety data sheet is unavailable locally, JSP 375 MoD Health and Safety Handbook (Volume II, Leaflet 5). Safety Information (Safety Data Sheets) for MoD procured hazardous materials is promulgated through JSP 515 - MoD Hazardous Stores Information System 2 (HSIS 2).

MAINTENANCE PROCEDURES

8 The periodic routine maintenance activities cover physical inspection, general cleaning and tank disinfection.

9 When performing any task ensure that equipment items are not placed on dirty or sandy surfaces.

10 Stow accessories in a clean and dry condition in the valise provided.

Physical inspection

11 Water carriage pack installations and stored water carriage pack equipment must be physically inspected at intervals as specified in Table 2. The main inspection areas of the water tank and restraint frame are shown in Fig 9.

12 Inspect the equipment, as follows:

13 Check frame restraining tie-rod assembly tie-down points, trailer/truck tie-down points and/or rope lashings for condition and security.

13.1 Check that hose connections are tight.

13.2 Inspect all hoses and fittings for damage or deterioration.

13.3 Inspect quick-disconnect hose couplings on water tank and dispensing equipment for cleanliness.

13.4 Inspect neoprene seals (Fig 9 (10)) in dispensing equipment quick-disconnect couplings for damage or deterioration.

13.5 Inspect water tank (Fig 9 (6)) for damage (i.e. holes and splits).

13.6 Check security of lid (Fig 9 (3)) and operation of ring clamp (Fig 9 (2)).

13.7 Inspect the rubber 'O'-ring seal (Fig 9 (4)) for damage or deterioration.

13.8 Inspect tank vent/filler cap (Fig 9 (1)) and rubber 'O'-ring seal (Fig 9 (14)) for damage or deterioration.

13.9 Examine the tank interior for cleanliness. Pay particular attention to the internal support plate for the shut off valve (Fig 9 (11)) as it is prone to corrosion.

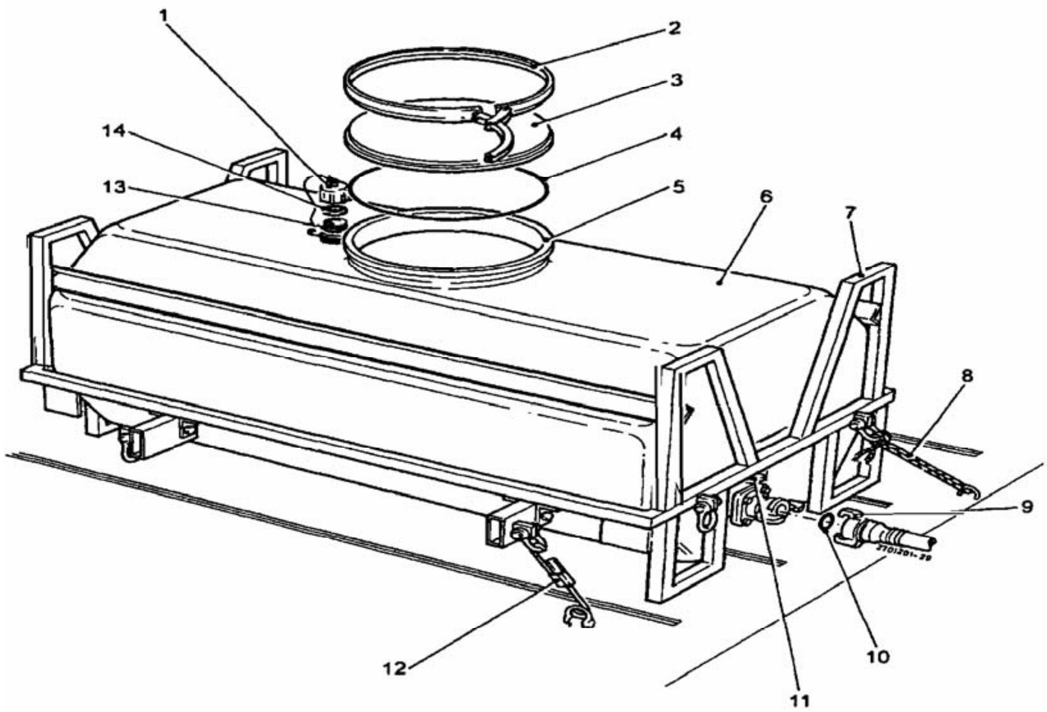
13.10 Check operation of shut off valve.

13.11 Check operation of dispensing manifold taps.

13.12 Check operation of jerrycan nozzle assembly.

13.13 Check conditions of pumping, filtration and ancillary items refer to Chapter 6.

13.14 On completion of the inspection, report any faults found.



1	Vent/filler cap	8	Rope lashing
2	Ring clamp	9	Water dispensing equipment coupling
3	Lid	10	Neoprene seal
4	Rubber 'O'-ring seal	11	Shut off valve
5	Access hole	12	Tie-rod assembly
6	Water tank	13	Vent/filler neck
7	Tank restraint frame	14	Vent/filler cap 'O'-ring seal

Fig 9 Water tank and restraint frame assemblies

Cleaning the water tank

14 The water tank must be cleaned at intervals as specified in Table 2 and 2.

15 To clean the water tank interior, proceed as follows:

15.1 Remove any visible contamination from the tank interior via the access hole and flush the tank out with clean water.

15.2 Leave the lid off and the shut off valve open and allow the tank to dry naturally. Once dry refit lid, loosen vent cap and ensure shut off valve is open.

Disinfecting the water tank

NOTE

(1) The following method removes any biological contamination from the water tank by treatment with Calcium Hypochlorite solution.

(2) Throughout the operation detailed in Para 17, add a sign to the water tank stating: "DISINFECTING - DO NOT TOUCH" a template for this sign is found at Annex A to this chapter.

16 Disinfect the water tank at intervals as specified in Table 2 and 2.

17 To disinfect the water tank, proceed as follows:

17.1 Open shut off valves (Fig 10 (1)). On twin installation ensure inter-connection Hose (Fig 10 (3)) is installed, and it's shut off valve is open.

17.2 Roll out lay-flat hose (Fig 10 (4)) and connect to shut off valve.

17.3 Connect dispensing manifold (Fig 10 (5)) to lay-flat hose and ensure taps closed.

17.4 Secure jerrycan nozzle in the OPEN position (Fig 10 (6)) and place inside water tank.

17.5 Fill the water tank(s) with clarified water.

17.6 Ensure that no leaks are present, especially at connections. If leaks are present, rectify prior to continuing with disinfection.

WARNING

HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING CALCIUM HYPOCHLORITE. READ SAFETY DATA SHEET PRIOR TO USE.

17.7 Using a suitable container add 24 grams (30 ml) Calcium Hypochlorite granules to clarified water and mix into a slurry. Add slurry mix to the water tank and stir using a suitable implement. (For twin installation carry out the process described in this Para 17.6 for each water tank).

17.8 In turn place each dispensing manifold tap into a suitable jerrycan and operate until Calcium Hypochlorite solution flows out.

17.9 Pour dispensed Calcium Hypochlorite solution back into water tank.

17.10 Immerse dispensing manifold, still connected to lay-flat hose with taps closed, into the Calcium Hypochlorite solution in the water tank.

17.11 Top up water tank with clarified water as necessary.

17.12 Allow to stand for a minimum of 30 minutes.

NOTE

The following method neutralises the Calcium Hypochlorite solution with Sodium Thiosulphate Pentahydrate crystals.

WARNING

HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING SODIUM THIOSULPHATE PENTAHYDRATE. READ SAFETY DATA SHEET PRIOR TO USE.

17.13 Using a suitable container, add 12 grams (10 ml) Sodium Thiosulphate Pentahydrate crystals (crushed to granular consistency) to clarified water and mix into a slurry. Add slurry mix to the water tank, and stir using a suitable implement. (For twin installation carry out the process described in Para 17.12 for each water tank).

17.14 Allow to stand for 5 minutes to neutralise the Calcium Hypochlorite solution.

17.15 Remove the dispensing manifold from the solution.

17.16 Dispense a full jerrycan of solution from one of the manifold taps. Pour back into the water tank and repeat process described in Para 17.15 once more.

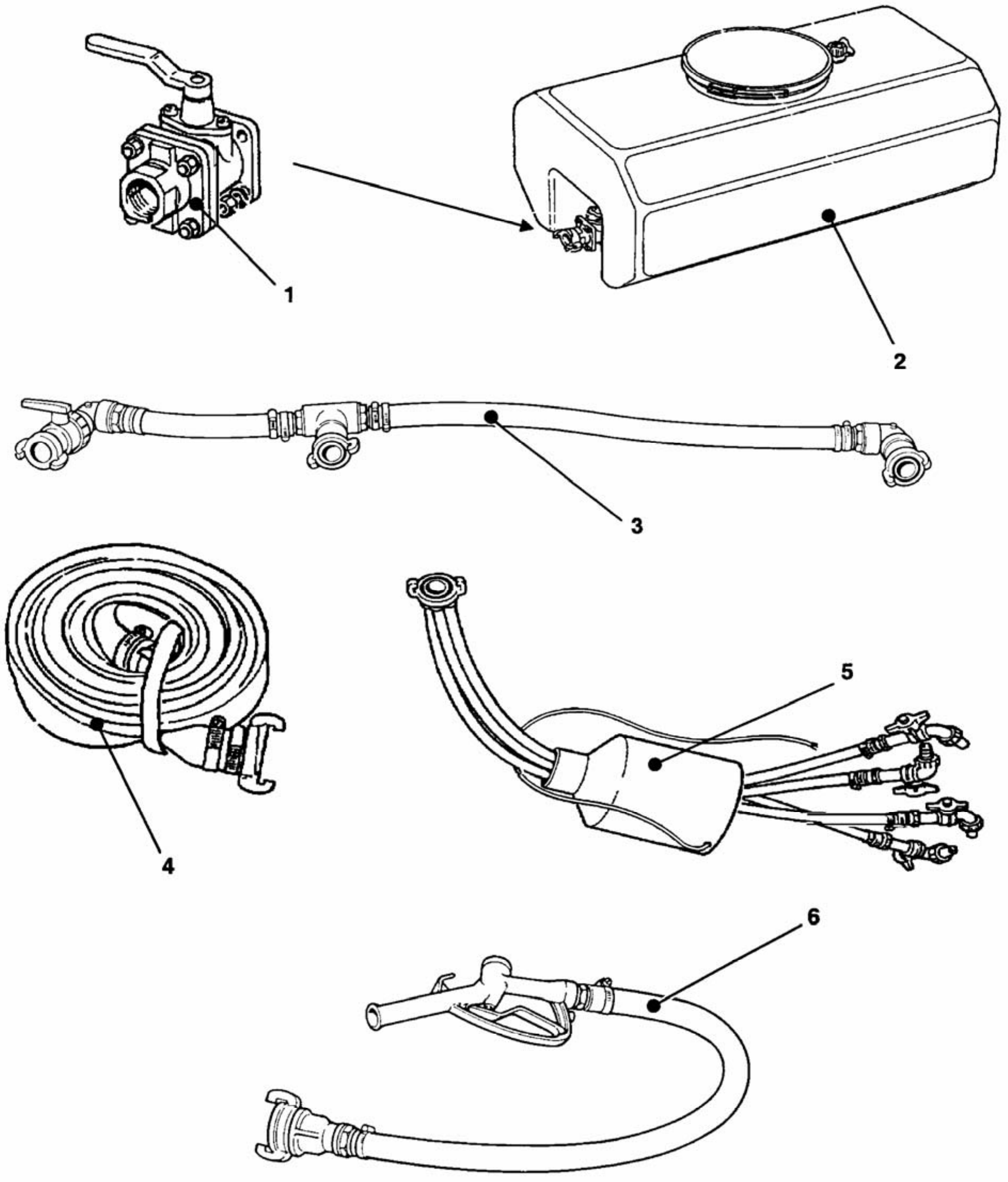
17.17 For each tap on the dispensing manifold, dispense quarter of a jerrycan of solution. Pour back into the water tank and stir solution.

17.18 Check the residual chlorine content of the water tank solution using the Lovibond test kit. See Chap 6 Para 28. The chlorine level must be less than 0.2 mg/litre before the tank contents are discharged. (For twin installation carry out the process described in Para 17.17 for each water tank).

17.19 When the correct chlorine level is achieved, dispose of the water tank contents.

PARTS REPLACEMENT

18 Any faulty or damaged parts shall be interchanged with a new replacement part. The replaceable parts for a single WCP installation and a twin WCP installation are illustrated in Chapter 5 (Illustrated Parts Catalogue) of this AESP.



1 Shut off valve
2 Water tank assembly
3 Tank inter-connector (Twin installation only)
4 Lay-flat hose
5 Dispensing manifold
6 Jerrycan nozzle

Fig 10 WCP component parts

CHAPTER 4 ANNEX A

MAINTENANCE

DISINFECTING - WARNING SIGN - TEMPLATE

CONTENTS

Fig 11 Template, sign disinfecting

CHAPTER 5

ILLUSTRATED PARTS CATALOGUE

CONTENTS

Para

INTRODUCTION

1 This Illustrated Parts Catalogue (IPC) is designed as an aid to the identification of component parts or assemblies of parts of the equipment, and to provide information necessary for demanding spares. This IPC should not be used as a dismantling, maintenance, repair, storage, transportation or operational guide.

2 This IPC may list some of the parts comprising the equipment concerned, but only those parts assigned a NATO Stock Number, Service Catalogue or Reference Number will normally be available as spares. Should there be a requirement for an item not assigned a number, demands may be submitted quoting the AESP number, item number, Figure Reference and item name. Where a manufacturer's reference is known, this should also be quoted.

Quantity

3 The figure in the 'No. off' column specifies the quantity for the unit, (or assembly, sub-assembly etc); it does not include the quantity to be demanded.

Demands

4 When demanding Spare Parts the following particulars must be quoted:

4.1 Management Code.

4.2 NATO Stock Number.

4.3 Item Name.

4.4 Names of equipment for which part is required.

4.5 Manufacturer's reference, if known.

NOTE

Alternatives quoted apply only to the Equipment covered by this IPC.

Modification state

5 When appropriate, a list at the front of each chapter or sub-chapter will indicate the modification numbers which have been incorporated in the IPC by amendment action, subsequent to initial issue.

Annotations

6 The following notations are used in this publication:

6.1 AR When appearing in the 'Number off' column indicates that the quantity is 'as required'.

6.2 NI When appearing in the 'Fig Item' column indicates that the item is not illustrated.

6.3 * (Obsolete stock) - an asterisk in the 'Part number' column indicates an obsolete item, no further purchase of which will be made but stocks are to be used until exhausted.

6.4 NP When appearing in the 'NATO Stock Number' column indicates that the item though illustrated, is not available from stock as a replacement item, i.e. it is a Non-Provisioned item.

6.5 LM Indicates local manufacture, i.e. a part that is to be manufactured by service units from local resources.

6.6 Ref in the 'No off' column indicates that the item is listed for reference purposes only.

Abbreviations

7 Abbreviations and symbols used in this IPC have been approved and are listed below:

A	Ampere
ac	Alternating Current
Al	Aluminium
A/R	As Required
Assy	Assembly
BC	Bayonet Cap
Br	Brass
BS	British Standard
BSF	British Standard Fine Thread
BSP	British Standard Pipe Thread
Btu	British Thermal Unit
C	Celsius (Centigrade)
cc	Cubic Centimetre
ccw	Counterclockwise
ch hd	Cheese Head
circ	Circumference
cm	Centimetre
cont	Continued
cres	Corrosion Resistant steel
csk	Countersunk
csk hd	Countersunk Head

cr	Chromium
Cu	Copper
cu	Cubic
cw	Clockwise
c/w	Complete with
dc	Direct Current
deg	Degree
dia	Diameter
dim	Dimension (all) (ing)
dwg	Drawing
ext	External
fig	Fig
flex	Flexible
ft	Foot
g	Gramme
gal	Gallon
h	Height
h	High
hd	Head
hex	Hexagon (al)
HF	High Frequency
HSS	High Speed Steel
ht	High Tension
HTS	High Tensile Steel
Hz	Hertz
id	Inside Diameter
in	Inch
incl	Inclusive
int	Internal
JSP	Joint Services Publication
K	Kilo (one thousand)
kg	Kilogram (mass)
kw	Kilowatt
L	Litre
lb	Pound (avoirdupois) (mass)
lg	Length (long)
lh	Left hand
m	Metre
mA	Milliampere
max	Maximum
mfr	Manufacture
min	Minimum
Mk	Mark
mm	Millimetre
mod	Modification (fied) (fy)
mtg	Mounting
N/A	Not Applicable
neg	Negative
no.	Number
nom	Nominal

NSN	NATO Stock Number
o/a	Over-all
od	Outside Diameter
o/s	Over-size
oz	Once (avoirdupois) (mass)
PCD	Pitch Circle Diameter
%	Percent
pos	Positive
pr	Pair
psi	Pound-force per square inch
PTFE	Polytetraflouroethylene
PVC	Polyvinyl Chloride
rad	Radius
rd	Round
rd hd	Round Head
rect	Rectangular
ref	Reference
rev/min	Revolutions per minute
rh	Right hand
s	Second (time)
SBC	Small Bayonet Cap
sect	Section
SI	International System of Units
spec	Specification
sq	Square
sq cm	Square Centimetre
sq	Square Metre
std	Standard
SWG	Standard Wire Gauge
temp	Temperature
thd	Thread (ed)
thk	Thick (ness)
tpi	Threads per inch
UNC	Unified Coarse Thread
UNF	Unified Fine Thread
u/o	Used on
V	Volt
W	Watt
W	Width
w/o	Without
wp	Working Pressure
Zn	Zinc

Amendments

8 Amendments to the IPC will be published as and when necessary. They will be numbered consecutively, and the amendment record sheet is to be completed for each Amendment Instruction Sheet embodied.

9 New or amended material will be highlighted by sidelining to show the extent of the amendment.

Indentations

10 Items are listed in a logical assembly/disassembly order and are indented by the 'Dot System' in which each 'dot' depicts the relationship of the item to the next higher assembly:

TABLE 6 THE DOT SYSTEM OF INDENTATION

(1)	MAIN ASSEMBLY
	Attaching parts for main assembly.
(2)	. FIRST LEVEL OF BREAKDOWN (sub-assembly or detail part of main assembly)
	. Attaching parts for first level.
(3)	.. SECOND LEVEL OF BREAKDOWN (sub-sub-assembly or detail part of sub-assembly)
	.. Attaching parts for second level.
(4)	... THIRD LEVEL OF BREAKDOWN (sub-sub-sub-assembly or detail part of sub-sub-assembly)
	... Attaching parts for third level.
(5)	.... FOURTH LEVEL OF BREAKDOWN (sub-sub-sub-sub-assembly or detail part of sub-sub-sub-assembly).
	.... Attaching parts of fourth level.

NOTES

(1) Attaching parts for the main Assembly are listed at the end of the text of the main Assembly.

(2) NATO Stock Numbers (NSNs) quoted in this IPC will supersede any number that may have been allotted previously.

Publication information

11 Any communication regarding this catalogue should be made to the controlling publication authority.

CHAPTER 5 ANNEX A

PARTS LIST FOR THE

680 LITRE (150 GAL) WATER CARRIAGE PACK MK 2

CONTENTS

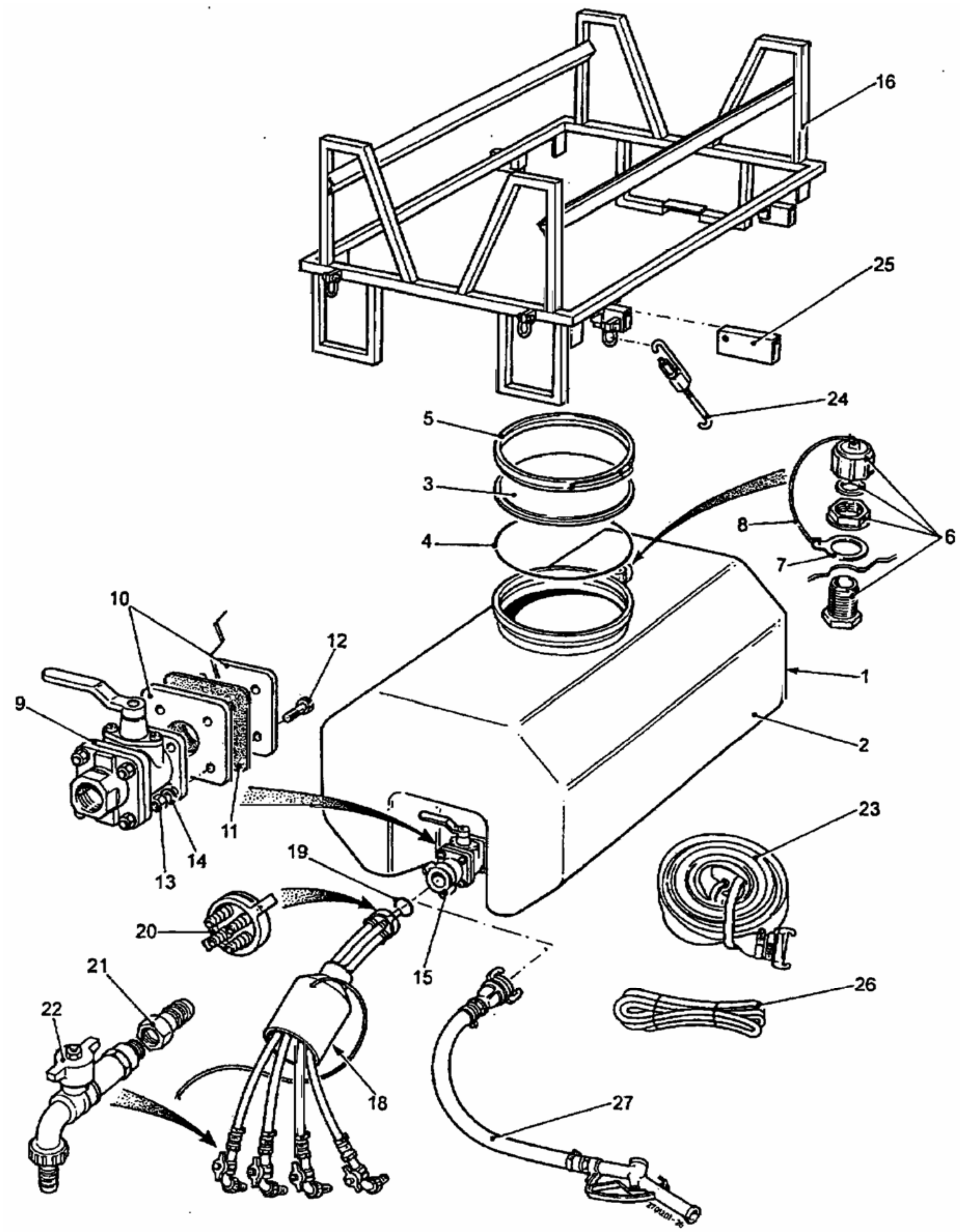


Fig 12 Single installation

TABLE 7 PARTS LIST SINGLE INSTALLATION

Fig 1 Item	DMC Army	NATO stock number	Item Name	Part No./ Drwg No.	No. off	Annotation (NSCM)
	NR	4610-99-075-8085	SINGLE INSTALLATION		REF	
1	NR	4610-99-206-1300	. TANK ASSEMBLY	MEXE 36244	1	
2	NR	5430-99-206-1301	. . TANK	302001	1	
3	NR	5340-99-207-1723	. . LID	302002	1	
4	NR	5331-99-836-3003	. . 'O' RING, 18 in.	302003	1	
5	NR	5340-99-207-1733	. CLOSING RING	302007	1	
6	NR	4610-99-301-5544	. . FILLER VENT ASSEMBLY	866	1	
7	NR	5330-99-667-2512	. . GASKET, filler/vent	302005	1	
8	NR	4020-99-980-0231	. . CORD, Nylon, 3 mm dia	302006	1	
9	NR	4610-99-207-1736	. . VALVE, cast iron, single	302009	1	
10	NR	4610-99-396-1190	. . PLATE, Reinforcing	302010	2	
11	NR	5330-99-131-1595	. . GASKET, Valve	MEXE 48777	1	
12	NR	5306-99-853-6791	. . BOLT, Hex Hd. 5/16 x 2 in. lg. stainless steel	302012	4	
13	NR	5310-99-663-5401	. . NUT, locking, Hexagon 5/16 in. steel zinc plated, nylon insert (Nyloc)	302013	4	
14	NR	5310-99-005-0683	. . WASHER, FLAT, 5/16 in. stainless steel	302014	4	
15	NR	4730-99-207-1734	. . COUPLING, Brass	302008	1	
16	NR	4610-99-001-6939	. FRAME ASSEMBLY	302106	1	
NI 17			ITEM DELETED			
18	NR	4610-99-663-5386	. . MANIFOLD ASSEMBLY	302101	1	
19	NR	5330-99-206-3504	. . . WASHER, FLAT, Neoprene	302029	1	
20	NR	4610-99-398-7178	. . . MANIFOLD, Water	302024	4	
21	NR	4730-99-983-6347	. . . PILLAR, HOSE 1/2 in. BSPF	302025	1	
22	NR	4510-99-500-5449	. . . FAUCET, 1/2 in. metal	302022	4	
23	NR	4720-99-205-5180	. . HOSE ASSEMBLY	302103	1	
24	NR	4610-99-214-1138	. . TIE ROD ASSEMBLY	302050	4	
25	NR	4610-99-215-7594	. . BLOCK TRAILER, Wide Track	302017	2	
26	NR	4020-99-052-0495	. . ROPE, Frame tie down	302057	2	
27	NR	4610-99-957-4529	. . NOZZLE, JERRYCAN	302104	1	
NI 28	F1A	5120-99-139-3637	. . WRENCH, box and open combination 17 mm	RJM 17	2	
NI 29	F1A	5120-99-120-7297	. . HAMMER, rubber	616	1	
NI 30	NR	4610-99-206-3820 Deleted	. . VALISE, accessories (empty)	MEXE 36243	1	

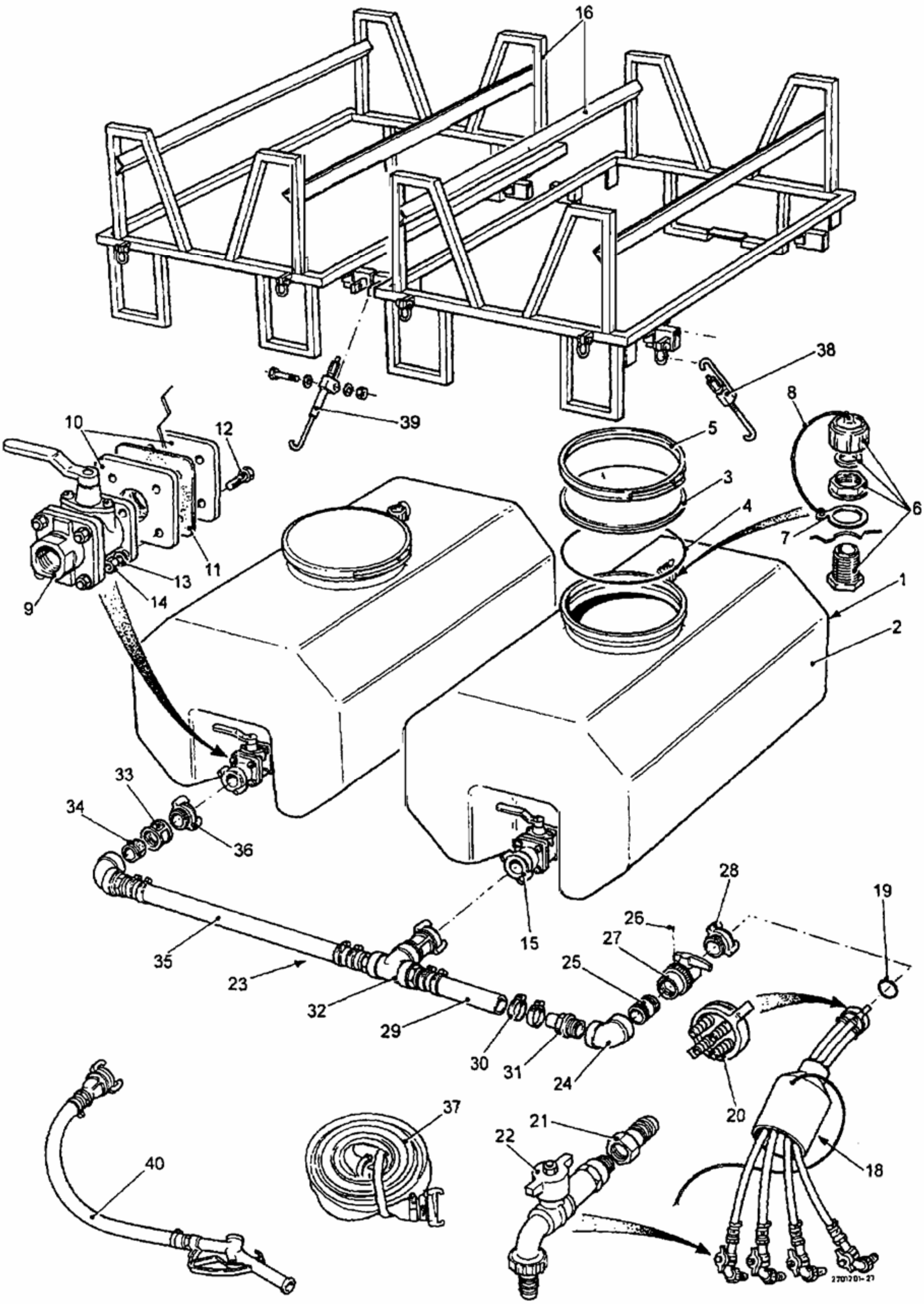


Fig 13 Twin installation

TABLE 8 PARTS LIST TWIN INSTALLATION

Fig 2 Item	DMC Army	NATO stock number	Item Name	Part No./ Drwg No.	No. off	Annotation (NSCM)
	NR	4610-99-748-0535	TWIN INSTALLATION		REF	
1	NR	4610-99-206-1300	. TANK ASSEMBLY	MEXE 36244	2	
2	NR	5430-99-206-1301	..TANK	302001	1	
3	NR	5340-99-207-1723	. . LID	302002	1	
4	NR	5330-99-836-3003	. . 'O' RING, 18 in.	302003	1	
5	NR	5340-99-207-1733	. CLOSING RING	302007	1	
6	NR	4610-99-301-5544	. . FILLER, VENT ASSEMBLY	866	1	
7	NR	5330-99-667-2512	. . GASKET, filler/vent	302005	1	
8	NR	4020-99-980-0231	. . CORD, Nylon, 3 mm dia	302006	1	
9	NR	4610-99-207-1736	. . VALVE, cast iron, single	302009	1	
10	NR	4610-99-396-1190	. . PLATE, Reinforcing	302010	2	
11	NR	5330-99-131-1595	. . GASKET, valve	MEXE 48777	1	
12	NR	5306-99-853-6791	. . BOLT, Hex Hd. 5/16 x 2 in. lg. stainless steel	302012	4	
13	NR	5310-99-005-0683	. . WASHER, FLAT, 5/16 in. stainless steel	302014	4	
14	NR	5310-99-663-5401	. . NUT, locking, Hexagon 5/16 in. steel zinc plated, nylon insert (Nyloc)	302013	4	
15	NR	4730-99-207-1734	. . COUPLING, Brass	302008	1	
16	NR	4610-99-001-6939	. FRAME ASSEMBLY	302106	1	
NI 17	NR		ITEM DELETED			
18	NR	4610-99-663-5386	. . MANIFOLD ASSEMBLY	302101	1	
19	NR	5330-99-206-3504	. . . WASHER, FLAT, Neoprene	302029	1	
20	NR	4610-99-398-7178	. . . MANIFOLD, Water	302024	1	
21	NR	4730-99-983-6347	. . . PILLAR, HOSE 1/2 in. BSPF	302025	4	
22	NR	4510-99-500-5449	. . . FAUCET, 1/2 in. metal	302022	4	
23	NR	4610-99-244-8315	. . TANK CONNECTOR ASSEMBLY	302102	1	
24	NR	4730-99-877-1493	. . . ELBOW, 1 1/2 in. BSPF female	302031	2	
25	NR	4730-99-126-3698	. . . UNION, Pipe special	302032	1	
26	NR	5305-99-215-6787	. . . SCREW, self tapping	302033	1	
27	NR	4610-99-126-3699	. . . VALVE, 1 1/2 in. BSP	302034	1	
28	NR	4730-99-207-1734	. . . COUPLING, Brass	302008	1	
29	NR	4720-99-770-0313	. . . HOSE, 1 1/2 in. x 0.34 m, Heliflex	302035	1	
30	NR	4730-99-461-1259	. . . CLAMP, Hose, 40-55 mm dia	302036	8	
31	NR	4730-99-414-6554	. . . ADAPTOR, straight, pipe	302037	4	
32	NR	4730-99-974-7282	. . . TEE, EQUAL, 1 1/2 in. BSP	302038	1	
33	NR	4730-99-739-5949	. . . SOCKET, threaded female union, pipe, special	302039	2	

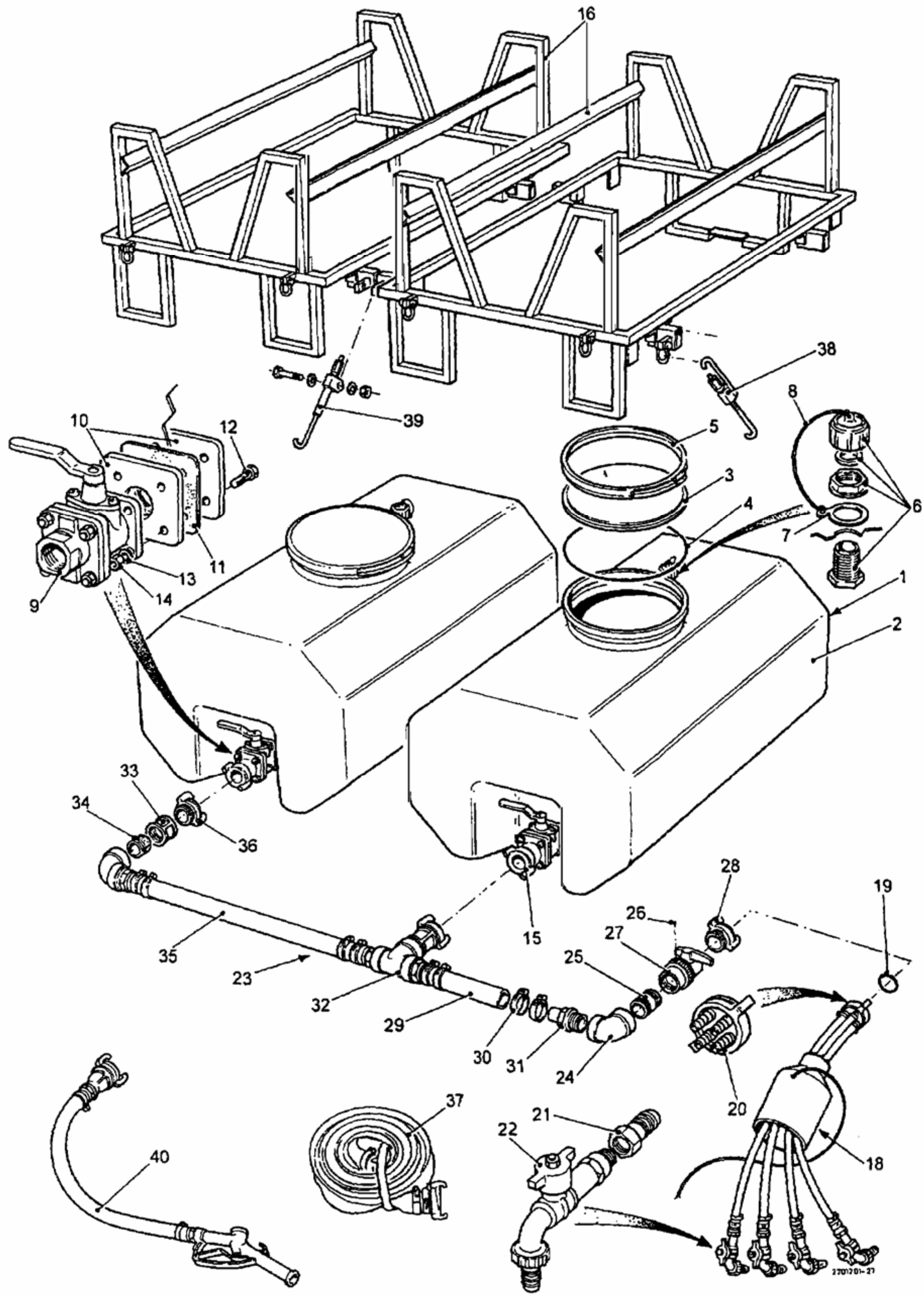


Fig 2 Twin installation

TABLE 2 PARTS LIST TWIN INSTALLATION (continued)

Fig 2 Item	DMC Army	NATO stock number	Item Name	Part No./ Drwg No.	No. off	Annotation (NSCM)
			TWIN INSTALLATION - Contd			
34	NR	4730-99-409-9777	. . . UNION, pipe special	302040	2	
35	NR	4720-99-500-5454	. . . HOSE, 1 1/2 in. x 0.92 m Heliflex	302041	1	
36	NR	4730-99-663-5377	. . . COUPLING, Half, quick disconnect	302028	2	
37	NR	4720-99-205-5180	. . HOSE ASSEMBLY, 9.1 m	302103	1	
38	NR	4610-99-214-1138	. . TIE ROD ASSEMBLY	302050	8	
39	NR	4610-99-770-0319	. . CENTRE TIE ROD ASSEMBLY	302051	2	
40	NR	4610-99-957-4529	. . NOZZLE, JERRYCAN, c/w hose	302104	1	
NI 41	F1A	5120-99-139-3637	. . WRENCH, box and open combination. 17 mm	RJM 17	2	
NI 42	F1A	5120-99-120-7297	. . HAMMER, rubber	616	1	
NI 43	NR	4610-99-206-3820 Deleted	. . VALISE, accessories (empty)	MEXE 36243	1	

CHAPTER 5 ANNEX B

INDEX OF NATO STOCK NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS

INDEX OF NATO STOCK NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS

CHAPTER 5 ANNEX C

INDEX OF MANUFACTURERS'/PART/DRAWING NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS

INDEX OF MANUFACTURERS'/PART/DRAWING NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS

Manufacturers' Part or Dwg Numbers	Chapter 5 Sub-chap	Fig & Item
616		1-29 NI
616		2-42 NI
866		1-6
866		2-6
302001		1-2
302001		2-2
302002		1-3
302002		2-3
302003		1-4
302003		2-4
302005		1-7
302005		2-7
302006		1-8
302006		2-8
302007		1-5
302007		2-5
302008		1-15
302008		2-15
302008		2-28
302009		1-9
302009		2-9
302010		1-10
302010		2-10
302012		1-12
302012		2-12
302013		1-13
302013		2-14
302014		1-14
302014		2-13
302017		1-25
302022		1-22
302022		2-22
302024		1-20
302024		2-20
302025		1-21
302025		2-21
302028		2-36
302029		1-19
302029		2-19
302031		2-24
302032		2-25
302033		2-26
302034		2-27
302035		2-29
302036		2-30
302037		2-31
302038		2-32
302039		2-33

Manufacturers' Part or Dwg Numbers	Chapter 5 Sub-chap	Fig & Item
302040		2-34
302041		2-35
302050		1-24
302050		2-38
302051		2-39
302057		1-26
302101		1-18
302101		2-18
302102		2-23
302104		1-27
302104		2-40
302106		1-16
302106		2-16
RJM 17		1-28 NI
RJM 17		2-41 NI
MEXE 36243		1-30 NI
MEXE 36243		2-43 NI
MEXE 36244		1-1
MEXE 36244		2-1
MEXE 48777		1-11
MEXE 48777		2-11

CHAPTER 5 ANNEX D

CROSS REFERENCE LIST TO COMMERCIAL PARTS NOT CONTAINED IN TEXT

FOR THE

680 LITRE (150 GAL) WATER CARRIAGE PACK MK 2

(NOT APPLICABLE)

CHAPTER 5 ANNEX E

CROSS REFERENCE LIST TO COMMERCIAL PARTS CONTAINED IN TEXT

FOR THE

680 LITRE (150 GAL) WATER CARRIAGE PACK MK 2

INDEX OF MANUFACTURERS' PART/DRAWING NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS

Fig & Item No.	Manufacturer's Part Numbers	Catalogue Number	Item Name	Remarks
1			SINGLE INSTALLATION	
1-1	MEXE 36244	4610-99-206-1300	TANK ASSEMBLY	
1-2	302001	5430-99-206-1301	TANK	
1-3	302002	5340-99-207-1723	LID	
1-4	302003	5330-99-836-3003	'O' RING 18 in.	
1-5	302007	5340-99-207-1733	CLOSING RING	
1-6	866	4610-99-301-5544	FILLER VENT ASSEMBLY	
1-7	302005	5330-99-667-2512	GASKET, filler / vent	
1-8	302006	4020-99-980-0231	CORD, Nylon, 3mm dia	
1-9	302009	4610-99-207-1736	VALVE, cast iron single	
1-10	302010	4610-99-396-1190	PLATE, reinforcing	
1-11	MEXE 48777	5330-99-131-1595	GASKET, valve	
1-12	302012	5306-99-853-6791	BOLT	
1-13	302013	5310-99-663-5401	NUT	
1-14	302014	5310-99-005-0683	WASHER, FLAT, Neoprene	
1-15	302008	4730-99-207-1734	COUPLING, brass	
1-16	302106	4610-99-001-6939	FRAME ASSEMBLY	
1-18	302101	4610-99-663-5386	MANIFOLD ASSEMBLY	
1-19	302029	5330-99-206-3504	WASHER, FLAT	
1-20	302024	4610-99-398-7178	MANIFOLD	
1-21	302025	4730-99-983-6347	PILLAR, HOSE 1/2, BSPF	
1-22	302022	4510-99-500-5449	FAUCET, 1/2 in. metal	
1-23	302103	4720-99-205-5180	HOSE ASSEMBLY	
1-24	302050	4610-99-214-1138	TIE ROD ASSEMBLY	
1-25	302017	4610-99-215-7594	BLOCK TRAILER	
1-26	302057	4020-99-052-0495	ROPE	
1-27	302104	4610-99-957-4529	NOZZLE, JERRYCAN	
1-28 NI	RJM 17	5120-99-139-3637	WRENCH	
1-29 NI	616	5120-99-120-7297	HAMMER	
1-30	MEXE 36243	4610-99-206-3820	VALISE, empty	
2			TWIN INSTALLATION	
2-1	MEXE 36244	4610-99-206-1300	TANK ASSEMBLY	
2-2	302001	5430-99-206-1301	TANK	
2-3	302002	5340-99-207-1723	LID	
2-4	302003	5330-99-836-3003	'O' RING 18 in.	
2-5	302007	5340-99-207-1733	CLOSING RING	
2-6	866	4610-99-301-5544	FILLER VENT ASSEMBLY	
2-7	302005	5330-99-667-2512	GASKET, filler / vent	
2-8	302006	4020-99-980-0231	CORD, Nylon, 3mm dia	

INDEX OF MANUFACTURERS' PART/DRAWING NUMBERS

TO

CHAPTER, FIGURE AND ITEM NUMBERS (continued)

Fig & Item No.	Manufacturer's Part Numbers	Catalogue Number	Item Name	Remarks
2-9	302009	4610-99-207-1736	VALVE, cast iron, single	
2-10	302010	4610-99-396-1190	PLATE, reinforcing	
2-11	MEXE 48777	5330-99-131-1595	GASKET, valve	
2-12	302012	5306-99-853-6791	BOLT	
2-13	302014	5310-99-005-0683	WASHER, FLAT	
2-14	302013	5310-99-663-5401	NUT	
2-15	302008	4730-99-207-1734	COUPLING, brass	
2-16	302106	4610-99-001-6939	FRAME ASSEMBLY	
2-18	302101	4610-99-663-5386	MANIFOLD ASSEMBLY	
2-19	302029	5330-99-206-3504	WASHER, FLAT, Neoprene	
2-20	302024	4610-99-398-7178	MANIFOLD, water	
2-21	302025	4730-99-983-6347	PILLAR, HOSE 1/2 BSPF	
2-22	302022	4510-99-500-5449	FAUCET 1/2 metal	
2-23	302102	4610-99-244-8315	TANK CONNECTOR ASSEMBLY	
2-24	302031	4730-99-877-1493	ELBOW, 1 1/2 in. BSPF female	
2-25	302032	4730-99-126-3698	UNION, Pipe special	
2-26	302033	5305-99-215-6787	SCREW, self tapping	
2-27	302034	4610-99-126-3699	VALVE, 1 1/2 in. BSP	
2-28	302008	4730-99-207-1734	COUPLING, Brass	
2-29	302035	4720-99-770-0313	HOSE	
2-30	302036	4730-99-461-1259	CLAMP, Hose	
2-31	302037	4730-99-414-6554	ADAPTOR, straight, pipe	
2-32	302038	4730-99-974-7282	TEE, EQUAL, 1 1/2 in. BSP	
2-33	302039	4730-99-739-5949	SOCKET, threaded female union pipe	
2-34	302040	4730-99-409-9777	UNION, pipe special	
2-35	302041	4720-99-500-5454	HOSE	
2-36	302028	4730-99-663-5377	COUPLING, Half quick disconnect	
2-37	302103	4720-99-205-5180	HOSE ASSEMBLY, 9.1 m	
2-38	302050	4610-99-214-1138	TIE ROD ASSEMBLY	
2-39	302051	4610-99-770-0319	CENTRE TIE ROD ASSEMBLY	
2-40	302104	4610-99-957-4529	NOZZLE, JERRYCAN c/w hose	
2-41 NI	RJM 17	5120-99-139-3637	WRENCH	
2-42 NI	616	5120-99-120-7297	HAMMER, rubber	
2-43	MEXE 36243	4610-99-206-3820	VALISE, accessories (empty)	

CHAPTER 6

ANCILLARY PUMPING AND FILTRATION EQUIPMENT

CONTENTS

INTRODUCTION

1 This Chapter provides a description of the Ancillary Pumping and Filtration Equipment, and the procedures for assembling and using the equipment in conjunction with a single Water Carriage Pack (WCP). The single WCP 680 litre (150 gal) is carried on the 0.75 tonne GS trailer, 1.1 tonne Cargo lightweight trailer or the TUM Landrover. The twin WCP Two x 680 litre (150 gal) carried on the 1.75 tonne GS trailer or the 3 tonne Cargo GS 2 whd trailer..

2 The person in a unit or formation with delegated responsibility for the specified equipment, who is also competent and experienced in that role, is responsible for ensuring that the operations detailed in this chapter are properly carried out. The operations are only to be carried out by personnel that have completed and passed the Unit Environmental Health Duties course. The aforementioned responsible person may also order any operation to be carried out more frequently than specified, if conditions under which the equipment is operated render it necessary.

PURPOSE AND FACILITIES

3 The purpose of the ancillary pumping and filtration equipment is to provide a simple, lightweight means of producing drinking water from raw, non-saline sources in relatively small quantities in conjunction with a WCP. Water containing salts in solution, such as sea or brackish waters, cannot be treated with this equipment.

4 The ancillary pumping and filtration equipment is capable of producing approximately 910 litres/h (200 gal/h) of drinkable water with a hand-operated pump. A water filtration system is incorporated to prevent foreign matter entering the water tank during pumping operations. Sterilisation by chlorination is achieved by the addition of water sterilising chemicals into a full water tank. A chlorination level testing facility is provided to avoid over or under chlorination of the stored water.

5 In transit, the ancillary pumping and filtration equipment is stored in two valises, which are secured to the trailer or vehicle by rope lashings.

EQUIPMENT DESCRIPTION

6 The main items of equipment (Fig 14) are:

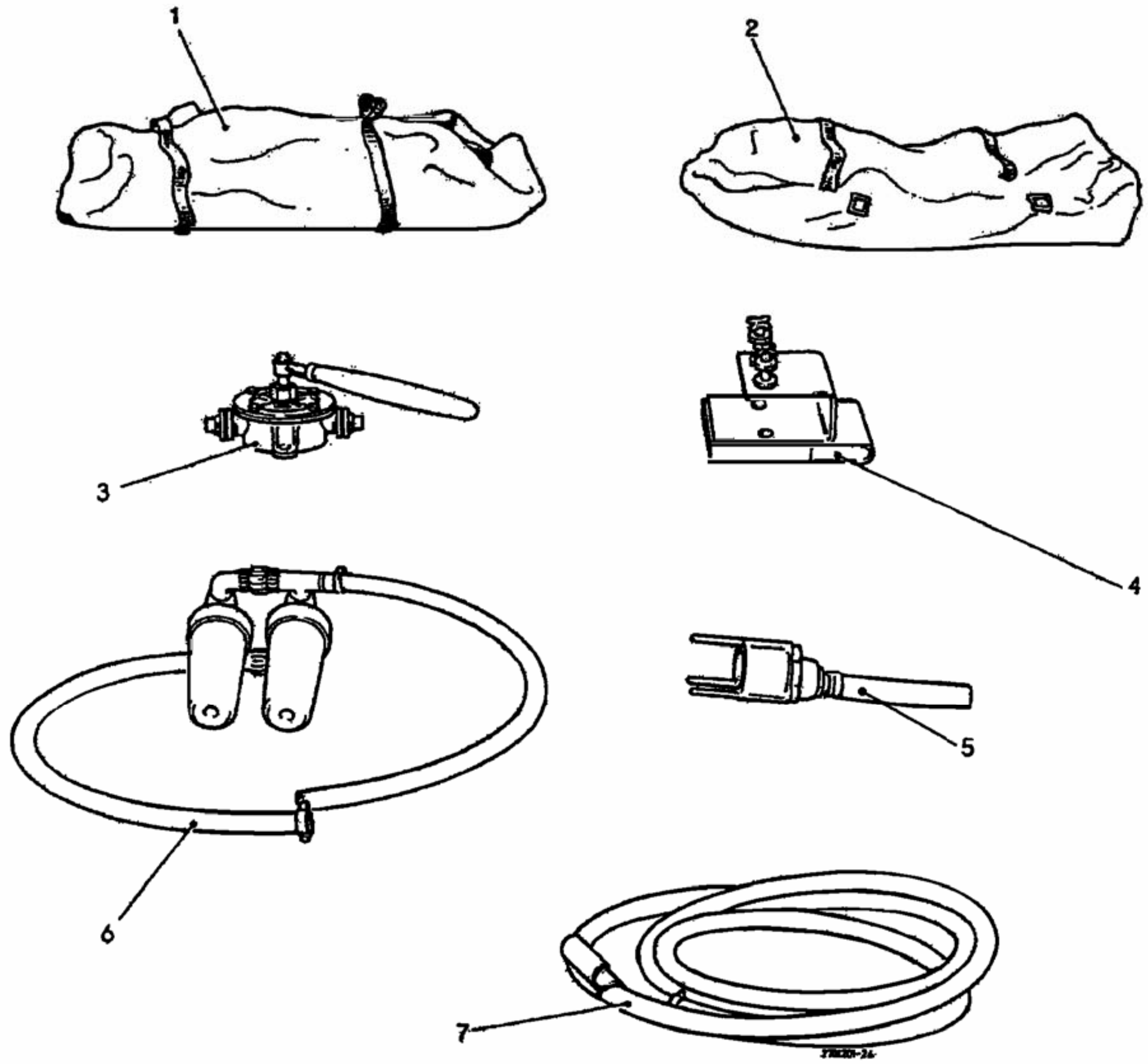
6.1 A hand operated pump (Fig 14 (3)).

6.2 A universal bracket (Fig 14 (4)) for securing the hand operated pump to the trailer or vehicle.

6.3 A foot valve (Fig 14 (5)), used in conjunction with the hand operated pump.

6.4 A dual-filter assembly (Fig 14 (6)), using disposable filter elements. The filter assembly is secured to the trailer or vehicle by a yoke and webbing restraint.

6.5 Associated hoses (Fig 14 (7)) and connectors.



1	Valise	5	Foot valve
2	Valise	6	Dual filter assembly
3	Hand operated pump	7	Suction hose
4	Universal bracket		

Fig 14 Ancillary pumping and filtration equipment items

Hand operated pump

7 The hand-operated pump is a semi-rotary, positive displacement wing type and has a 4.6 m (15 ft) suction lift capability. It is constructed of an iron casing with malleable iron valves and a steel spindle. The pump casing has two mounting points for bolting the pump to the universal bracket.

Universal bracket

8 The universal bracket is manufactured from steel and is formed to accept the hand pump.

Dual-Filter

9 The dual filter is a STELMET SM 1/2 type and is of plastic head and plastic body construction. The disposable filter elements used by this filter are BC/PP/5/10 type bleached cotton. A length of hose is connected by screwed cap fittings to the input and output ports of the filter assembly.

Foot valve

10 The foot valve comprises of a rubber disc valve and metal strainer assembly, housed in an iron casing. Three support legs are attached to the valve casing for anchoring the foot valve to the bottom of the raw water source. One end of a short length of hose is attached to the foot valve and the other end is for connection to the main suction hose.

Hoses

11 All hoses are flexible, reinforced PVC, food grade and 25.4 mm (1 in.) bore.

FUNCTIONAL DESCRIPTION

12 The functional arrangements of the hand pump system are shown in Fig 15.

13 For the hand pump system, the hand pump must be used in conjunction with the foot valve unit for the system to operate. If the foot valve was not connected, the pump could not be primed.

14 A positive pumping action occurs for both directions of operation of the hand pump. Each pumping action creates suction, which opens the valve in the foot valve unit to allow water to be sucked into the hose. When the pump is not operated (no suction), the valve closes to prevent water in the hose from flowing back out (pipeline remains primed).

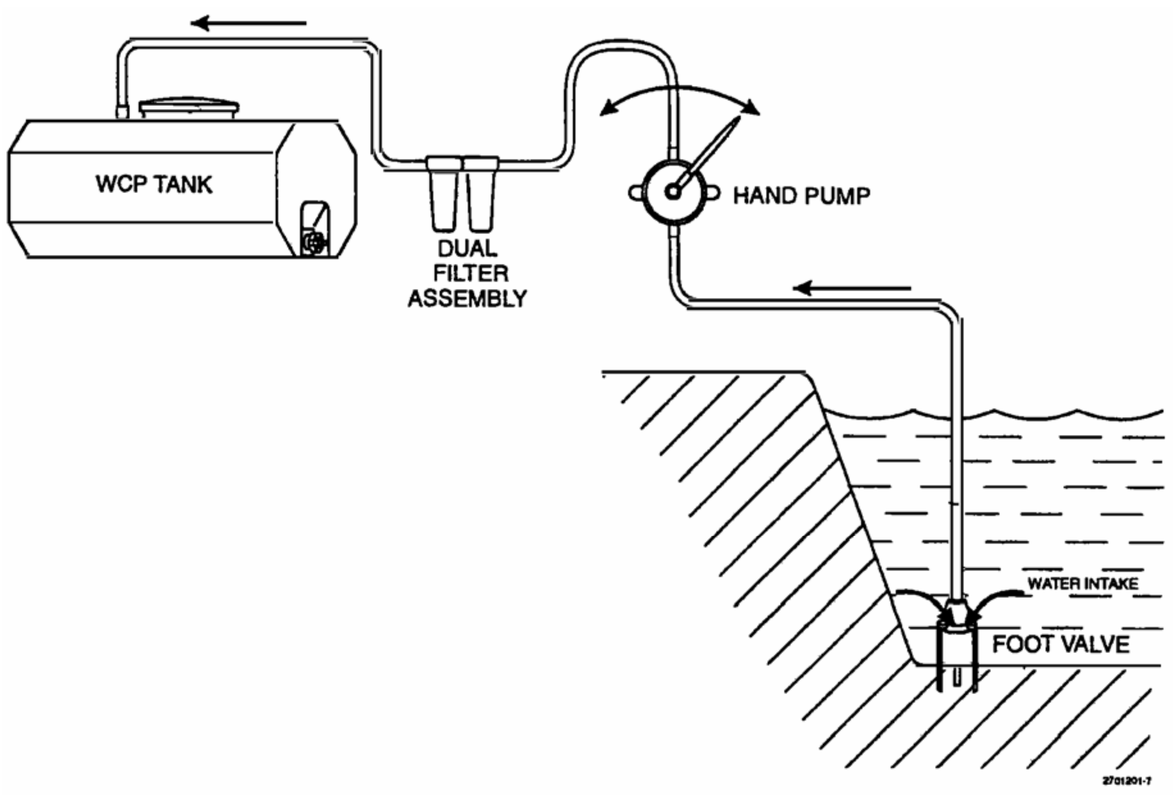


Fig 15 Hand pump system - functional diagram

INSTALLATION

NOTE

When performing any task, make sure that the equipment is not placed on dirty or sandy surfaces.

15 The following installation operation is supported by Fig 16 for the hand pump system.

Siting

16 Position the trailer or vehicle carrying the WCP(s) as near to the raw water source as possible.

Universal bracket

17 Secure the universal bracket (Fig 16 (4)) to the trailer or vehicle, as follows:

17.1 Mount and clamp the bracket to the side of the carrying vehicle and secure by screwing in the hand operated clamp bolts (Fig 16 (5)).

Dual-filter

Installing filter elements

18 Before fitting the dual-filter, install new filter elements (Para 32).

Fitting the dual filter

19 The dual-filter (Fig 16 (1)) is secured to the trailer or vehicle using the yoke and webbing restraint (Fig 16 (2)). Attach in a convenient position on the side of the vehicle and secure.

Hand Pump

20 Secure the hand pump (Fig 16 (3)) to the universal bracket using the two fixing bolts supplied with the bracket.

Hose connections

NOTE

All hose connections are made by hand screwed fittings, air tight connections are important on the suction side of the pump.

21 Interconnect and set up the hand pump system (Fig 16), as follows:

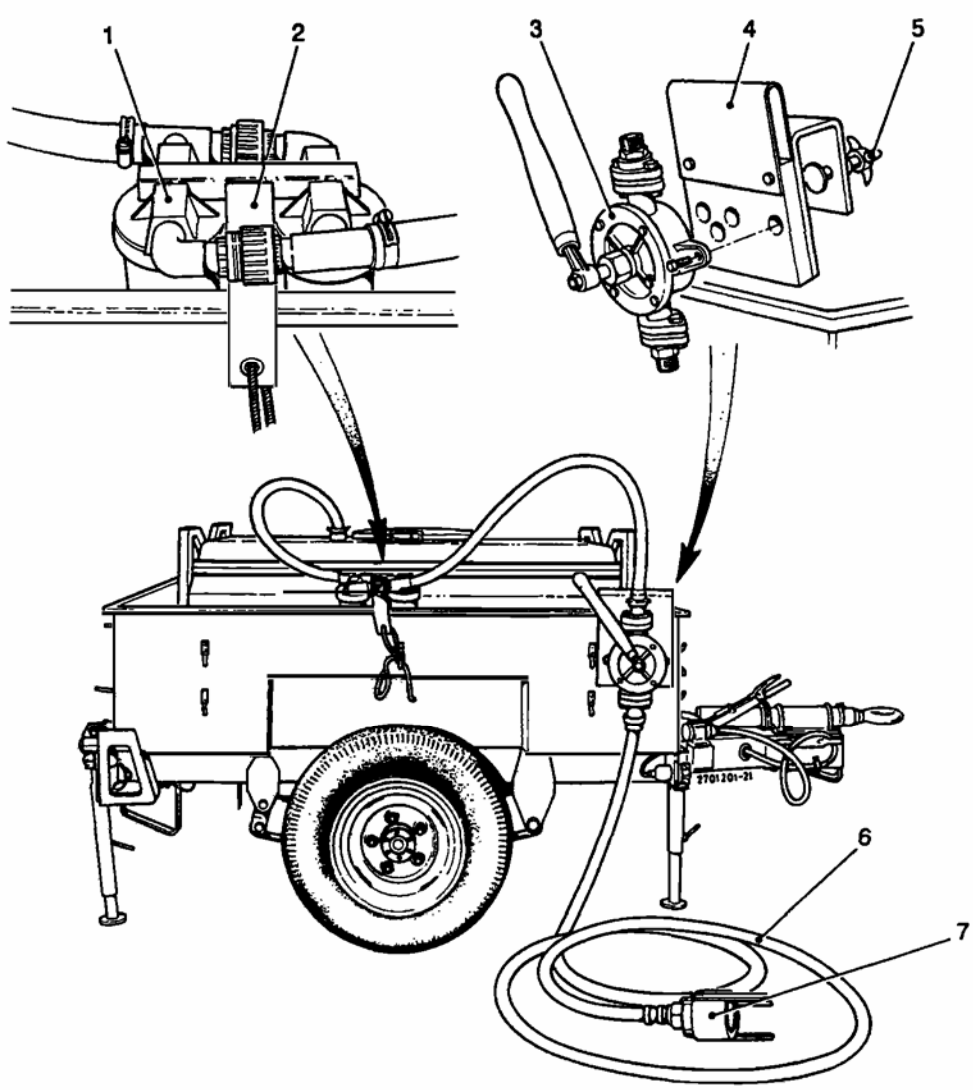
21.1 Remove the vent/small filler cap from the tank and insert the dual-filter discharge hose (plain end) into the tank.

21.2 Connect the Dual-filter input hose (with the screwed connector) to the pump discharge (top) fitting.

21.3 Connect the suction hose (Fig 16 (6)) to the pump input (bottom) fitting.

21.4 Connect the other end of the suction hose to the foot valve (Fig 16 (7)).

21.5 Place the foot valve into the raw water source so that the foot valve rests vertically on the bottom. If possible, drive the foot valve spikes into the ground at the point of suction.



1	Dual-filter assembly	5	Clamp bolts
2	Yoke and webbing	6	Suction hose
3	Hand pump	7	Foot valve
4	Universal bracket		

Fig 16 Hand pump system equipment installation

OPERATION

WARNINGS

(1) HEALTH HAZARD. TANK MUST NOT BE FILLED WITH WATER CONTAINING SALTS (SEA OR BRACKISH WATERS).

(2) UNSTABLE LOAD. ONLY TRANSPORT WATER CARRIAGE PACK (WCP) EMPTY OR COMPLETELY FULL.

FILLING THE WCP TANK

Hand pump

22 The pump and suction hose must initially be primed with water, following which the hose is connected to the pump and pumping should commence. Water will then be pumped into the filter pots and is subsequently forced through the filters. The first 10-15 litres pumped must be run to waste. The WCP will take approximately 45 mins - 1 hr to fill. It is recommended that a steady motion on the pump handle be maintained and do not attempt too fast a rate.

Filter element renewal

23 During tank filling operations, the dual-filter elements become progressively clogged with foreign matter, causing system pressure to build up and eventually overload the pump. The elements must be renewed when:

23.1 The hand pump becomes stiff to operate.

23.2 The filters are visibly clogged.

23.3 The filtered water shows signs of failure.

23.4 Every time the equipment is brought into use after storage.

24 To renew the filter elements, refer to paragraph 32.

After filling

25 On completing pumping operations:

25.1 Disassemble the dual-filter (Para 32), discard the used elements, rinse the filter bodies in clean water and re-assemble the dual-filter.

25.2 Disconnect the system equipment and remove the individual items from their trailer/vehicle mounting locations.

25.3 Remove any foreign matter from the foot valve strainer.

25.4 Stow the ancillary pumping and filtration equipment into the valises.

Before entering storage

26 Prior to any period of equipment not used:

26.1 Disassemble the dual-filter (Para 32), discard the used elements, rinse the filter bodies in clean water, allow to dry naturally and re- assemble.

26.2 Disconnect the system equipment and remove the individual items from the trailer/vehicle mounting locations.

26.3 Remove any foreign matter from the foot valve strainer, clean and check operation of non-return valve (listen for movement).

26.4 Ensure the ancillary pumping and filtration equipment is clean and dry and stow in the valises.

Sterilisation

NOTE

(1) For consistency of chlorine level measurements, water samples are to be taken via the access hole on the water tank.

(2) Throughout the sterilisation process and until water is fit to drink, add a sign to the water tank, "STERILISING-DO NOT TOUCH" the template for this sign can be found in Annex A to this chapter.

27 In order to destroy virus organisms and to render the water fit for drinking, sterilisation by chlorine is essential. The dosage is sufficient to provide primary sterilisation (virus destruction) and to counteract further contamination before drinking.

Chlorine application

WARNING

HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING CALCIUM HYPOCHLORITE. READ SAFETY DATA SHEET PRIOR TO USE.

28 To chlorinate the drinking water, proceed as follows:

28.1 Ensure the manifold is drained, and water tank shut off valve is closed.

28.2 Fill the water tank(s) with clarified water.

28.3 Using a suitable container, add 12 grams (15 ml) of Calcium Hypochlorite granules to clarified water and mix into a slurry. Add slurry mix to a full water tank, and stir using a suitable implement. (For twin installation carry out the process described in this Para for each water tank). This dosage aims at producing a residual chlorine content of 5 mg/l.

28.4 Wait a minimum of 30 minutes.

Residual chlorine level measurement

NOTE

Care should be taken not to touch the DPD No. 1 Tablet; this may cause contamination and give an incorrect reading.

29 To measure the chlorine content level using the Lovibond test kit (Fig 17), proceed as follows:

29.1 Remove the comparator (Fig 17 (4)) from the test kit storage container.

29.2 Remove the lid (Fig 17 (2)) from the comparator and fill all the compartments of the comparator with treated water from the water tank.

29.3 Place a DPD No. 1 tablet (Fig 17 (7)) in the outer compartments of the comparator and crush the tablets with the spatula (Fig 17 (6)) provided.

29.4 Refit the comparator lid and shake the comparator to dissolve the tablets.

WARNING

ENVIRONMENTAL HAZARD. IF TOTAL FAILURE OCCURS, TANK CONTENTS MUST BE NEUTRALISED WITH 6g (5 ml) OF SODIUM THIOSULPHATE PENTAHYDRATE CRYSTALS PRIOR TO DISCHARGE OF CONTENTS.

NOTE

If there is an excess of chlorine present in the water, it will cause instant bleaching of the DPD No. 1 tablet and will indicate a fail, If you suspect this happening, dilute the sample you are using with some water that has already been filtered.

29.5 Hold the comparator up to the light, and where the colour graduation window on the outer compartment matches the colour in the adjacent window on the middle compartment, note the associated mg/l level. The chlorine level must be at least 5 mg/l. If less add half-original dose 6g (7.5 ml) Calcium Hypochlorite granules to the water tank. Wait for 30 minutes and repeat the chlorine level test. If still less than 5 mg/l, TOTAL FAILURE has occurred. Neutralise the contents with 6g (5 ml) of Sodium Thiosulphate Pentahydrate Crystals. Allow to stand for 5 minutes and then discharge contents. Check equipment and chemicals.

Taste removal

WARNINGS

(1) HEALTH HAZARD. ONLY DETASTE THE WATER IMMEDIATELY PRIOR TO CONSUMPTION. DETASTED WATER IS OPEN TO CONTAMINATION.

(2) HEALTH HAZARD. DETASTED WATER MUST BE CONSUMED WITHIN 24 HOURS.

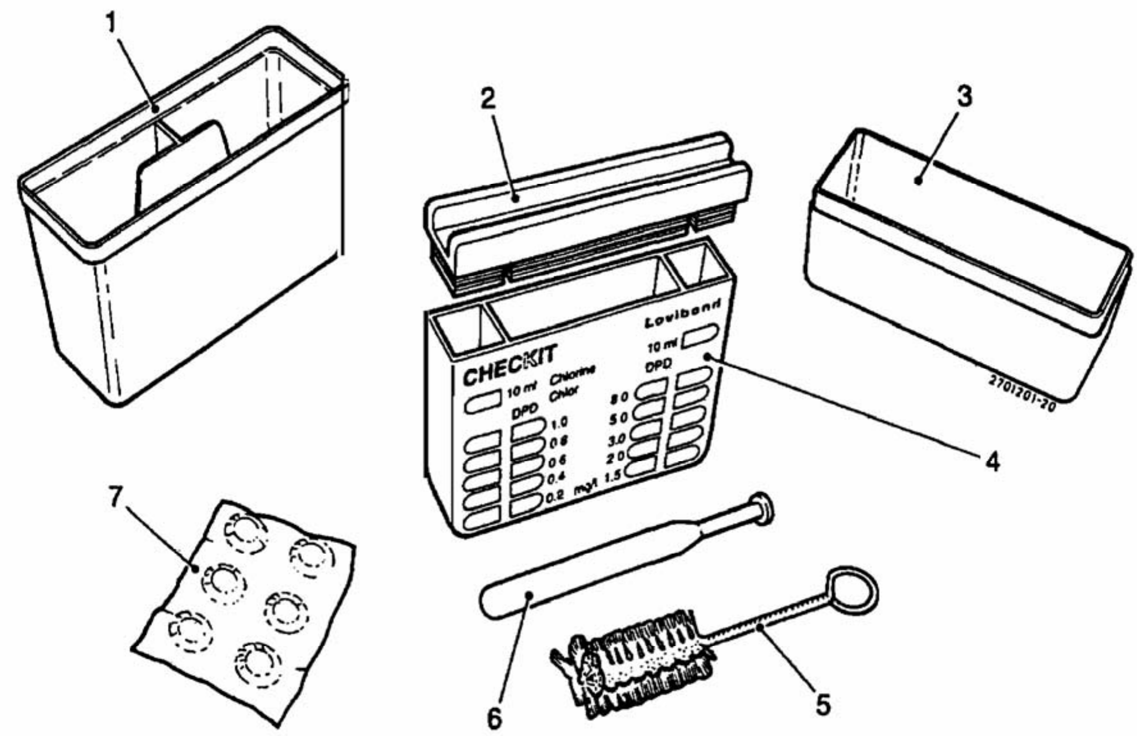
(3) HARMFUL SUBSTANCE. THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING SODIUM THIOSULPHATE PENTAHYDRATE. READ SAFETY DATA SHEET PRIOR TO USE.

30 To remove the taste of chlorine from the water and make it safe to drink, proceed as follows:

30.1 Using a suitable container, add 6g (5 ml) of Sodium Thiosulphate Pentahydrate crystals (crushed to a granular consistency) to chlorinated water and mix into a slurry. Add slurry mix to a full chlorinated water tank, and stir using a suitable implement. (For twin installation carry out the process described in this Para for each water tank).

30.2 Allow to stand for 5 minutes.

30.3 Using the Lovibond test kit, measure the chlorine content of the detasted water. If less than 0.2 mg/l then it is ready for consumption. If more than 0.2 mg/l add half the original dose 3g (2.5 ml) of Sodium Thiosulphate Pentahydrate crystals to the water tank. Stir using a suitable implement and then repeat process starting at Para 30.2.



1 Lovibond test kit container
2 Comparator lid
3 Lovibond test kit container lid
4 Comparator
5 Comparator cleaning brush
6 Spatula
7 DPD No. 1 Tablets

Fig 17 Chlorine level test kit

MAINTENANCE

Fault finding

31 The main symptoms of system malfunction will be either slow delivery of pumped water or no water flow when pumped. The possible reasons and remedies for these symptoms are given in Table 9.

TABLE 9 SLOW OR NO WATER FLOW - FAILURE DIAGNOSIS

Serial (1)	Possible cause (2)	Action (3)
	HAND PUMP SYSTEM	
1	Loose hose connection	Check hose connections, especially to pump
2	Dual - filter blocked	Fit replacement filter elements (Para 32)
3	Foot Valve strainer blocked	Remove foreign matter and clean strainer
4	Faulty foot valve unit	Replace foot valve unit
5	Faulty hand pump	Replace hand pump

Renewing dual-filter elements

WARNING

HARMFUL SUBSTANCES. IN CASES WHERE TOXIC SUBSTANCES ARE KNOWN TO HAVE PASSED THROUGH THE FILTER ASSEMBLY, THE APPROPRIATE PERSONAL PROTECTION SAFETY EQUIPMENT AND CLOTHING MUST BE USED WHEN HANDLING THE FILTER ELEMENTS.

32 To install new filters into the filter assembly, proceed as follows:

32.1 Unscrew each filter body from the filter head and discard the used filter elements.

32.2 Clean the inside of each filter body with clean water.

32.3 Insert a filter element centrally into each body.

32.4 Whilst holding the filter body vertically, screw the body firmly against the 'O' ring seal.

PARTS LISTS

Equipment parts

33 The parts that make up the ancillary pumping and filtration equipment and their identification references are given in Table 10.

TABLE 10 ANCILLARY PUMPING AND FILTRATION EQUIPMENT

Serial (1)	Description (2)	NATO Stock No. (3)	Part No. (4)	Qty (5)
1	Semi-rotary hand pump	W1/4930-99-209-1729	SF6002	1
2	Dual - filter	W1/4610-99-208-9715	SF6001	1
3	Yoke and webbing Restraint (dual-filter)	W1/4610-99-208-9725	SF6018	1
4	Suction hose, 6 m (20 ft) with connectors	W1/4720-99-209-1722	SF21074-3	1
5	Filter hose, 2 m (6.5 ft) With connector (secured to dual - filter)	W1/4720-99-209-1725	SF6049	1
6	Filter hose, 2 m (6.5 ft) Plain (secured to dual - filter)	W1/4720-99-209-1726	SF21074-1	1
7	Foot valve	W1/4610-99-208-9737	SF6003	1
8	Universal bracket	W1/4610-99-209-1728	MEXE43239	1
9	Measure, plastic graded	NIV	NIV	2
10	Valise, No. 1, filtration equipment	W1/4610-99-208-9739	SF21081/C	1
11	Valise, No. 2, pumping equipment	W1/4610-99-209-3468	SF5988	1

NOTE

Item 9 is to be sourced locally.

Operational stores

34 The parts that make up the operational stores for the ancillary pumping and filtration equipment and their identification references are given in Table 11.

TABLE 11 OPERATIONAL STORES

Serial (1)	Description (2)	NATO Stock No. (3)	Part No. (4)	Qty (5)
1	'O' ring, Large (filter head)	NR/5331-99-101-7130	SF6008	4
2	Leather joint, hose connector	NR/5310-99-208-9730	SF6025	8
3	Filter element	NR/4330-99-208-9716	SF6007	14
4	Calcium Hypochlorite (Granular 65%)	H1CI 6810-99-611-3812		1
5	Sodium Thiosulphate Pentahydrate Crystals	H1CI 6505-99-660-2760		25
6	DPD No. 1 Tablet	H6/6550-99-220 3996	R106F	1
7	Lovibond Check kit (chlorine level test)	H6/6545-99-523-0469	155300	1

CHAPTER 6 ANNEX A

ANCILLARY PUMPING AND FILTRATION EQUIPMENT

STERILISING - WARNING SIGN - TEMPLATE

CONTENTS

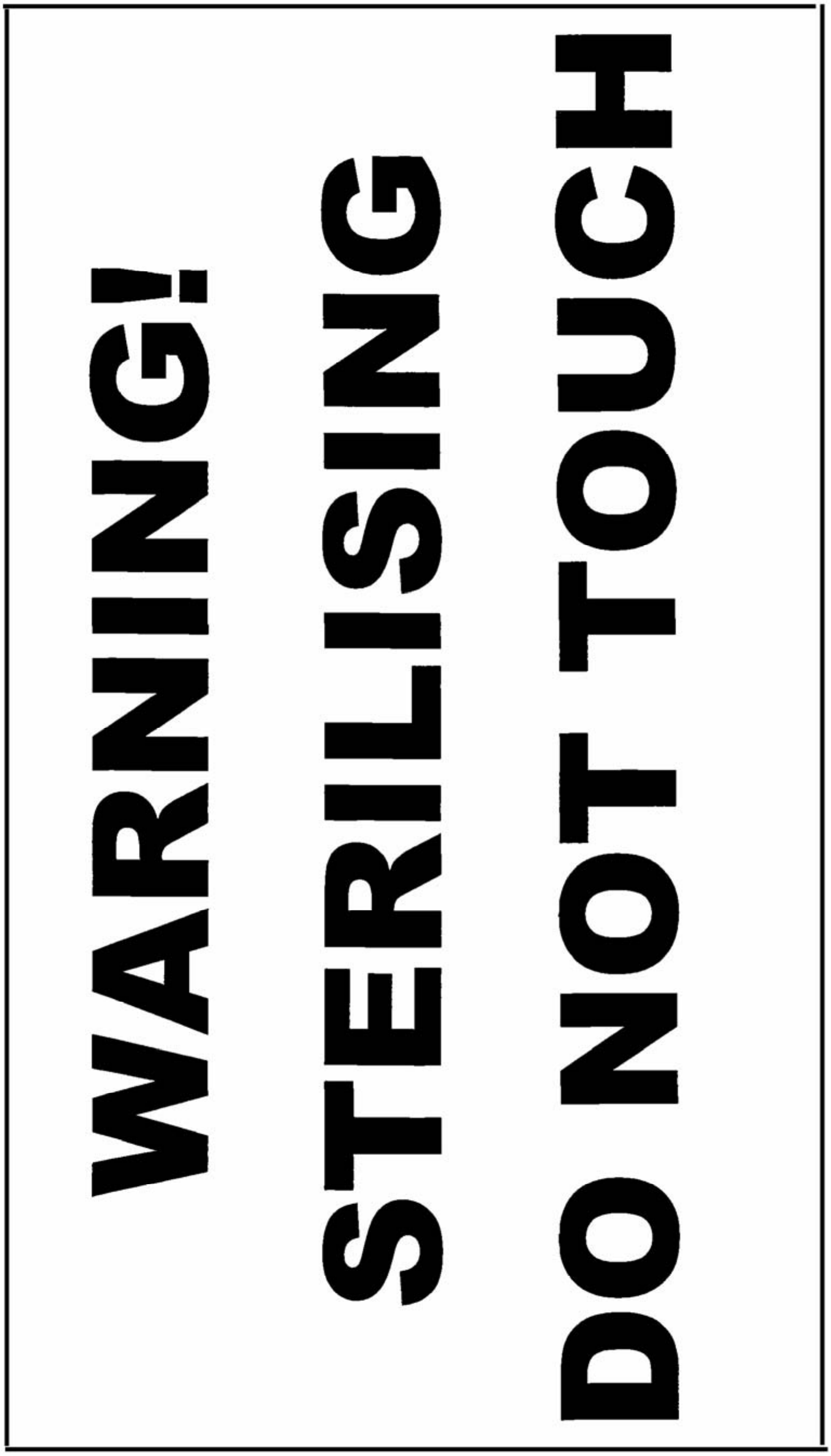


Fig 18 Template, sign sterilising

CHAPTER 7

THERMAL INSULATION KIT

ISSUED ONLY TO UNITS DEPLOYING ON EXERCISES AND OPERATIONS AS STATED IN DEF STAN 00-35 - CLIMATIC CONDITIONS

CONTENTS

INTRODUCTION

1 This chapter provides a description of the Thermal Insulation Kit and the procedures for assembling and using the equipment in conjunction with a single 680 litre (150 gal) Water Carriage Pack (WCP) when carried in the 0.75 tonne GS (wide track) trailer, and the 1.75 tonne GS trailer.

2 The person in a unit or formation with delegated responsibility for the specified equipment, who is also competent and experienced in that role, is responsible for ensuring that the operations detailed in this chapter are properly carried out.

PURPOSE AND FACILITIES

3 The purpose of the thermal insulation kit is to provide a means of protecting the contents of a single WCP against freezing in ambient temperatures down to -32° C (-25.5°F) for a period of three days.

4 The WCP water tank is enveloped by a thermal insulation jacket assembly, which has access areas for the tank access hole, vent cap and water outlet coupling.

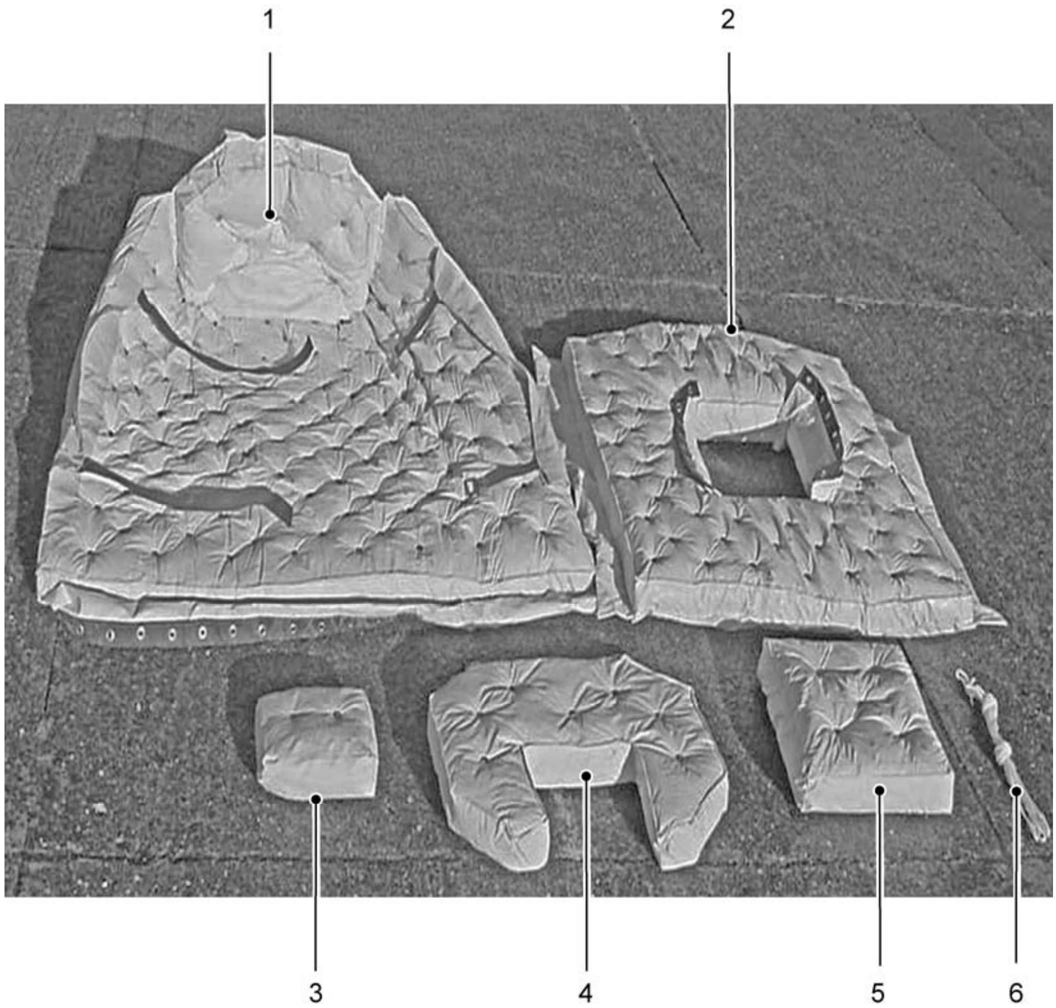
5 A kit is provided for insulating the outlet valve inside the tank for frost protection. An extension pipe is connected between the internally mounted outlet valve and the tank outlet fitment. Water is dispensed via a quick-disconnect coupling fitted to the end of the extension tube. The internally located outlet valve is operated via the tank vent hole using a T-handle.

6 Restraint straps are used to secure the tank plus insulation jacket to the vehicle and the tank restraint frame is removed.

Fig 19 Single insulated water carriage pack installed in the 0.75 tonne GS (wide track) trailer

Insulation jacket

7 The insulation jacket (Fig 20) is constructed of 101.6 mm (4 in.) thick mineral wool of 4.5 kg (10 lb) density with PVC faced calico covering for all sections. The jacket is secured to the WCP with the straps fixed to the base section and the cord provided. The access hole and outlet valve will be accessible by removal of the relevant insert placed over them.



1	Base section	4	End section
2	Top section	5	Access hole insert
3	Outlet valve insert	6	Cord

Fig 20 Insulation jacket assembly

Outlet valve repositioning kit

8 The outlet valve repositioning kit enables the tank outlet valve to be repositioned from the outside of the tank to the inside of the tank underneath the tank vent hole. This prevents the metal valve from freezing.

9 The modification kit consists mainly of a galvanised metal extension pipe, with a flange at each end, a valve spindle extension rod, a T-handle for operating the valve, a backing plate and two backing plate joints.

NOTE

This modification should be carried out in a workshop prior to requirement (Para 14).

Lifting sling

10 The lifting sling is an in-service item consisting of:

10.1 Two polyester slings, each fitted with an adjusting buckle.

10.2 A lifting ring, requiring a single point lift only.

Restraint straps

11 Two restraint straps are provided, each consisting of a length of 50 mm (2 in.) wide polyester webbing strap fitted with an overcentre tensioning buckle.

12 In some cases, an alternative tie-down restraint may be provided.

ASSEMBLY

Repositioning the outlet valve

NOTE

This modification should be carried out in a workshop prior to requirement.

13 In order to prevent the outlet valve from freezing, it is positioned inside the WCP tank by means of an extension pipe. The valve spindle is located in line below the tank vent hole and is operated by a detachable T-handle via a valve spindle extension rod. The valve assembly fitted for general service is shown in Fig 21, and the repositioned valve assembly is shown in Fig 22.

14 To reposition the outlet valve using the modification kit, proceed as follows:

14.1 Unbolt the adaptor (Fig 21 (2)) with quick-disconnect hose coupling (Fig 21 (3)) from the valve body (Fig 21 (1)).

14.2 Unbolt the valve body from the water tank.

14.3 Using the bolt fixings removed in Para 14.1, secure the backing plate (Fig 22 (9)) from the kit to one side of the valve body (Fig 22 (8)).

14.4 Using the bolt fixings removed in Para 14.2, secure the non-studded, plain flange (Fig 22 (7)) of the extension pipe to the other side of the valve body.

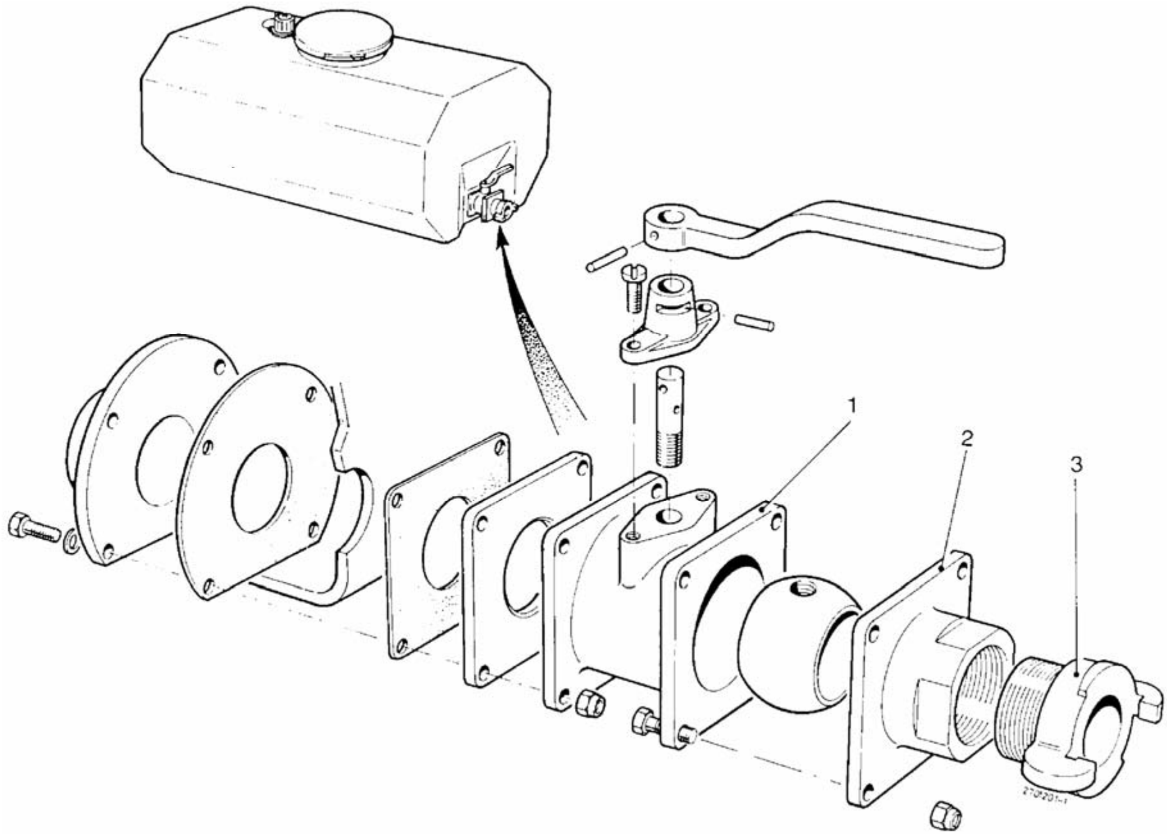
14.5 Remove the valve handle and fit the valve spindle extension rod (Fig 22 (1)) to the valve.

14.6 Position the valve in the water tank with the upper end of the extension rod located in the neck of the tank vent hole.

14.7 Remove the nuts from the studs on the flange at the other end of the extension pipe.

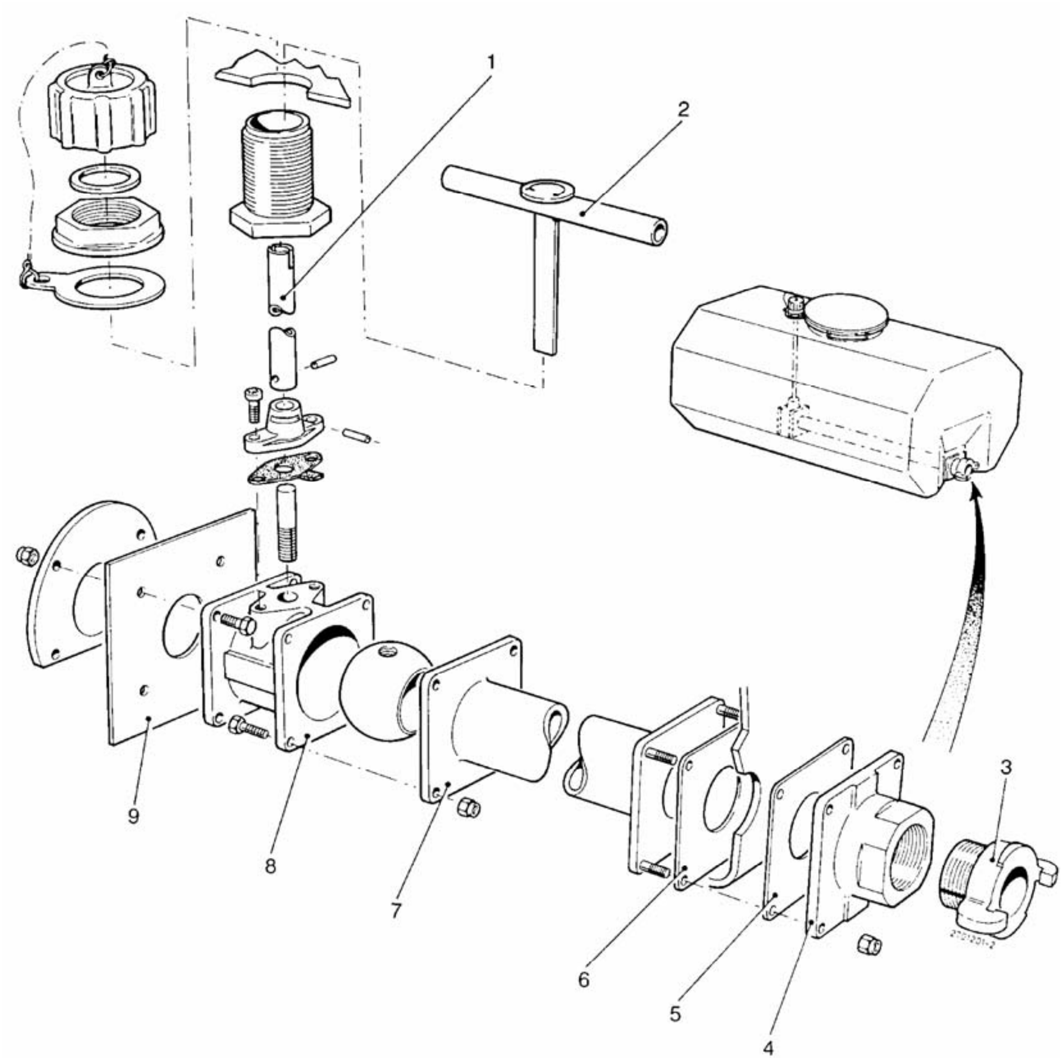
14.8 Place a joint (Fig 22 (6)) over the studs through the four holes in the tank.

14.9 Locate a joint (Fig 22 (5)) and the adaptor (Fig 22 (4)) with a quick-disconnect hose coupling (Fig 22 (3)) on to the flange studs, and secure with the nuts provided.



1 Outlet valve body
2 Adaptor
3 Quick-disconnect hose coupling

Fig 21 Outlet valve fitted for general service



1 Valve spindle extension rod
2 T-handle
3 Quick-disconnect hose coupling
4 Adaptor
5 Joint
6 Joint
7 Plain flange
8 Valve body
9 Backing plate

Fig 22 Outlet valve assembly repositioned

Fitting the insulation jacket

WARNING

PERSONAL INJURY. THE INSULATION JACKET ASSEMBLY WEIGHS 90.7 KG (200 LB) A MINIMUM OF THREE PERSONS ARE REQUIRED TO FIT THE INSULATION JACKET.

15 A minimum of three persons are required to fit the insulation jacket, which can be fitted at ground level.

16 To fit the insulation jacket to a water tank, proceed as follows:

NOTE

All stobbing buttons on the insulation jacket assembly are to face inwards.

16.1 With the base section (Fig 20 (1)) laid out on the ground, place the lifting slings in position underneath it ready to lift onto trailer when installation of insulation jacket is complete.

16.2 Place the empty water tank into the base section, with the water outlet facing away from the fitted end.

16.3 Ensure that the tank is well into the fitted end and that the two sides of the jacket are level. Join the two sets of straps and draw up tightly.

16.4 Lace the fitted end to the strap (Fig 23 (1)) to prevent sagging during use.

16.5 Place the end section (Fig 20 (4)) into position over the water outlet opening and lace to strap (Fig 23 (2)).

16.6 Place the outlet valve insert (Fig 20 (3)) into position (Fig 23 (3)).

16.7 Place the top section (Fig 20 (2)) over the water tank taking care not to chafe the jacket on the access hole clamp. Ensure the top section makes good contact with the base section, and that there are no areas un-insulated.

16.8 Place the access hole insert (Fig 20 (5)) into position. Lace up access hole flaps (Fig 23 (4)).

16.9 Lace the end assembly (Fig 23 (5)) to hold the jacket end section firmly in position.

Loading into the 0.75 tonne GS (wide track) trailer and securing for transit

WARNING

PERSONAL INJURY. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) MUST BE WORN DURING LIFTING OPERATIONS.

17 To load the insulated water tank into a 0.75 tonne GS (wide track) trailer, proceed as follows:

17.1 Place the two lifting slings under the water tank, each approximately 0.3 m (1 ft) from each end, locate through the lifting ring and adjust the buckles on the slings for equal length.

17.2 Hoist the tank into the trailer ensuring the water outlet is rearwards, and the equipment is as far forwards as possible to give maximum access to the outlet valve.

17.3 Tighten the lifting sling to fit the installation snugly, and tidy away the loose ends into the trailer.

17.4 Position each restraint strap over the winterised water tank and under the trailer box frame. Work the straps round until the tensioning buckles are in position shown in Fig 24 for ease of operation. When positioning the forward strap, care must be taken to locate the strap between the brake rod and the chassis (Fig 25) so the brake rod is free to operate. Thread the straps through the buckles as shown in Fig 26.

17.5 Ensure that the straps are not snagging on anything underneath the trailer, and tighten the straps to secure the winterised water tank to the trailer.

Loading into the 1.75 tonne GS trailer and securing for transit

WARNING

PERSONAL INJURY. APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) MUST BE WORN DURING LIFTING OPERATIONS.

18 To load the insulated tanks into a 1.75 tonne GS trailer (Fig 27 and 10), proceed as follows:

18.1 Thread the four 5 m restraint straps through the tie-down points as shown in Fig 27.

18.2 Hoist the first tank into the trailer using the lifting sling as per Para 17.1.

18.3 Lower the tank across the trailer and position it on the load platform against the trailer headboard.

18.4 Ensure that the water outlet is on the required side of the trailer and that the tank is firmly against the sideboard away from the outlet.

18.5 Secure the restraint straps as shown in Fig 26. Take care not to entrap fabric.

NOTE

If the alternative tie-down restraints are provided, use them to provide a restraint geometry similar to that shown in Fig 27.

18.6 Lift the second insulated tank into the trailer and position it firmly against the first and firmly against the sideboard away from the outlet.

18.7 Replace the trailer sideboard and headboard, ensuring that the fixing bolts are tightened securely.

18.8 Secure the restraint straps as per Para 18.5, Fig 26 and Fig 27.

18.9 Fit the tilt cover and tie-down securely (Fig 28).

NOTE

The hemp cord may be replaced by the elastic cord provided.

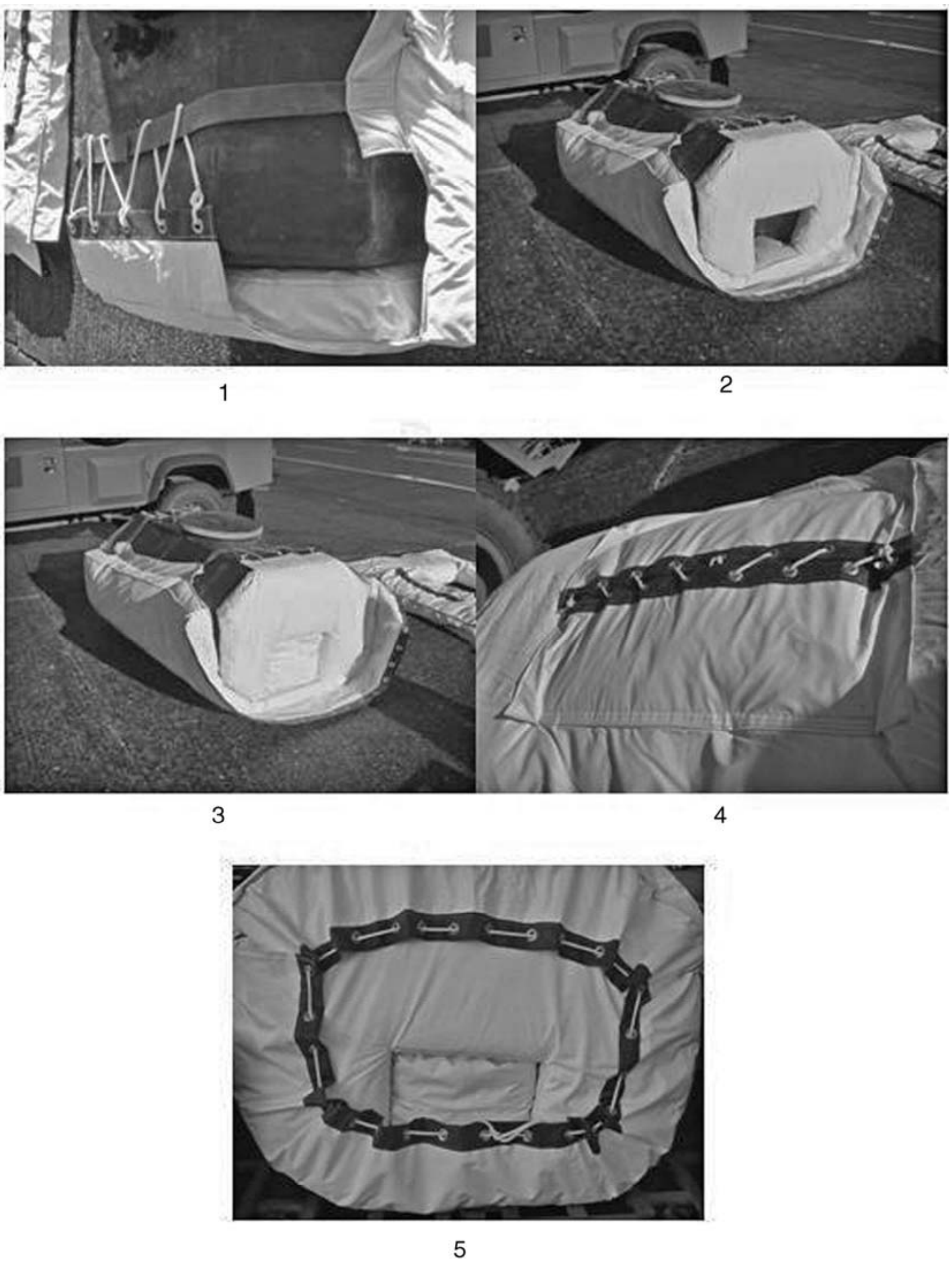


Fig 23 Thermal jacket installation

Fig 24 Restraining straps arrangement in the 0.75 tonne GS (wide track) trailer

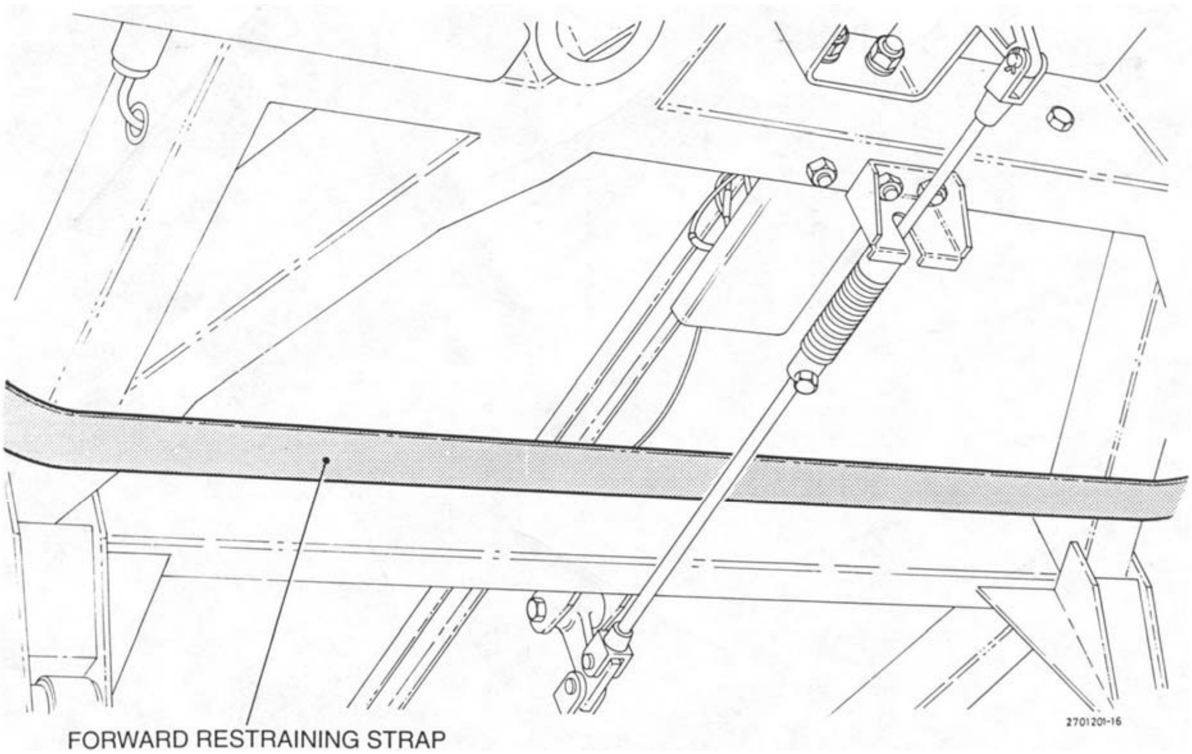


Fig 25 Routing the forward restraining strap in the 0.75 tonne GS (wide track) trailer

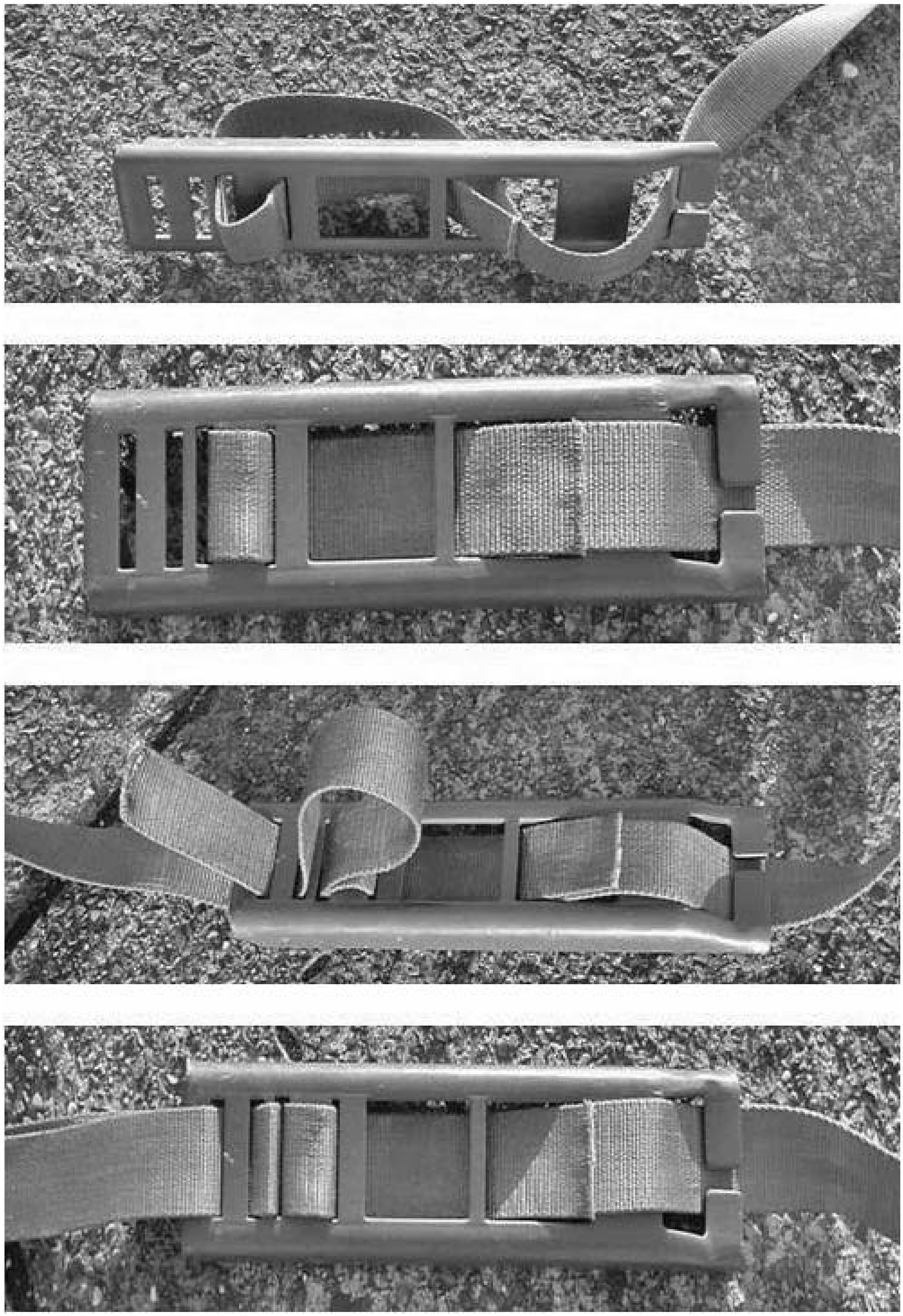


Fig 26 Threading the restraint buckle

OPERATION

Filling the tank

19 The tanks(s) may be filled via the access hole, as described in Chap 3.

NOTE

The tank should not be filled via the tank vent hole when employed in this role, the hole is partially restricted by the valve spindle extension rod.

Dispensing from the single WCP on the 0.75 tonne GS (wide track) trailer

20 To dispense water from the 0.75 tonne GS (wide track) trailer, proceed as follows:

20.1 Remove the outlet valve insert (Fig 20 (3)) and connect the 4-way dispensing manifold or jerrycan nozzle assembly to the outlet quick disconnect coupling.

20.2 Remove the access hole insert by unlashing the flaps.

20.3 Unscrew and remove the tank vent cap and operate the internal valve using the T-handle markings on top of the T-handle indicate the 'open' and 'shut' positions.

20.4 Replace equipment as soon as is possible after dispensing.

Dispensing from the twin WCP on the 1.75 tonne GS trailer

21 To dispense water from the 1.75 GS trailer, proceed as follows:

21.1 Remove the tilt cover (Fig 28).

21.2 Drop the trailer tailboard.

21.3 Remove the trailer sideboard to gain access to the tank outlets.

21.4 Continue by carrying out operations as per Paras 20.1 to 20.4.

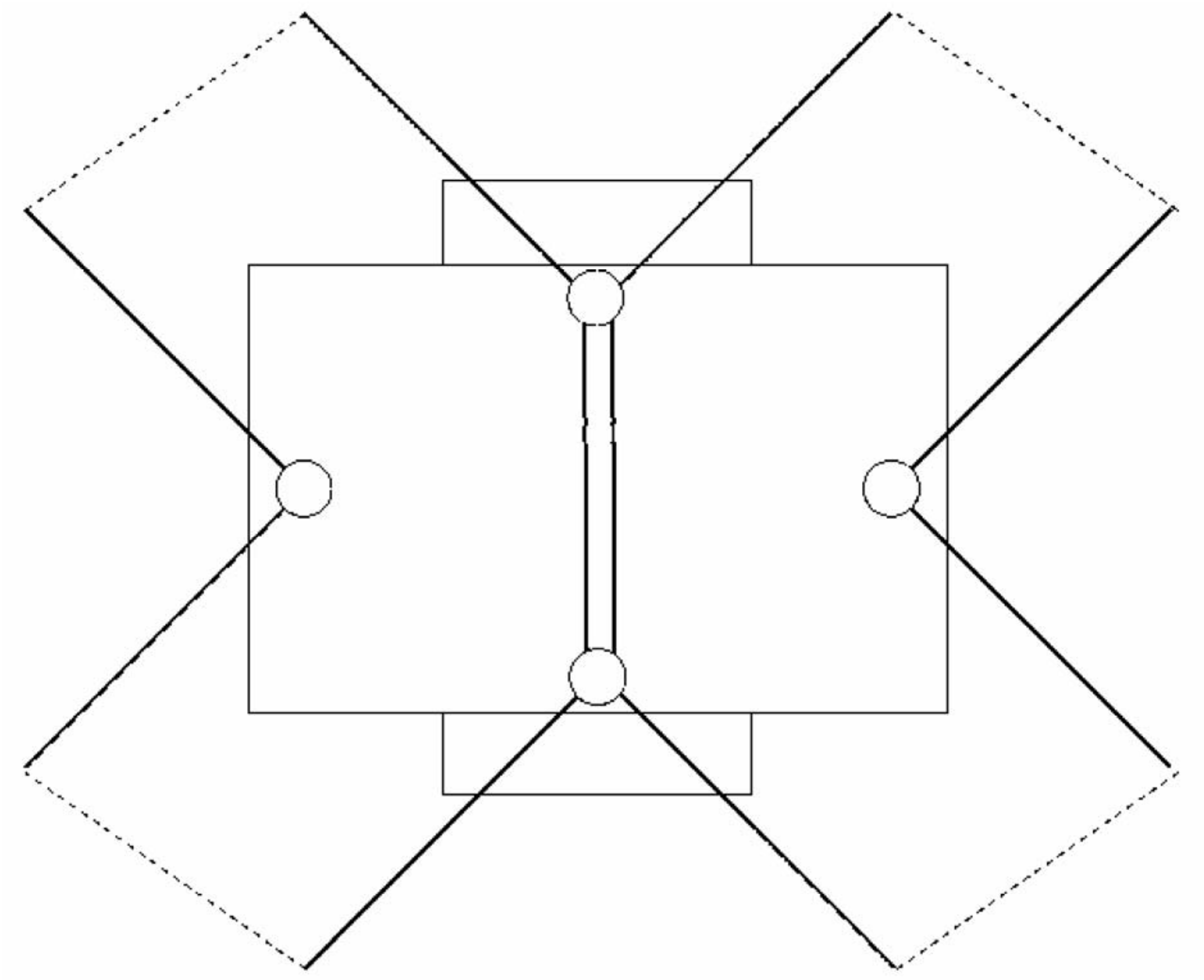


Fig 27 Restraint for the 1.75 tonne GS trailer

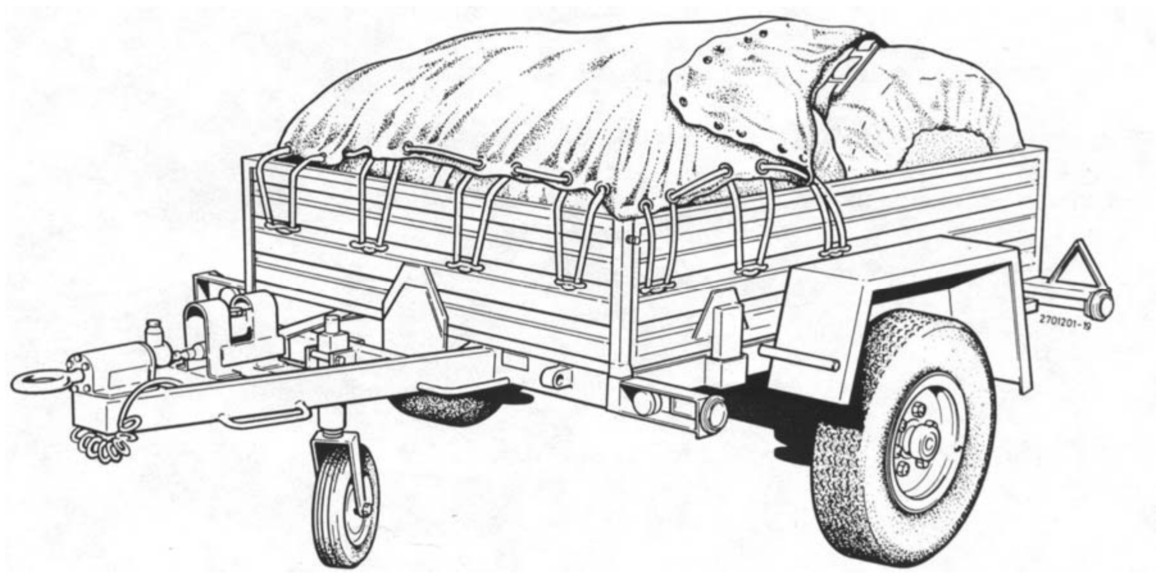


Fig 28 Twin insulated water carriage packs installed in the 1.75 tonne GS trailer

TABLE 12 VALISE, VALVE MODIFICATION KIT W1 4610-99-209-1678

DMC (1)	NATO Stock No. (2)	Item name (3)	No. off (4)
W1	4610-99-209-1678	Valise, Valve Modification Kit	
	NIV	. VALVE actuating assembly	
W1	4610-99-209-3464	.. EXTENSION ROD, valve spindle	1
	NIV	.. JOINT, universal 1/2 in. sq drive	1
	NIV	.. PIN, spring 8 mm dia x 28 mm lg stainless steel	1
	NIV	.. TUBE	
W1	4610-99-209-3466	. 'T' BAR assembly	1
W1	4610-99-209-4234	. PLATE, steel zinc plated	1
W1	4610-99-209-3465	. GASKET, rubber	2
W1	4610-99-209-4228	. EXTENSION TUBE assembly	1
G1	5310-99-120-4980	. NUT, locking, Hexagon 5/16 in. steel zinc plated, nylon insert (Nyloc)	4
G1	5315-99-530-3738	. PIN, spring 3/16 in. dia x 1.18 in. lg stainless steel	1
F1	3990-99-136-6200	. CLIP, buckle	4
F3	3990-99-136-2504	. CLIP, webbing	8
W1	4610-99-209-3467	. LEVER, tensioner webbing	2
F3	3940-99-135-9732	. SLING, universal pallet, Webbing 50 mm olive drab and fittings	1
W1	4610-99-209-3468	. VALISE	1
H2	8305-99-120-0832	. WEBBING, 50 mm x 5 m lg	2

CHAPTER 8

DESTRUCTION OF EQUIPMENT

CONTENTS

DESTRUCTION OF EQUIPMENT

Mandatory directive

1 Destruction of the equipment when subject to capture by the enemy will be undertaken by the user arm, ONLY WHEN, in the judgement of the unit commander concerned, such action is necessary in accordance with orders of, or policy established by the Army or Divisional Commanders.

2 The reporting of the destruction of the equipment is to be done through command channels.

Degree of damage

3 The degree of damage inflicted, to prevent the equipment being used by an enemy, shall be as follows:

3.1 Methods of destruction should achieve such damage to equipment and essential spare parts, that it will not be possible to restore the equipment to a usable condition in the combat zone either by repair or cannibalisation.

3.2 Classified equipment must be destroyed in such degree as to prevent, whenever possible, duplication, or determination of operation or function of the enemy.

3.3 Any classified documents, notes, instructions or any other written material pertaining to function, operation, maintenance or employment, including drawings or parts lists, must be destroyed in a manner to render them useless to the enemy.

4 In general, destruction of essential parts, followed by burning will usually be sufficient to render the equipment useless. However, selection of the particular method of destruction requires imagination and resourcefulness in utilisation of the facilities at hand under the existing conditions, time is usually critical.

Priorities of destruction

5 The priorities of destruction should be considered, as follows:

5.1 Priority must be given to the destruction of classified equipment and associated documents.

5.2 When lack of time and/or means prevents complete destruction of equipment, priority must be given to the destruction of essential parts. The same parts are to be destroyed on all like equipment and in spare parts storage areas.

5.3 A guide to priorities of destruction of the equipment is shown in Table 13.

TABLE 13 PRIORITIES OF DESTRUCTION

Serial (1)	**Item (2)**	**Priority (3)**
1	Water tank	1st
2	Ancillary pumping equipment	2nd

Methods of destruction

6 If destruction is ordered, due consideration should be given to:

6.1 Selection of a point of destruction that will cause greatest obstruction to enemy movement and also prevent hazard to friendly troops.

6.2 Observance of appropriate safety precautions.

7 The following information is for guidance only. Of the possible methods of destruction, those most generally applicable are mechanical, burning and gunfire.

Mechanical

8 This method requires the use of an axe, pick, crowbar or similar implement. The equipment should be destroyed in accordance with the priorities given in Table 13.

Burning

WARNING

GASOLINE. DUE CONSIDERATION SHOULD BE GIVEN TO THE HIGHLY FLAMMABLE NATURE OF GASOLINE. CARELESSNESS IN ITS USE MAY RESULT IN SERIOUS BURNS.

9 This method requires the use of gasoline, oil or other flammables. To destroy the equipment by burning, proceed as follows:

9.1 Remove and empty the portable fire extinguishers.

9.2 If quantities of combustibles are limited, smash all vital elements such as switches, instruments and control levers.

9.3 Place ammunition and charges in and about the equipment so that the greatest damage will result from the explosion.

9.4 Pour gasoline and oil liberally over the equipment.

9.5 Ignite the equipment, using one of the following methods and exercise all necessary personal safety precautions:

9.5.1 An incendiary grenade.

9.5.2 A burst from a flame thrower.

9.5.3 A combustible train of suitable length.

9.5.4 Or any other appropriate means.

<u>Gunfire</u>

WARNING

PERSONAL SAFETY. FIRING ARTILLERY AT RANGES OF 500 YARDS OR LESS, AND FIRING RIFLE GRENADES OR ANTI-TANK ROCKETS SHOULD BE FROM COVER.

10 When destroying the equipment by gunfire, proceed as follows:

10.1 Remove and empty the portable fire extinguishers.

10.2 Smash all vital elements, such as switches, instruments and control levers.

10.3 Destroy the equipment by gunfire, using any of the following methods:

10.3.1 Tank guns.

10.3.2 Self-propelled guns.

10.3.3 Artillery.

10.3.4 Rifle grenades.

10.3.5 Anti-tank rockets from launchers.

COMMENT(S) ON AESP*

To: FRACAS
BFPO 794

From: ....
....
....
....

Sender's Reference	**BIN Number**	**Date**
AESP* Title:		
Chapter(s)/Instruction	**Page(s)/Paragraph(s)**	
If you require more space, please use the reverse of this form or a separate piece of paper. **Comment(s):**		

Signed: ....

Telephone No.: ....

Name (Capitals): ....

Rank/Grade: ....Date: ....

FOR AESP* SPONSOR USE ONLY

To: ....
....
....
....

From: ....
....
....
....

Thank you for commenting on AESP*: ....

Your reference: ....

Dated: ....

Action is being taken to:	**Tick**		**Tick**
Issue a revised/amended AESP*		Under investigation	
Incorporate comment(s) in future amendments		No action required	
Remarks			

Signed: ....

Telephone No.: ....

Name (Capitals): ....

Rank/Grade: ....Date: ....

* AESP or EMER

AESP Form 10 (dated June 2006)