UNITED STATES MARINE CORPS
Utilities Instruction Company
Marine Corps Engineer School
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U-10B05
OCT 99

STUDENT HANDOUT

PUMPS

LEARNING OBJECTIVES:

1. Terminal Learning Objectives:

a. Provided a GPM pump, a water source, earplugs, tools, oil, grease, fuel, and references, operate the pump in accordance with the technical manual. (1171.2.1)

b. Provided a GPM pump, a water source, tools, oil, grease, fuel, and references, perform preventive maintenance on the pump in accordance with the technical manual. (1171.4.1)

2. Enabling Learning Objectives:

a. Given the necessary equipment, a water source, tools and materials, set up the unit in accordance with TM-81283-14 and TM-08922A-14/1. (1171.02.01a)

b. Given the necessary equipment, a water source, tools and materials, conduct operator maintenance in accordance with TM-81283-14 and TM-08922A-14/1. (1171.04.01a)

c. Given the necessary equipment, a water source, tools and materials, start the unit in accordance with TM-81283-14 and TM-08922A-14/1. (1171.02.01b)

d. Given the necessary equipment, a water source, tools and materials, shutdown the unit in accordance with TM-81283-14 and TM-08922A-14/1. (1171.02.01c)

e. Given the necessary equipment, a water source, tools and materials, prepare the unit in for storage in accordance with TM-81283-14 and TM-08922A-14/1. (1171.02.01d)

BODY

1. Characteristics and capabilities:

a. Nomenclature - The 65 GPM pump is a frame mounted, four cycle, air cooled, gasoline operated, self priming, centrifugal pump rated at 1-1/2 horsepower. This pump is used primarily as an intake pump for raw water sources.

b. Personnel – The 65 GPM pump will require one Marine for proper operation.

2. Description of components:

a. Fuel tank - holds one gallon of gas.

b. Engine oil crankcase - holds one pint of 30 wt oil.

c. Air filter - dry element type, used to keep dirt out of the air intake.

d. Fuel pump - distributes fuel from the fuel tank to the carburetor.

e. Governor - used to control engine RPM's

f. Fuel filter - keeps sediment from entering the fuel pump.

g. Suction and discharge ports - used to connect hoses to the pump.

h. Carburetor - provides the correct amount of fuel for engine combustion.

i. Run/Off switch - used to control current to the sparkplug.

j. Suction hose (hard) 1-1/2"

k. Discharge hose (collapsible) 1-1/2"

l. Spanner wrench

m. Starter rope

3. Set up procedures:

a. Site selection

(1) Place pump on firm, flat, level ground.

(2) Set up the 65 GPM within 50 feet of the water source with no more than a 10-foot suction lift.

(3) The site should have adequate cover and concealment, sufficient road networks and good drainage.

b. Installation

(1) Connect a 1-½" suction hose (hard) to the intake port.

(2) Connect a 1-1/2" discharge hose (collapsible) to the discharge port.

(3) Prime the pump through the suction hose using a pail of water.

(4) Attach a strainer and float to the suction hose.

(5) Place the hose into the water source.

c. Preposition valves and switches

(1) Close the choke.

(2) Flip “run/off” Switch to “run” position.

(3) Adjust throttle lever to ¼ open.

d. Conduct before operational checks and services

(1) Check oil level in the engine crankcase.

(2) Check fuel level in the tank.

(3) Check the sediment bowl under the fuel tank for dirt.

4. Start up procedures:

a. Wrap starter rope clockwise around pulley and pull until the engine starts.

b. Once engine starts, open choke.

c. Let engine warm up for 5 minutes.

d. After engine warms up, open the throttle fully.

5. During operational checks and services:

a. Observe engine and pump during operation for any possible malfunctions. (Visual inspection.)

b. Refuel pump as needed.

6. Shutdown procedures:

a. Idle engine for 5 minutes.

b. To stop engine, flip "run/off" switch to "off" position.

7. Disassembly and storage procedures:

a. Disassembly

(1) Disconnect and drain all hoses.

b. After operational checks and service

(1) Drain pump of water.

(2) Check oil and fuel levels. (Drain fuel and oil for long storage periods.)

(3) Clean the pump.

(4)Inspect the pump for any damages.

8. Characteristics and capabilities:

a. Nomenclature - The 125 GPM pump is a frame mounted, four stroke, air cooled, diesel operated, self priming, centrifugal pump rated at 6 horsepower. This pump is used as a distribution pump for treated water only.

b. Personnel - The 125 GPM pump will require one Marine for proper operation.

9. Description of components:

a. Engine Hand crank - Used to start diesel engine. The crank is stored on a stud beside the engine.

b. Compression Release - Located directly above the starter gear housing.

c. Oil Dipstick - Located below the air filter assembly.

d. Crankcase Drain - Located below the gear drive housing. Used to drain the engine crankcase oil.

e. Primer Pump Lever - Located below the muffler on the fuel pump. Primer pump lever is operated up and down to send fuel to the injector pump, if the engine has run out of fuel or if the injector pump has been removed or disconnected.

f. Extra Fuel Button - Located on the injector pump.

g. Oil Priming Cap - Located beside the air filter housing. Used for starting in extreme cold weather. Pull open plug; place a small amount of ENGINE LUBRICATING OIL (not fuel) into priming chamber. Replace the plug and push down.

h. Engine Throttle Lever - Located above and behind the engine timing cover. Full counterclockwise movement of the lever is the high rpm position. Moving the lever clockwise reduces engine rpm to idle. Full clockwise movement of the lever stops the engine.

i. Air Restrictor Indicator - Located on the air intake manifold. Indicator changes from green to red when the air filter element requires cleaning or replacement.

j. Oil Filler Plug - Located below fuel injector pump. Remove plug to add oil.

10. Set up procedures:

a. Site selection

(1) Place pump on firm, flat, level ground.

(2) Set up the 125 GPM within 50 feet of the water source with no more than a 10-foot suction lift.

b. Installation

(1) Connect 2" suction hose to suction side of pump.

(2) Connect 2" discharge hose to coupling half on discharge side of pump.

c. Preposition valves and switches

(1) Remove the hand crank from the stud. Insert the hooked end into the drive socket.

(2) Rotate the long end of the compression release clockwise to the 12 o'clock position. The release automatically rotates to the 6 o'clock position while the engine is being cranked.

(3) Move throttle control lever to high RPM position.

(4) Pull out extra fuel button, if needed.

d. Conduct before operation checks and services

(1) Check fuel tank/cap for cracks or leaks. Capacity: 1 gal diesel fuel; replace fuel filter every 500 hours.

(2) Check oil. Capacity: 1 quart/30 wt; new engines, change oil after 25 hrs, thereafter, every 150 hours or 6 months, whichever is first.

(3) Check air restrictor indicator. Green should be showing to indicate
filter is good. Change every 500 hrs.

(4) Check for loose nuts and bolts.

11. Start up procedures:

a. Operate priming pump lever up and down several times.

b. Insert hand crank in drive socket and crank clockwise until started (7-8 rotations). Secure hand crank in storage position.

c. Adjust the throttle to the desired flow rate (RPM's).

12. Conduct during operational checks and services:

a. Observe engine and pump during operation for any possible malfunctions. (Visual inspection)

b. Refuel pump as needed.

13. Shutdown procedures:

a. Reduce engine speed and let it idle for 30 seconds.

b. Stop engine by adjusting throttle control lever fully closed.

14. Disassembly and storage procedures:

a. Disassembly

(1) Disconnect and drain all hoses.

b. After operational checks and services

(1) Drain pump of water.

(2) Check oil and fuel levels. (Drain for long storage.)

(3) Clean and pack the pump.

(4) Inspect the pump for any damages.

REFERENCES:

TM-81283-14
TM 09241B-12&P