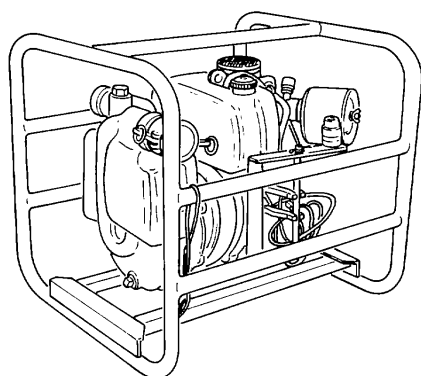


**OPERATOR'S UNIT,
DIRECT SUPPORT AND
GENERAL SUPPORT
MAINTENANCE**



**PUMPING ASSEMBLY,
FLAMMABLE LIQUID,
BULK TRANSFER,
100 GPM, DIESEL
ENGINE DRIVEN (DED)**

**TABLE OF CONTENTS
PAGE I**

**EQUIPMENT DESCRIPTION
AND DATA
PAGE 1-3 -**

**OPERATING INSTRUCTIONS
PAGE 2-1**

**OPERATOR'S PREVENTIVE
MAINTENANCE CHECKS AND
SERVICES (PMCS)
PAGE 2-3**

**UNIT MAINTENANCE
TROUBLESHOOTING
PAGE 4- 5**

**UNIT MAINTENANCE
PROCEDURES
PAGE 4-8**

**DIRECT SUPPORT
MAINTENANCE INSTRUCTIONS
PAGE 5-1**

**GENERAL SUPPORT
MAINTENANCE INSTRUCTIONS
PAGE 6-1**

**ALPHABETICAL INDEX
PAGE INDEX-1**

**NSN: 4320-01-306-6892
MODEL NUMBER: LPI-PA--9215**

Approved for public release; Distribution is unlimited.

**HEADQUARTERS, DEPARTMENT OF THE ARMY
1 NOVEMBER 1989**

TECHNICAL MANUAL

TM 5-4320-313-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 1 November 1989OPERATOR'S, UNIT, DIRECT SUPPORT AND GENERAL SUPPORT
MAINTENANCE MANUAL

for

PUMPING ASSEMBLY, FLAMMABLE LIQUID, BULK TRANSFER,
100 GPM, DIESEL ENGINE DRIVEN (DED)

Approved for public release; Distribution is unlimited.

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Troop Support Command, ATTN: AMSTR-MCTS, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. A reply will be furnished to you.

TABLE OF CONTENTS

Page

CHAPTER 1	INTRODUCTION	1-1
Section I.	General Information	1-1
Section II.	Equipment Description and Data.....	1-3
Section III.	Technical Principles of Operation.....	1-7
CHAPTER 2	OPERATING INSTRUCTIONS	2-1
Section I.	Description and Use of Operator's Controls and Indicators	2-1
Section II.	Operator's Preventive Maintenance Checks and Services (PMCS).....	2-3
Section III.	Operation Under Usual Conditions	2-5
Section IV.	Operation Under Unusual Conditions	2-10
CHAPTER 3	OPERATOR MAINTENANCE INSTRUCTIONS	3-1
Section I.	Lubrication Instructions	3-1
Section II.	Troubleshooting	3-1
CHAPTER 4	UNIT MAINTENANCE INSTRUCTIONS	4-1
Section I.	Lubrication Instructions	4-1
Section II.	Repair Parts, Special Tools, TMDE, and Support Equipment	4-2
Section III.	Service Upon Receipt of Equipment	4-3
Section IV.	Preventive Maintenance Checks and Services (PMCS)	4-3
Section V.	Troubleshooting	4-4

TABLE OF CONTENTS - Continued

		Page
CHAPTER 4	UNIT MAINTENANCE INSTRUCTIONS - Continued	
Section VI.	Maintenance Procedures	4-8
Section VII.	Preparation for Storage or Shipment.....	4-28
CHAPTER 5	DIRECT SUPPORT MAINTENANCE INSTRUCTIONS.....	5-1
Section I.	Troubleshooting	5-1
Section II.	Maintenance Procedures	5-4
CHAPTER 6	GENERAL SUPPORT MAINTENANCE PROCEDURES.....	6-1
Section I.	Troubleshooting	6-1
Section II.	Maintenance Procedures	6-1
APPENDIX A	REFERENCES	A-1
APPENDIX B	MAINTENANCE ALLOCATION CHART	B-1
APPENDIX C	COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS.....	C-1
APPENDIX D	ADDITIONAL AUTHORIZATION LIST	D-1
APPENDIX E	EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST	E-1
ALPHABETICAL INDEX		Index-1

LIST OF ILLUSTRATIONS

Illus/ Figure		Page
1-1	Pumping Assembly, 100 GPM	1-0
1-2	Pumping Assembly, Rear and Left Side	1-4
1-3	Pumping Assembly, Front and Right Side	1-5
1-4	Engine and Pump	1-8
2-1	Operator's Controls and Indicators	2-2
2-2	Setting Up Refueling Operation	2-6
2-3	Setting Up Refueling Operation	2-7
2-4	Priming, Starting, and Stopping Pumping Assembly	2-9
2-5	Filling Cold Start Assist Cup.....	2-10

LIST OF ILLUSTRATIONS-Continued

Illus/ Figure		Page
4-1	Engine Lubrication	4-2
4-2	Air Filter Assembly	4-9
4-3	Air Filter Indicator Removal/Installation	4-11
4-4	Fuel Filter Removal/Installation	4-13
4-5	Bleeding Fuel System	4-15
4-6	Fuel Pump Removal/Installation	4-17
4-7	Fuel Lines, Hoses, and Fittings Removal/Installation	4-19
4-8	Fuel Tank Removal/Installation	4-21
4-9	Muffler/Spark Arrestor Removal/Installation	4-23
4-10	Throttle Removal/Installation/Adjustment	4-25
4-11	Crank Assembly Removal/Installation	4-27
5-1	Pump Assembly Disassembly	5-7
5-2	Pump Assembly Reassembly	5-9
5-3	Engine Assembly Removal/Installation	5-10
5-4	Fuel Injector Removal	5-12
5-5	Fuel Injector Test Set-Up	5-13
5-6	Fuel Injector Installation	5-14
5-7	Fuel Injection Pump Testing	5-17
5-8	Fuel Injection Pump Removal/Installation	5-17
5-9	Delivery Valve Removal	5-19
5-10	Spill Device and Dial Gauge Installation	5-20
5-11	Fuel Injection Pump Delivery and Adjustment	5-21
5-12	Fuel Injection Pump Delivery Lift Adjustment	5-23
5-13	Extra Fuel Button Adjustment	5-23
5-14	Cranking Cover and Gears Removal	5-26
5-15	Cranking Cover and Gears Installation	5-27
5-16	Cylinder Head Cowling Removal	5-29
5-17	Cylinder Head Cover Removal	5-29
5-18	Rocker Arm Removal	5-30
5-19	Cylinder Head Removal	5-31
5-20	Pushrod and Protection Tube Removal	5-31
5-21	Cylinder Head and Piston Bumping Clearance Measurement	5-33
5-22	Tappet Clearance Adjustment	5-34
5-23	Decompression Screw and Pinion Adjustment	5-35
5-24	Cylinder Removal	5-37
5-25	Cylinder Measuring Points	5-38
5-25	Cylinder Installation	5-39
5-27	Piston Removal	5-41
5-28	Measuring Piston Circumference	5-42
5-29	Piston Rings Installation	5-43
5-30	Piston Installation	5-43
5-31	Flywheel Removal/Installation	5-45
5-32	Frame Assembly Removal/Installation	5-47
6-1	Cylinder Head Disassembly	6-3
6-2	Checking Valve Recession	6-4
6-3	Cylinder Head Reassembly	6-5
6-4	Connecting Rod Removal	6-7
6-5	Measuring Connecting Rod Bushing Inside Diameter	6-8
6-6	Connecting Rod Installation	6-9

LIST OF ILLUSTRATIONS - Continued

Illus/ Figure		Page
6-7	Timing Cover and Camshaft Removal/Disassembly	6-11
6-8	Timing Cover and Camshaft Reassembly.....	6-13
6-9	Governor Removal.....	6-15
6-10	Governor Installation	6-17
6-11	Oil Seal (Flywheel Side) Removal/Installation	6-19
6-12	Crankshaft Removal.....	6-21
6-13	Crankshaft Installation	6-23
6-14	Crankcase Disassembly/Reassembly	6-25

LIST OF TABLES

Table No		Page
1-1	Equipment Data	1-6
2-1	Operator's Controls and Indicators.....	2-2
2-2	Operator's Preventive Maintenance Checks and Services.....	2-5
4-1	Unit Monthly Preventive Maintenance Checks and Services.....	4-3
4-2	Unit Maintenance Troubleshooting	4-5
5-1	Direct Support Troubleshooting	5-1

HOW TO USE THIS MANUAL

a. General. This manual contains operation and maintenance procedures for the pumping assembly. At the beginning of each chapter, you will find an index of topics covered in the chapter.

Chapter 1 Introduction

Chapter 2 Operating Instructions

Chapter 3 Operator's Maintenance

Chapter 4 Unit Maintenance

Chapter 5 Direct Support Maintenance

Chapter 6 General Support Maintenance

In using these procedures, you must familiarize yourself with an entire maintenance procedure before beginning a specific task.

Read all **Warnings** before you begin operating your equipment. Read each procedure completely before beginning a task. In locating specific items in this manual. The following sections are included in this manual. References in the manual are to pages, paragraphs and appendixes or other publications.

b. Front Cover Index - Tabbed index of major functions and appendixes are keyed to tabbed pages in the manual. These major items are also enclosed in boxed areas in the Table of Contents.

c. Table of Contents - List of chapters, sections and appendixes.

d. Alphabetical Index - Extensive index for each subject, located at the end of this manual.

v/(vi Blank)

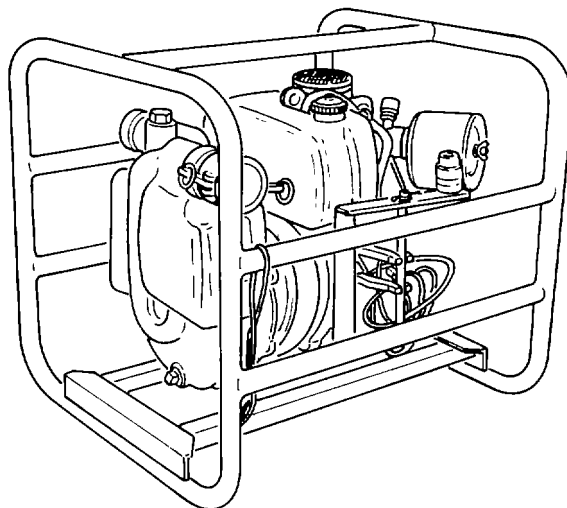


Figure 1-1. Pumping Assembly, 100 GPM.

1-0

CHAPTER 1

INTRODUCTION

Section I	General Information
Section II	Equipment Description and Data
Section III	Technical Principles of Operation

Section I. GENERAL INFORMATION

	Para		Para.
Destruction of Army Materiel to		Quality Assurance/Quality Control	
Prevent Enemy Use.....	1-3	(QA/QC)	1-5
List of Abbreviations.....	1-8	Reporting Equipment Improvement	
Maintenance Forms and Records.....	1-2	Recommendations.....	1-7
Nomenclature Cross Reference List	1-6	Scope	1-1
Preparation for Storage or Shipment.....	1-4		

1-1. SCOPE.

a. Type of Manual. This manual is an Operator's, Unit, Direct Support and General Support Maintenance Manual.

b. Model Number and Equipment Name. The official name is Pumping Assembly, Flammable Liquid, Bulk Transfer, 100 GPM, Diesel Engine Driven (DED), Model Number LPI-PA-9215. Hereafter it will be referred to as the pumping assembly.

c. Purpose of Equipment. Designed to pump liquid petroleum at the rate of 100 gallons per minute (GPM).

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, The Army Maintenance Management System (TAMMS).

1-3. DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE.

Refer to TM 750-244-3 for instructions covering the destruction of the pumping assembly to prevent enemy use.

1-4. PREPARATION FOR STORAGE OR SHIPMENT.

For other storage requirements or for shipment instructions, refer to Chapter 4, Section VII. Administrative storage requirements will be in accordance with the following: