



SERVICE MANUAL

Section 3 _____ ENGINE

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	a. DEUTZ INSTRUCTION MANUAL, No. 297 1225	
	b. DEUTZ WORKSHOP MANUAL, No. 2919842 (Available upon request at additional charge)	
	c. ENGELHARD PTX DIESEL PURIFIER SERVICE MANUAL, Form EM-A-264	
	d. SERVICE BULLETIN (DONALDSON AIR CLEANERS), Bulletin 1200-185	



3-1. GENERAL

This section contains the repair (overhaul) instructions for the cooling system, exhaust system and the Deutz F4L912W Diesel Engine. Instructions also given in this section include removal, inspection, installation and service.

Complete preventive maintenance procedures are provided in Section 2 of this manual.

Whenever feasible, the component manufacturer's service instructions are provided as a supplement to Eimco information.

3-2. SYSTEM DESIGN SPECIFICATIONS

A. Cooling System

For engine cooling system specifications, refer to the Deutz F3-6L912W Instruction Manual No. 297 1225 (included in this section) and the Deutz Workshop Manual No. 2919842 (available upon request at additional charge).

(b) Overall diameter 5 inches (127 mm), length 9-33/4 inches (248 mm).

(2) Water Bath Exhaust Conditioner (OPTION)

(a) Water tank capacity: gallons (liters).

B. Exhaust System

(1) PTX Exhaust Purifier

(a) Emission control reduced carbon monoxide by over 90%.

C. Engine

For engine specifications, refer to the Deutz F3-6L912W Instruction Manual No. 297 1225 (included in this Section) and the Deutz Workshop Manual No. 2919842 (available upon request at additional charge).

3-3. TROUBLE ANALYSIS TABLE

For engine cooling system trouble analysis, refer to the Deutz F3-6L912W Instruction Manual No. 297 1225 (included in this Section) and the Deutz Workshop Manual No. 2919842 (available upon request at additional charge).



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3-3. TROUBLE ANALYSIS TABLE

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TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
PTX EXHAUST PURIFIER		
Continuously loose nuts and bolts	Excessive vibration.	Tighten and tackweld,
Sparks from exhaust outlet	Carbon accumulation in connecting pipe.	Run engine at high speed and loads to burn out carbon.
Failure of metal parts	Defective part.	If within warranty, return to Eimco for replacement.
	Excessive engine vibration.	Tune engine.
	Normal wear.	Obtain replacement from Eimco.
Excessive smoke out of exhaust	Clogged engine air filter.	Clean or replace filter element.
	Undue clogging of Catalyst honeycomb.	Restrict excessive idling periods.
WATER BATH EXHAUST CONDITIONER (OPTION)		
Extremely hot exhaust gasses and excessive smoke	No water in the tank.	Remove the fill cap and fill the tank.
	Ruptured tank and leaking water.	Repair or replace the tank.
Failure of metal parts	Normal wear.	Obtain replacement from Eimco.
	Defective part.	If within warranty, return to Eimco for replacement.

3-4. SYSTEM DESCRIPTION

A. Cooling System

(1) For the cooling system description, refer to the Deutz F3-6L912W Instruction manual No. 297 1225 (included in this section) and Deutz Workshop Manual Form No. 2919842 (available upon request at additional charge).

B. Exhaust System

(1) PTX Exhaust Purifier (See Figure 3-1)

(a) The catalyst canister is formed from 16 gauge corrosion resistant steel tubing. The unit is a single catalyst type. The PTX catalyst is made of platinum metal deposited on strong, porous ceramic.

(b) Raw exhaust, containing carbon monoxide and other combustibles, enters the purifier via the exhaust manifold. The exhaust gases are burned in the PTX catalyst chamber which oxidizes carbon monoxide, hydrocarbons and exhaust odors, converting them to harmless carbon dioxide and water before they exit to the atmosphere.

(2) Water Bath Exhaust Conditioner (OPTION)

(a) The water bath exhaust conditioner is designed to cool the engine exhaust fumes, to extinguish any flames produced by the exhaust, and to aid in cleaning hot exhaust gases before they exit into the atmosphere.



C. Engine

For the engine description, refer to the Deutz F3-6L912W Instruction Manual No. 297 1225 (included in this Section) and the Deutz Workshop Manual No. 2919842 (available upon request at additional charge).

3-5. COOLING SYSTEM

For engine cooling system information, refer to the Deutz F3-6L912W Instruction Manual No. 297 1225 (included in this Section) and the Deutz Workshop Manual Form No. 2919842 (available upon request at additional charge).

3-6. EXHAUST SYSTEM

A. PTX Exhaust Purifier Removal (See Figure 3-1)

WARNING

VERIFY THAT THE EXHAUST MANIFOLD IS COOL.

- (1) Remove the six cap screws that secure the rear screen to the access door and remove the screen.
- (2) Disconnect the electrical wire to the warning horns.
- (3) Remove the two cap screws that anchor the exhaust diffuser to the access door.
- (4) Lift up on the exhaust diffuser and twist it as necessary to clear the pipe end of the exhaust purifier and remove the diffuser from the machine.
- (5) Partially support the exhaust purifier and remove the three cap screws that attach it to the engine exhaust manifold. Remove the exhaust purifier from the machine.

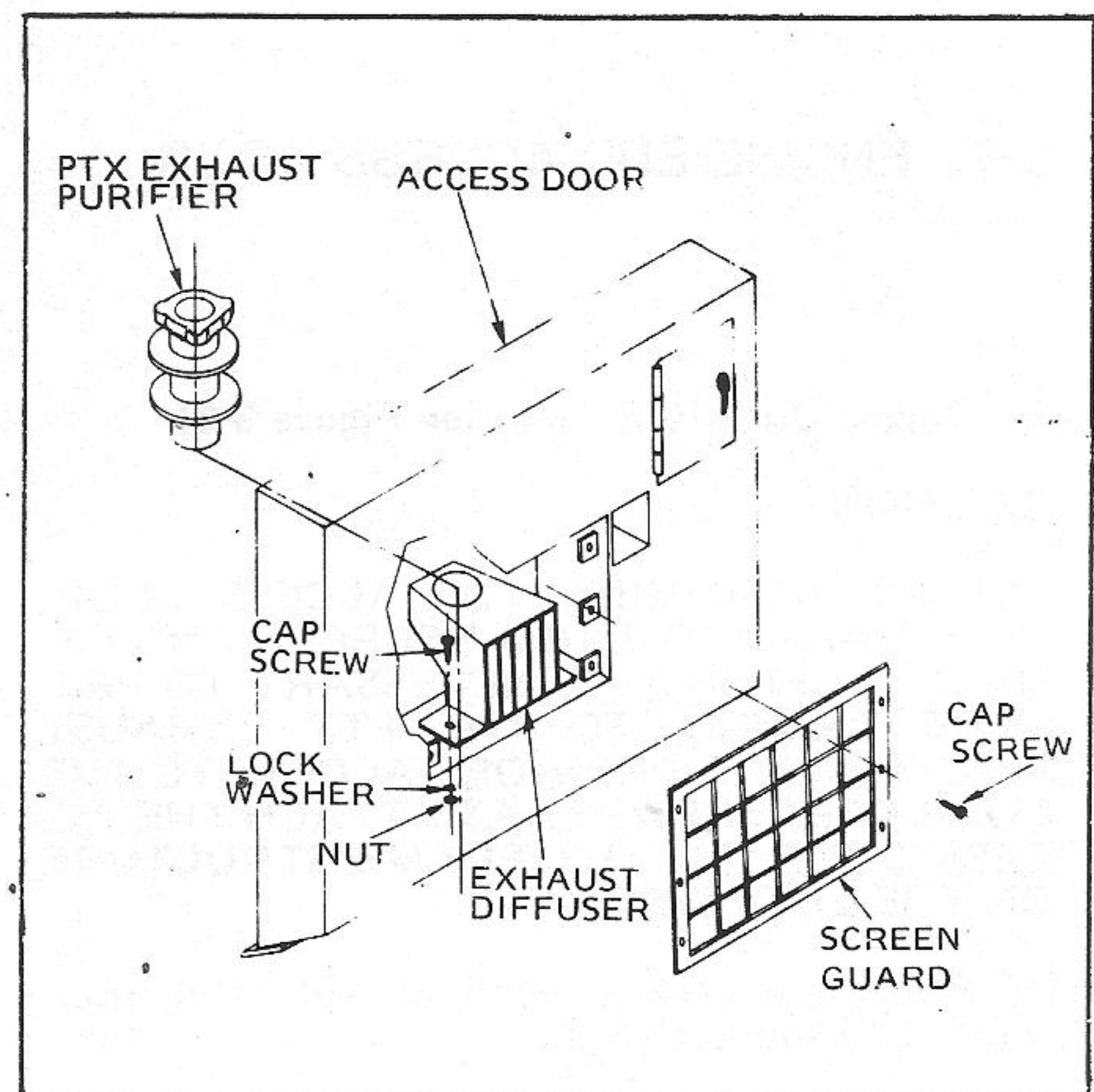


FIGURE 3 - 1. PTX EXHAUST PURIFIER INSTALLATION



B. PTX Exhaust Purifier Disassembly:

- (1) Position the PTX purifier suitably for disassembly.
- (2) To remove the catalyst element for replacement or cleaning, remove the top exhaust pipe stop from the purifier by removing the five cap screws that secure it to the center section.
- (3) Remove the high-temperature gasket from the flange and then remove the catalyst element.
- (4) Visually inspect the PTX purifier for damage.

C. Recommended Cleaning Procedures:

Refer to the engelhard PTX information at the back of this Section.

D. PTX Purifier Reassembly:

Reassembly of the exhaust purifier is basically the reverse of the disassembly procedures.

E. PTX Purifier Installation:

- (1) Verify that the PTX purifier mounting area is clean and free from obstruction.
- (2) Align the bolt holde between the exhaust purifier and manifold.
- (3) Secure the exhaust purifier to the manifold with three cap screws.

3-7. ENGINE END ACCESS DOOR

A. Access Door Removal (See Figure 3-2)

CAUTION

BEFORE REMOVING THE ACCESS DOOR, REMOVAL OF THE REAR SCREEN AND EXHAUST DIFFUSER IS NECESSARY TO PREVENT DAMAGE TO THE PTX EXHAUST PURIFIER AND PROVIDES ACCESS TO THE FOUR CAP SCREWS THAT ATTACH THE ACCESS DOOR TO THE FRAME STRUCTURE ON THE LEFT SIDE.

- (1) Remove the rear screen and exhaust diffuser, refering to subsection 3-6.
- (2) Remove the eight cap screws and the plate that secure the bottom of the access door to the frame structure.

(3) Reach inside the engine compartment through the rear screen opening and remove the four cap screws that secure the access door to the frame structure on the left side.

(4) Slowly swing the access door open. Observe that no obstruction interferes.

(5) With an overhead crane, partially support the access door.

(6) Remove the hinge pin and separate the access door from the frame structure.

B. Access Door Installation:

Installation of the access door is basically the reverse of the removal procedures.

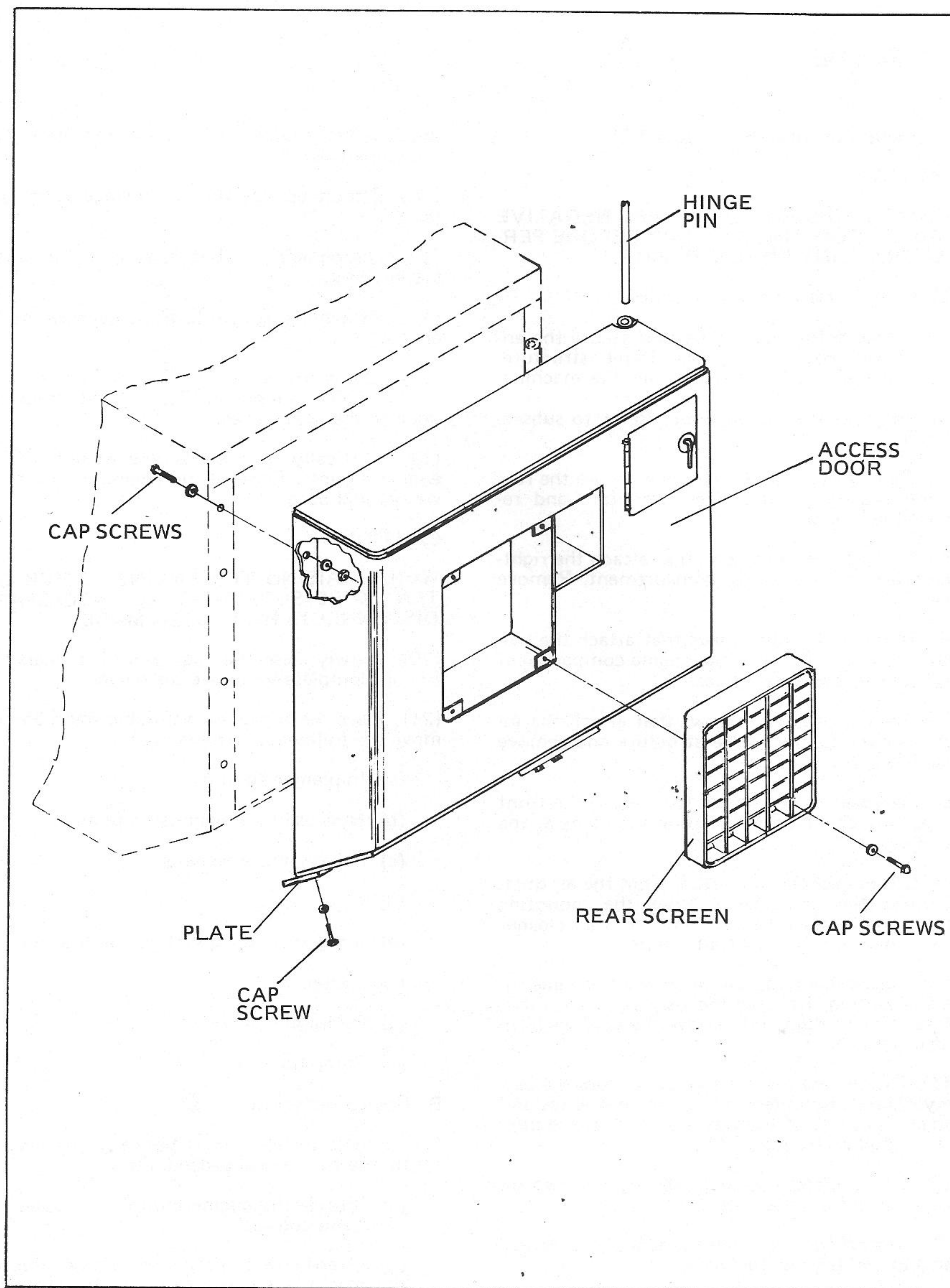


FIGURE 3 - 2. ACCESS DOOR INSTALLATION



3-8. ENGINE

A. Engine Removal (See Figure 3-3)

CAUTION

ALWAYS DISCONNECT THE NEGATIVE CABLE FROM THE BATTERY BEFORE PERFORMING ANY ENGINE REPAIR.

- (1) Remove the air filter precleaner.
- (2) Remove the cap screws that secure the engine hood assembly to the frame structure. Remove the hood assembly from the machine.
- (3) Remove the access door. Refer to subsection 3-7.
- (4) Remove the cap screws that secure the rear frame bracket to the frame structure and remove the bracket.
- (5) Remove the cap screws that attach the right-side cover to the engine compartment. Remove the cover.
- (6) Remove the cap screws that attach the two left-side cover plates to the engine compartment and remove the cover plates.
- (7) Remove the cap screws that attach the inlet air duct to the frame structure and remove the duct.
- (8) Remove the cap screws that secure the front covers to the frame structure and remove the covers.
- (9) Disconnect the air cleaner from the air duct. Remove the air cleaner from the mounting straps and remove the air cleaner. For air cleaner maintenance, refer to Attachments.
- (10) Disconnect the air duct at the engine intake manifold. Remove the two cap screws that secure the air duct and remove the air duct from the machine.
- (11) Disconnect the positive cable from the battery. Then disconnect all sender unit wires and move them out of the way. Disconnect the integral charging system.
- (12) Disconnect, cap and identify the two oil cooler lines from the oil cooler.
- (13) Shutoff the fuel from the tank. Disconnect, cap and identify the fuel lines.
- (14) Disconnect, cap and identify all hydraulic

lines to the hydrostatic transmission pump and implement pump.

- (15) Disconnect the throttle linkage at the fuel pump.
- (16) Disconnect the shift linkage at the hydrostatic pump.
- (17) Attach lifting eyes to the provisions on the engine.
- (18) Use a lifting crain with a minimum capacity of 2000 pounds (907.2 kg.) and attach the hoist to the lifting eyes.
- (19) Partically take the engine weight off the engine mounts. Remove the engine mount nuts, washer and pads.

CAUTION

WHILE RAISING THE ENGINE, CHECK OFTEN TO BE SURE THAT ALL NECESSARY DISCONNECTS HAVE BEEN MADE.

- (20) Slowly raise the engine until it clears the frame. Completely remove the engine.
- (21) Place the engine on a suitable stand and remove the following components:
 - (a) Implement pump
 - (b) Hydrostatic transmission pump
 - (c) Pulleys and drivebelts
 - (d) Fuel lines
 - (e) Integral charging system and brackets
 - (f) Starter
 - (g) Hydraulic oil cooler
 - (h) Pump housing

B. Engine Installation

- (1) Engine installation is basically the reverse of the engine removal procedures.
 - (a) Check the engine mount bolt holes for nicks and cracks.
 - (b) Verify that the engine mount area of the machine is clean, painted and free from loose obstruction that could hamper engine installation.

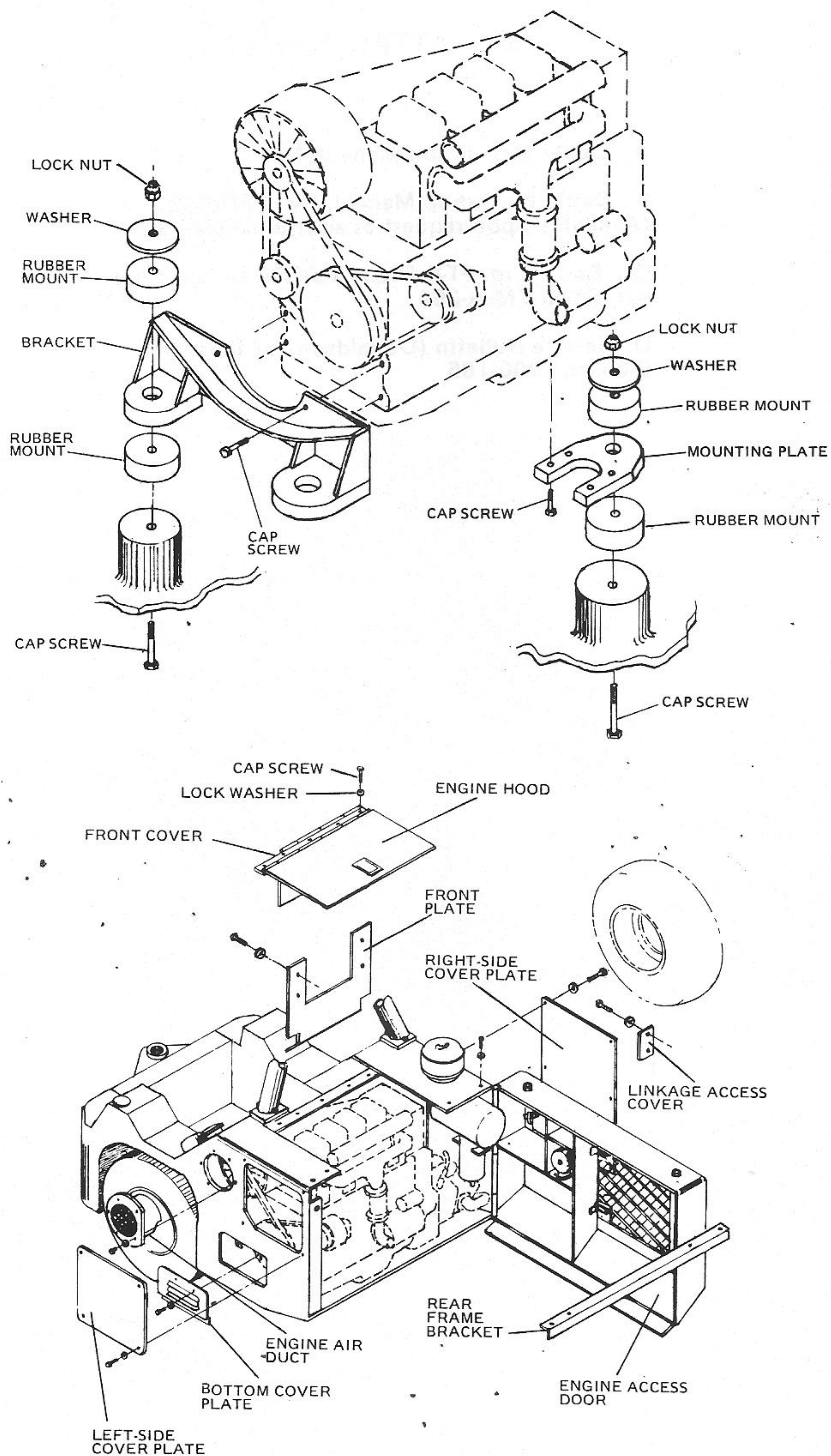


FIGURE 3 - 3. ENGINE MOUNT AND ACCESS COVERS



3-9. ATTACHMENTS

- A. Deutz Instruction Manual, No. 297 1225
- B. Deutz Workshop Manual, No. 2919842
(Available upon request at additional charge)
- C. Engelhard PTX Diesel Purifier Service Manual, Form EM-A-264
- D. Service Bulletin (Donaldson Air Cleaners),
Bulletin 1200-185