TM 3-4240-264-34

TECHNICAL MANUAL

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

FOR

SHELTER SYSTEM,

COLLECTIVE PROTECTION,

CHEMICAL-BIOLOGICAL:

INFLATABLE,

TRAILER-TRANSPORTED, M51

(NSN 4240-00-854-4144)

HEADQUARTERS, DEPARTMENT OF THE ARMY

DECEMBER 1975

TECHNICAL MANUAL
No. 3-4240-264-34

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *5 December 1975*

DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL

SHELTER SYSTEM, COLLECTIVE PROTECTION, CHEMICAL-BIOLOGICAL: INFLATABLE, TRAILER-TRANSPORTED, M51 (NSN 4240-00-854-4144)

			Paragraph	Page
CHAPTER	1.	INTRODUCTION		
Section	I.	General	1-1	1-1
	II.	Description and data	1-3	1-1
CHAPTER	2.	DIRECT SUPPORT MAINTENANCE INSTRUCTIONS		
Section	I.	Inflatable Shelter	2-1	2-1
	II.	Inflatable Entrance	2-4	2-3
	III.	Switch Box	2-8	2-7
	IV.	Distribution Box	2-12	2-10
	V.	Tailgate Extension and Support Rack	2-17	2-16
	VI.	Entrance Gas-Particulate Filter Unit	2-19	2-18
	VII.	Auxiliary Control Indicator..	2-22	2-23
	VIII.	Arctic Blanket (Electric)	2-32	2-30
	IX.	Arctic Blanket (Electric) Distribution Box	2-35	2-32
	X.	Power Supply, Access Cover, and Gasket	2-42	2-36
	XI.	Main Control Indicator	2-45	2-40
	XII.	Gas-Particulate Filter Assembly	2-77	2-53
	XIII.	Fuel System	2-80	2-55
	XIV.	Space Heater	2-84	2-65
	XV.	Heating Thermostat	2-94	2-75
	XVI.	Make Up and Inflation Air Valving and Ducts	2-98	2-78
	XVII.	Air Conditioning System	2-106	2-84
	XVIII.	Air Conditioning System Refrigerant Service	2-121	2-99
	XIX.	Refrigerant Compressor	2-130	2-109
	XX.	Gasoline Engine	2-136	2-114
	XXI.	Engine RFI Filter	2-138	2-123
	XXII.	Generator	2-140	2-124
	XXIII.	Voltage Regulator	2-147	2-133
	XXIV.	System RFI Filter	2-153	2-138
	XXV.	Cabinets and Enclosures	2-155	2-139
	XXVI.	Wiring Harness	2-157	2-140
	XXVII.	Fuel Gage Wiring	2-160	2-142
	XXVIII.	Filter and Utilities Unit M68	2-163	2-145
	XXIX.	Painting	2-174	2-153
CHAPTER	3.	GENERAL SUPPORT MAINTENANCE		
Section	I.	Introduction	3-1	3-1
	II.	Centrifugal Blower	3-2	3-1
APPENDIX	A.	REFERENCES		A-1
Index				I-1

LIST OF ILLUSTRATIONS

Figure No.	Title	Page
2-1	Inflatable entrance and shelter..	2-2
2-2	Exterior frame and door assembly, exploded view	2-5
2-3	Interior frame and door assembly, exploded view	2-6
2-4	Switch box, exploded view	2-8
2-5	Switch box wiring diagram.	2-9
2-6	Electrical wiring diagram	2-9
2-7	Distribution box, exploded view	2-11
2-8	Distribution box wiring diagram	2-13
2-9	Distribution box cover gasket fabrication	2-15
2-10	Tailgate extension and support rack, exploded view	2-17
2-11	Entrance gas-particulate filter unit, exploded view	2-18
2-12	Entrance fan wiring diagram	2-20
2-13	Entrance fan, exploded view	2-22
2-14	Auxiliary control indicator access cover gasket fabrication	2-24
2-15	Auxiliary control indicator, exploded view	2-25
2-16	Auxiliary control indicator wiring diagram	2-27
2-17	Arctic blanket (electric)	2-31
2-18	Arctic blanket (electric) distribution box, exploded view	2-33
2-19	Arctic blanket (electric) distribution box wiring diagram	2-35
2-20	Power supply, exploded view.	2-37
2-21	Electrical schematic	2-38
2-22	Power supply access cover gasket fabrication	2-39
2-23	Main control indicator, front, exploded view	2-41
2-24	Main control indicator wiring diagram	2-42
2-25	System hourmeter gasket fabrication	2-44
2-26 ①②	Main control indicator, rear, exploded view	2-46
2-27	Main control indicator gasket fabrication	2-50
2-28	Gas-particulate filter assembly, exploded view	2-54
2-29	Fuel pump removal and installation, exploded view	2-56
2-30	Air vent and fuel lines.	2-58
2-31	Fuel quantity transmitter, exploded view	2-60
2-31.1	Battery storage compartment	2-61
2-32	Fuel tank removal and installation, exploded view	2-63
2-32.1	Fuel tank removal and installation, exploded view, continued	2-64
2-32.2	Fuel tank removal and installation, exploded view, continued	2-64.1
2-32.3	Fuel tank removal and installation, exploded view, continued	2-64.2
2-33	Rubber strip and runner pad fabrication	2-64.3
2-33.1	Fuel tank removal and installation, exploded view, continued	2-64.4
2-33.2	Centrifugal blower and gasoline engine lubrication	2-64.7
2-33.3	Main control panel	2-64.8
2-34	Heater removal	2-67
2-35	Heater components	2-69
2-36	Deleted	2-70
2-37	Fuel control valve test	2-73
2-38	Module control and heater wiring diagram	2-74
2-39	Heating thermostat	2-76
2-40	Detachable plenum and duct	2-77
2-41	Air inflation valving and related components, exploded view	2-79
2-42	Check valve gasket fabrication.	2-80
2-43	Makeup air duct, valving, and related components, exploded view	2-82
2-44	Makeup air duct gasket fabrication	2-83
2-45 ① ② ③	Refrigerant tubing, connections, and insulation	2-85,2-86,2-87
2-46	Receiver	2-89
2-47	Thermostatic expansion valve..	2-90
2-48	Evaporator coil	2-93
2-49	Detachable plenum and duct	2-94
2-50	Recirculation fan	2-96
2-51	Condenser coil	2-98
2-52	Air conditioning system refrigerant flow diagram	2-100
2-53	Hot gas bypass valve, dehydrator, and sight glass	2-102
2-54	Hi-low pressure switch and suction and discharge service valves....	2-103

Figure No.	Title	Page
2-55	Adding refrigerant to air conditioning system.	2-105
2-56	System evacuation and gage—manifold hookup	2-108
2-57	Refrigerant compress or and gasoline engine	2-110
2-58	Refrigerant compressor, removal	2-111
2-59	Refrigerant compressor, exploded view, and specialtools	2-112
2-60	Battery and anchor storage	2-115
2-61	Engine fuel lines	2-116
2-62	Throttle cable installation.....	2-118
2-63	Voltage regulator-rectifier	2-119
2-64	Hoisting provisions	2-120
2-65	Engine mount and air control handles	2-121
2-66	Governor modification	2-122
2-67	Engine RFI filter	2-124
2-68	Soundproof enclosure	2-125
2-69	Generator and voltage regulator wiring diagram.	2-127
2-70	Generator and voltage regulator schematic	2-128
2-71	Generator removal	2-130
2-72	Generator, exploded view	2-132
2-73	Voltage regulator, generator brush box, and system RFI filter	2-134
2-74	Voltage regulator, exploded view	2-135
2-75	Voltage regulator cover gasket fabrication.	2-137
2-76	System RFI filter wiring diagrarm	2-139
2-77	Wiring harness	2-141
2-78	Shelter system cable diagram....	2-142
2-79	Fuel gage wiring	2-143
2-80 ①	Filter and utilities unit M68 (maintenance float trailer), rear and side view	2-145
2-80 ②	Filter and utilities unit M68 (maintenance float trailer), front and side view.	2-146
2-81	Filter and utilities unit M68 (maintenance float trailer), shipping configuration.	2-147
2-82	Auxiliary control indicator	2-149
2-83	Gas and particulate filter pressure check	2-150
3-1	Assembly plugs	3-2
3-2	Centrifugal blower	3-3
3-3	Drive element removal	3-4
3-4	Input shaft removal	3-5
3-5	Inner bearing removal	3-5
3-6	Bearing installation	3-6
3-7	Input shaft installation	3-7
3-8	Special tools	3-8

List of Tables

Table	Title	Page
2-1	Expendable items	2-3
2-2	Switch box wire listing	2-10
2-3	Distribution box wire listing	2-16
2-4	Auxiliary control indicator wire listing	2-29
2-5	Main control indicator wire listing	2-51
2-6	Space heater, troubleshooting..	2-65
2-7	Ambient temperature and refrigerant pressure	2-104
2-8	Voltage regulator test	2-136
2-9	Separately packaged items	2-148

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

These instructions are for use by direct support and general support maintenance personnel. They apply to the M51 Trailer-Mounted Inflatable Chemical-Biological Collective Protection Shelter System, hereinafter referred to as the shelter system.

1-2. Record and Report Forms

a. Equipment maintenance forms and procedures for their use are prescribed in TM 38-750.

b. You can improve this manual by recommending changes using DA Form 2028 (Recommended Changes to Publications and Blank Forms) or DA Form 2028-2 (Test) located in the back of the manual. Mail the form direct to Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS-CM, Aberdeen Proving Ground, MD 21010. A reply will be furnished direct to you.

Section II. DESCRIPTION AND DATA

1-3. Description

A general description of the shelter system and its component parts is contained in TM 3-4240-264-12. TM 5-2805-259-14 contains a description of the military standard gasoline engine model 4A084–3. TM 9-2330-213–14 contains a description of the M105A2 1 1/2 ton trailer.

1-4. Tabulated Data

TM 3-4240-264-12 contains tabulated data for the shelter system.

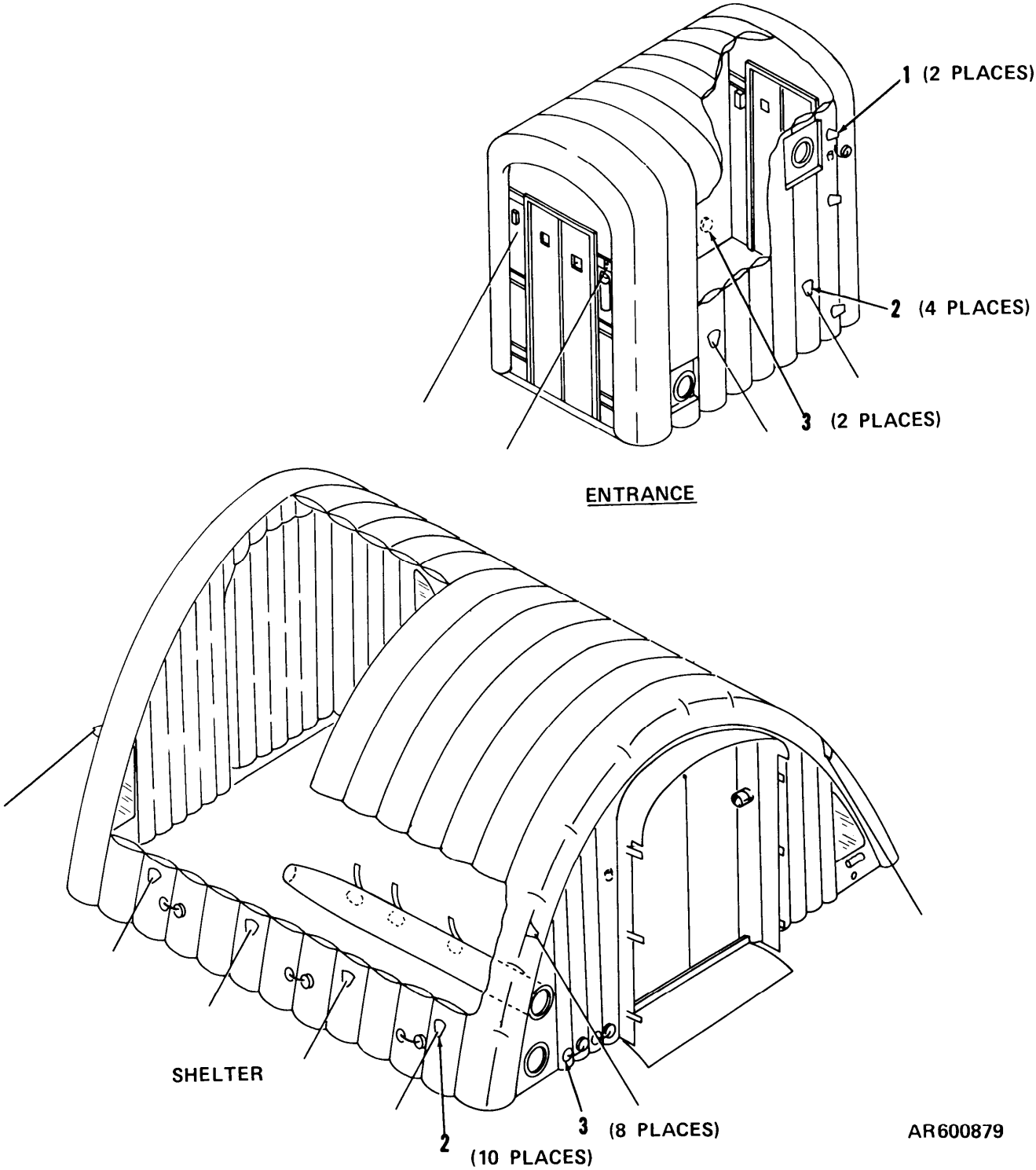
CHAPTER 2

DIRECT SUPPORT MAINTENANCE INSTRUCTIONS

Section I. INFLATABLE SHELTER

2-1. Evacuation Outlet Covers

Direct support maintenance personnel are authorized to replace the evacuation outlet covers (3, fig. 2-1).



1 Ring patches 2 Anchor patches 3 Evacuation outlet covers

Figure 2-1. Inflatable entrance and shelter.

a. Removal.

WARNING

HIGHLY INFLAMMABLE MATERIAL
When using the adhesive and cleaning solvent, keep open flame away from working area. Have working area well ventilated. DEATH or severe burns may result if personnel fail to observe safety precautions.