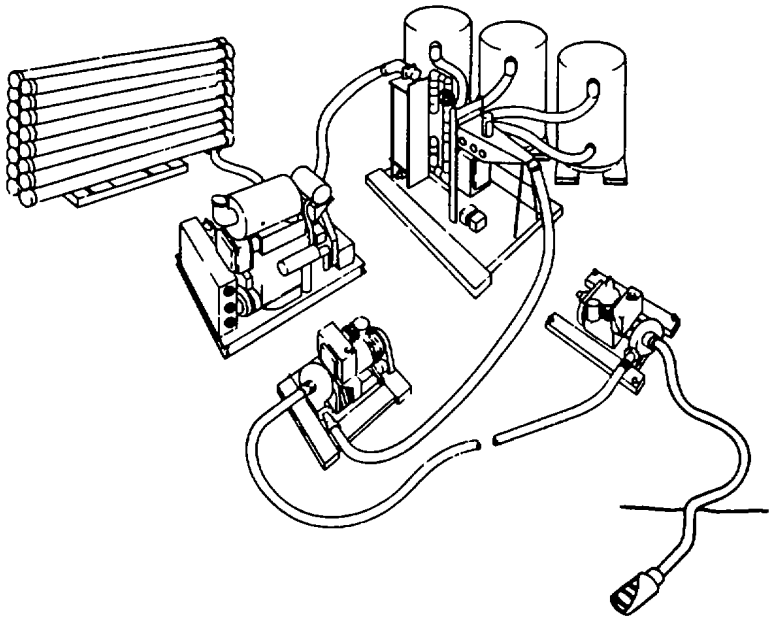
OPERATOR'S MANUAL



WATER PURIFICATION UNIT
REVERSE OSMOSIS

150,000 GPD, SKID-MOUNTED,
MODEL PD 81146
NSN 4610-01-121-0161

Approved for public release; distribution is unlimited.
***This manual supersedes TM 5-4610-229-10, 14 April 1986, including all changes.**

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y
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TECHNICAL MANUAL

NO. 10-4610-229-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 5 April1991

Operator's Manual

WATER PURIFICATION UNIT, REVERSE OSMOSIS

150,000 GPD, SKID-MOUNTED

MODEL PD 81146

NSN 4610-01-121-0161

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-MMTS, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished to you.

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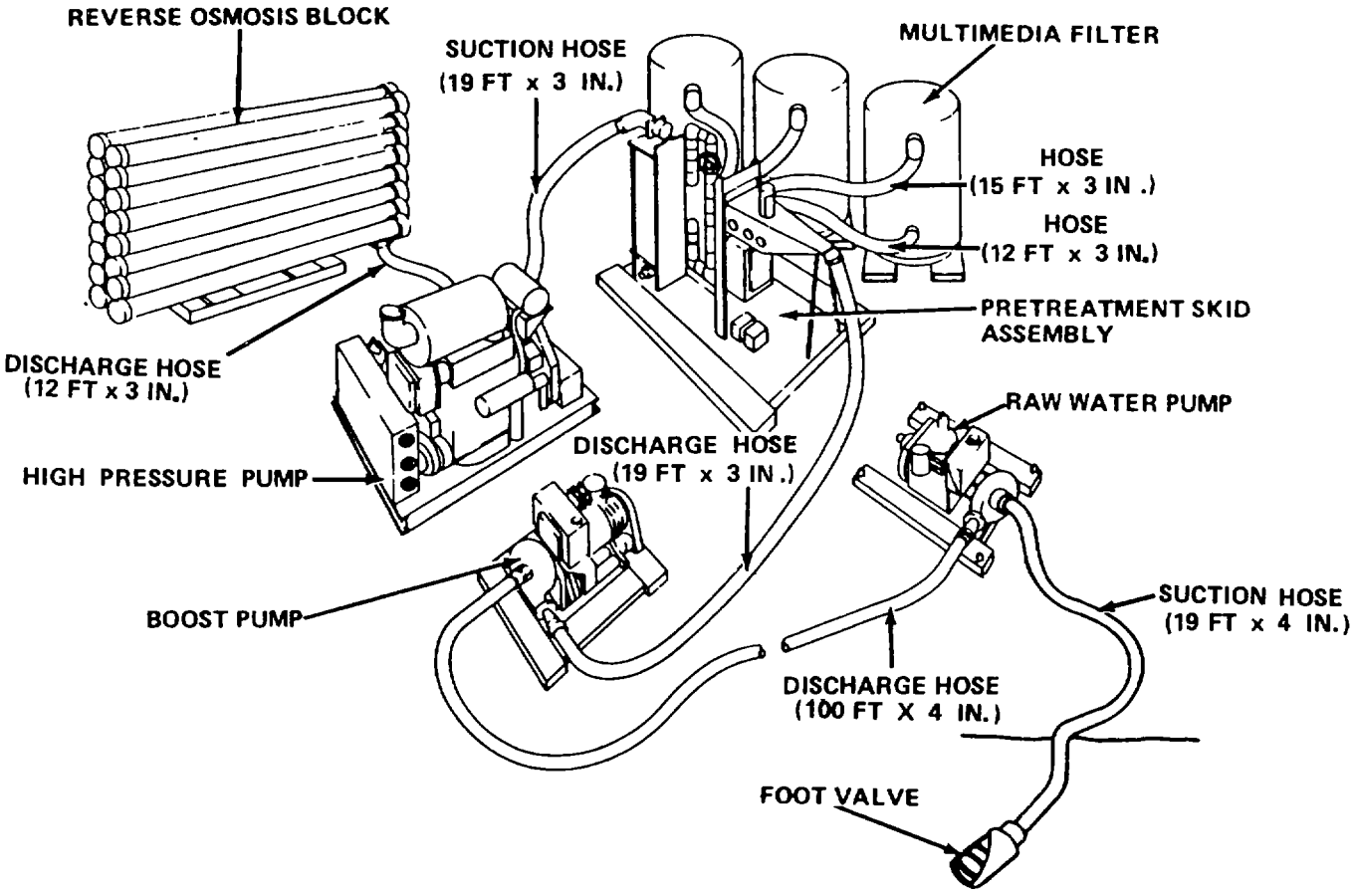

REVERSE OSMOSIS BLOCK
SUCTION HOSE
(19 FT x 3 IN.)
MULTIMEDIA FILTER
HOSE
(15 FT x 3 IN .)
HOSE
(12 FT x 3 IN.)
PRETREATMENT SKID
ASSEMBLY
DISCHARGE HOSE
(12 FT x 3 IN.)
RAW WATER PUMP
DISCHARGE HOSE
(19 FT x 3 IN .)
HIGH PRESSURE PUMP
BOOST PUMP
SUCTION HOSE
(19 FT x 4 IN.)
DISCHARGE HOSE
(100 FT X 4 IN.)
FOOT VALVE

CHAPTER 1

INTRODUCTION

Section I. GENERAL INFORMATION

1-1. SCOPE. This operator's manual contains instructions for the operation and operator's maintenance of the Skid-Mounted 150,000 GPD Reverse Osmosis Water Purification Unit (ROWPU), Model PD 81146. It produces drinking water from contaminated sources. ROWPU is not intended for use at temperatures below 32°F (0°C) or above 120°F (49°C).

1-2. MAINTENANCE FORMS AND RECORDS. 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. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS. If your ROWPU needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail it to us at: Commander, U. S. Army Troop Support Command, ATTN: AMSTR-MOF, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. We'll send you a reply.

1-4. GLOSSARY

Brine	Waste product, containing salt or other particles, that is separated from drinking water during the reverse osmosis process
Cavitation	Collapse in hoseline caused by vacuum in liquid flowing through hoseline
Membrane	Barrier that allows brine to pass from drinking water and forms a wall between the two liquids
Multimedia	Filtering system made of sand, gravel, and other granulated substances

1-4. GLOSSARY (CONT)

Raw water	Contaminated water that is not suitable for drinking without treatment
Reverse osmosis	Purification process by which contaminated water is subjected to high pressure, separating salt or other particles through a membrane to produce drinking water

Section II. EQUIPMENT DESCRIPTION

1-5. EQUIPMENT CRARACTERISTICS, CAPABILITIES, AND FEATURES

a. Characteristics

(1) Consists of a series of diesel-engine-driven pumps, filters, and a reverse osmosis block assembly.

(2) Produces drinking water from contaminated sources.

b. Capabilities and Features

(1) Skid-mounted for ease of transport by land, sea, or air.

(2) Open-air design allows easy maintenance of equipment.

NOTE

Actual performance will vary with changes in environment, operating conditions, and the age of the reverse osmosis membranes.

(3) Delivers drinking water at the rate of 150,000 gpd.

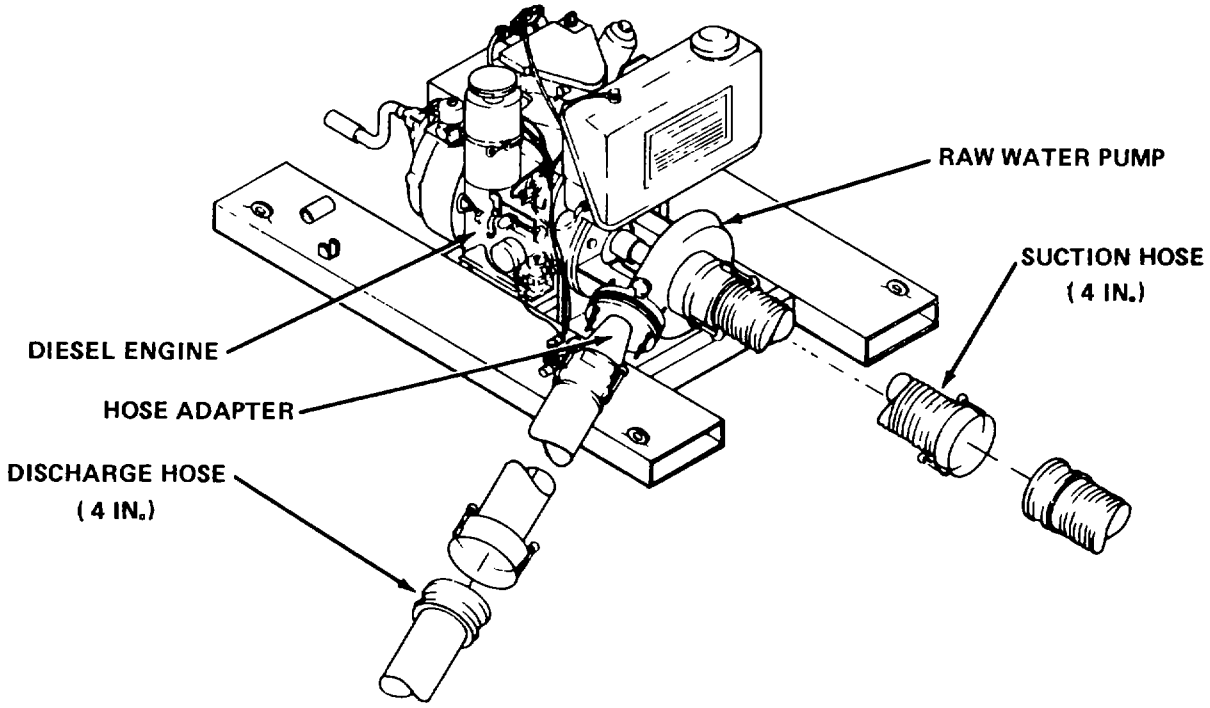
c. Performance Characteristics

NOTE

Actual performance will vary with changes in environment, operating conditions, and the age of the reverse osmosis membranes.

Total feed water flow = 347 gpm
Total product water flow = 104 gpm
Total brine concentrate flow = 243 gpm

1-6. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



Raw Water Pump Assembly and Hoses

SUCTION HOSE ASSEMBLY. Consists of five rigid-walled (19 ft x 4 in.) hose sections, each with quick-disconnect fittings. Carries water from water source to raw water pump.

RAW WATER PUMP. Pumps water from water source to boost pump assembly.

RAW WATER PUMP DIESEL ENGINE. One-cylinder diesel engine which directly drives raw water pump.

HOSE ADAPTER. Four in. adapter. Enables coupling of discharge hose assembly with 4 in. quick-disconnect fitting.

DISCHARGE HOSE ASSEMBLY. Consists of five collapsible (100 ft x 4 in.) hose sections, each with quick-disconnect fittings. Carries water from raw water pump assembly to boost pump assembly.