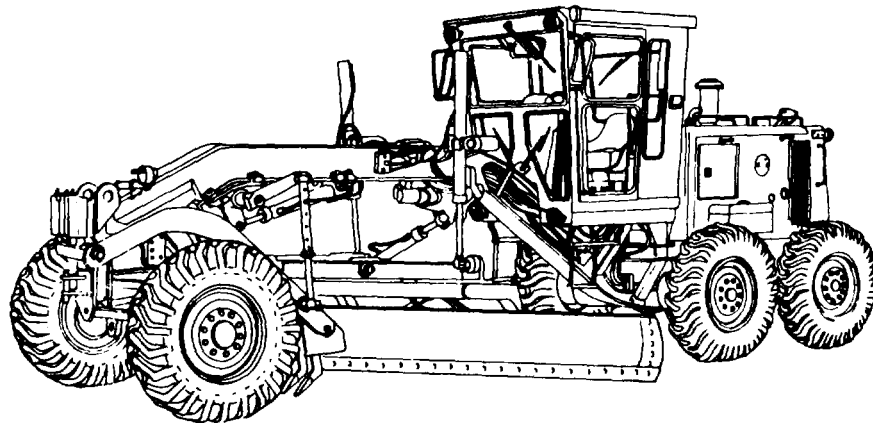


OPERATOR'S MANUAL



**GRADER, HEAVY, ROAD,
MOTORIZED,
CATERPILLAR MODEL 130G
(NSN 3805-01-150-4795)**

**This copy is a reprint which includes current
pages from Changes 1 and 2.**

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Headquarters, Department of the Army

MARCH 1989

TECHNICAL MANUAL

No. 5-3805-261-10

HEADQUARTERS
 Department of the Army
 Washington, D.C., 30 March 1989

OPERATOR'S MANUAL

GRADER, HEAVY, ROAD, MOTORIZED, DED,
 CATERPILLAR MODEL 130G (NSN 3805-01-150-4795)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve the 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 Tank Automotive Command, Attn: AMSTA-MB, Warren, MI 48397-5000. A reply will be furnished to you.

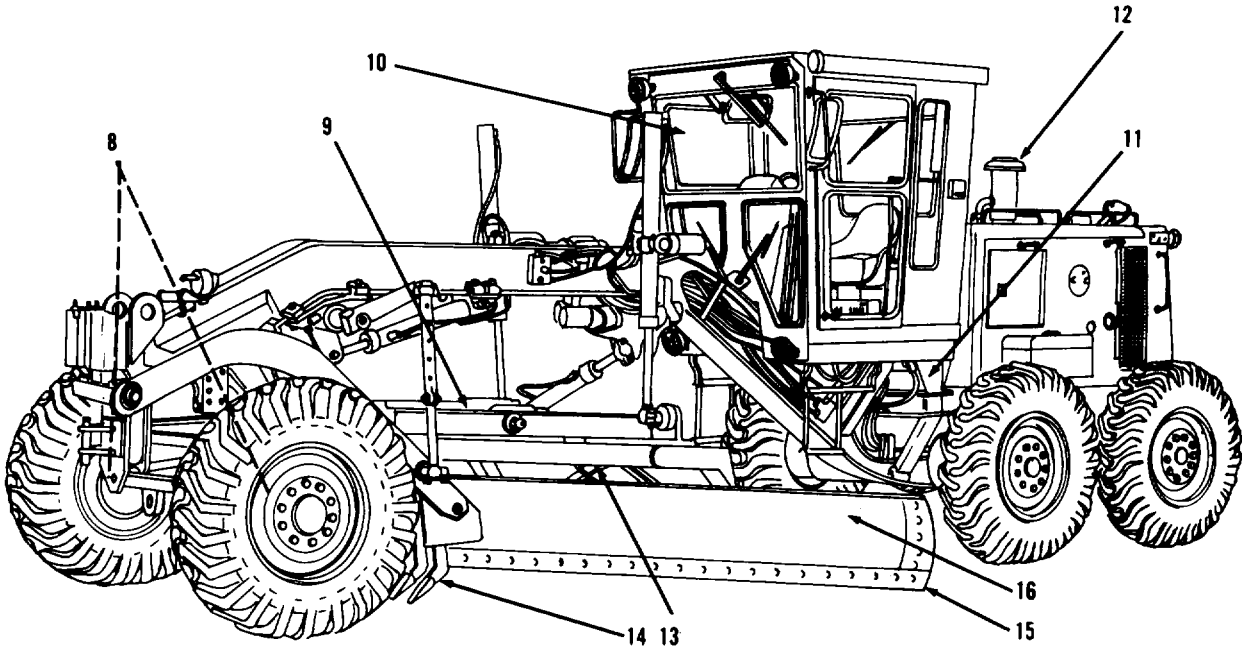
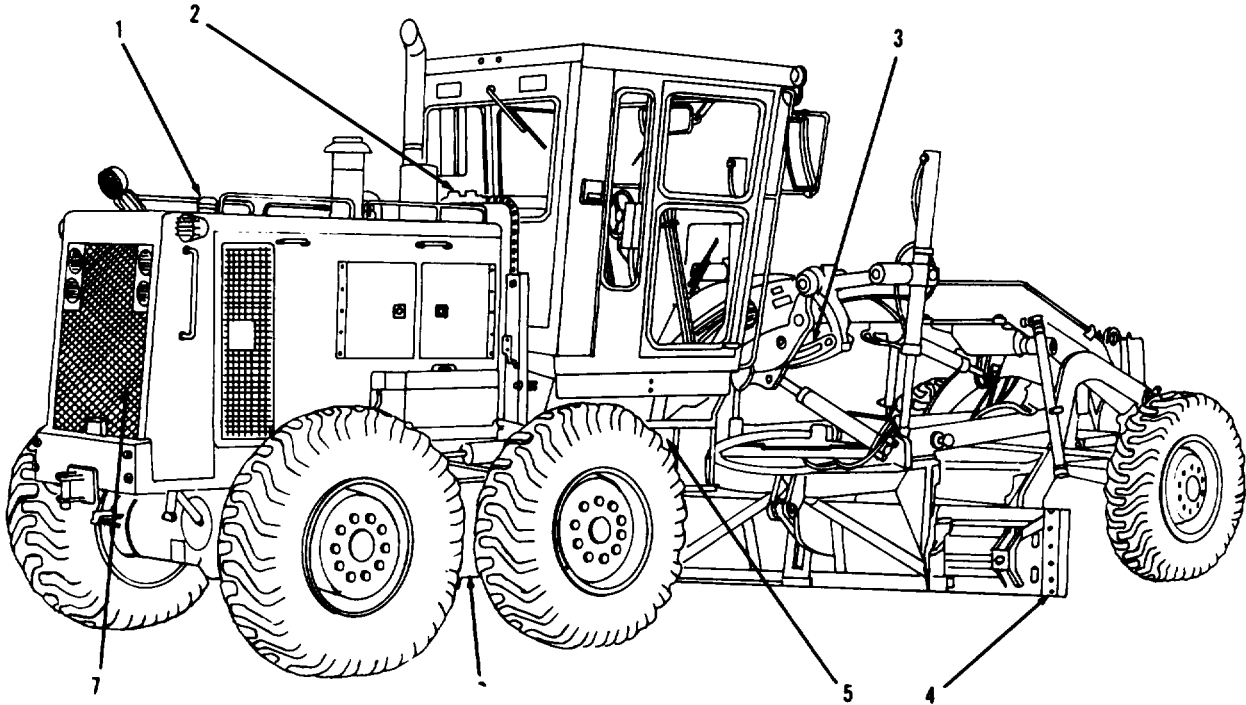
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*TM 5-3805-261-10 supersedes TM 5-3805-261-14&P-1 dated 29 July 1985.



Legend

- 1. Fuel tank
- 2. Hydraulic tank
- 3. Centershift
- 4. End bit
- 5. Fuse box
- 6. Tandem housings
- 7. Radiator
- 8. Wheel lean lock pin
- 9. Tool box
- 10. Operator's compartment
- 11. Antipivot pin
- 12. Air cleaner
- 13. Circle
- 14. Scarifier
- 15. Cutting edge
- 16. Moldboard

CHAPTER 1
INTRODUCTION

CHAPTER OVERVIEW

This chapter will familiarize you with the 130G Grader and its major operating systems.

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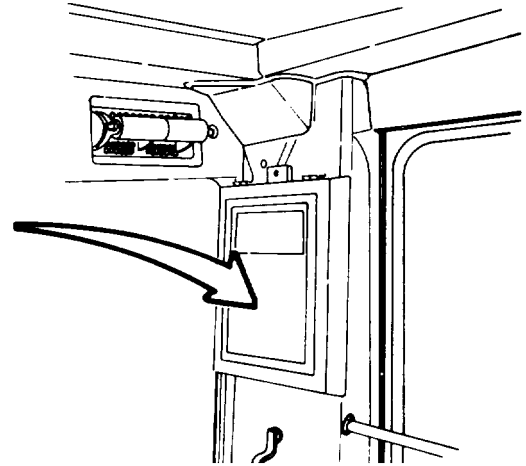
Section I. GENERAL INFORMATION

1-1. SCOPE. This manual presents the information you need for safe, efficient operation of the grader including authorized operation, preventive maintenance and service.

- a. Type of Manual. Operator's training manual. Includes operational maintenance and troubleshooting instructions.

NOTE

Storage container in left rear of cab holds the operator's manual. The manual remains with the vehicle at all times.



- b. Model No. Caterpillar Model 13OG (NSN 3805-01-150-4795).

- c. Equipment Name. Grader, Heavy, Motorized, DED (NSN 3805-01-150-4795).

- d. Purpose of Equipment. The grader is designed for rough and finished grading, low and high bank sloping, flat and V-ditching, scarifying bituminous road mixes and snow removed. Mission support role includes construction and maintenance of roads, airfields, hardstands, drainage, site preparation for pipeline and river crossing.

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. HAND RECEIPT (10 HR) MANUALS. This manual has a companion document with a TM number followed by -HR (which stands for Hand Receipt). The TM 5-3805-261-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e. COEI, BII and AAL) you must account for. As an aid to property accountability, additional -HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2:

The US Army Adjutant General Publications Center
 ATTN: AGLD-OD
 1655 Woodson Road
 St. Louis, MO 63114

1-4. REPORT EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR). If your grader 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: Commander, U.S. Army Tank-Automotive Command, ATTN: 1-2AMSTA-MB, Warren, MI 48397-5000. We'll send you a reply.

1-5. WARRANTY INFORMATION. The Caterpillar 130C Grader is warranted by Caterpillar Inc. for 15 months or 1500 hours of operation, whichever occurs first. The warranty starts on the date found on DA Form 2408-9 in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action through your organizational maintenance shop.

1-6. LIST OF ABBREVIATIONS.

A	after
AAL	Additional Authorization List
B	before
BII	Basic Issue Item
B.O.	blackout
oC	degrees Celsius
CAT.	Caterpillar
COE	Commercial Construction Equipment
COEI	Components of End Item
D	during
DA	Department of Army
D.C.	District of Columbia
EIR	Equipment Improvement Recommendations
EMS	Electronic Monitoring System
F	full
of	degrees Fahrenheit
FOPS	Falling object protective structure
FSCM	Federal Supply Code for Manufacturer
ft	feet
gal	gallons
H	high
-HR	Hand Receipts Manual
ICOEI	Integral Components of End Item
in	inch
kg	kilogram
km/h	kilometer per hour
l	liter
L	low
lb	pound
mm	millimeters
N	medium
mph	miles per hour
N ₂	neutral
N	dry nitrogen
NBC	Nuclear Biological Chemical
No.	number
PHICS	Preventive Maintenance Checks and Services
psi	pounds per square inch
Qty	quantity
R	reverse
Rec'd.	received
ROPS	Roll over protective structure
rpm	revolutions per minute
SER.	service
TANES	The Army Maintenance Management System
U/N	unit of measure

Section II. EQUIPMENT DESCRIPTION AND DATA

1-7. EQUIPMENT CHARACTERISTICS, CAPABILITIES AND FEATURES.

a. Characteristics.

- Excellent maneuverability
- Sound-suppressed ROPS cab
- Fast, precise blade control without drift
- Superior visibility, convenience and safety with true sit-down operation

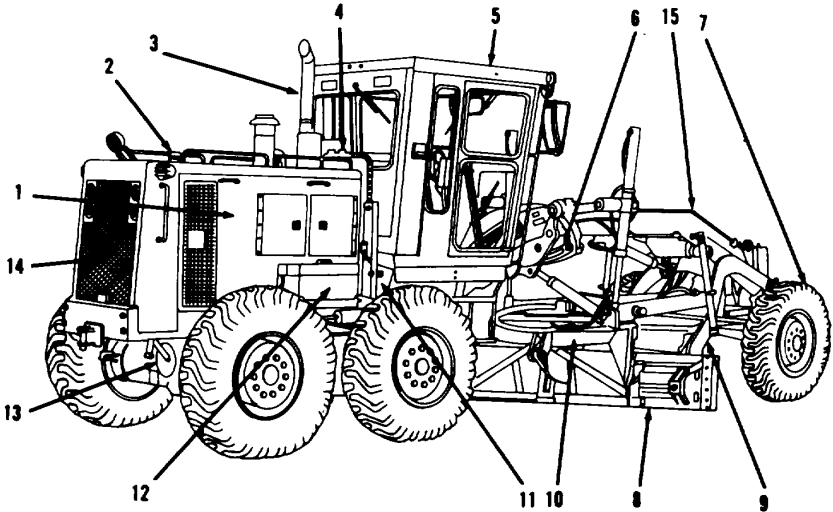
b. Capabilities and Features.

- Articulated frame and front wheel, lean steering
- Single-lever, full power-shift transmission with six forward and six reverse speeds
- Twelve foot blade with manual and hydraulic sideshift
- V-type, front mounted scarifier
- Supplemental power steering
- Ether starting aid
- Differential lock
- (EMS) electronic monitoring system
- Inching capability

1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

Legend

1. Engine
2. Fuel tank
3. Muffler and exhaust pipe
4. Hydraulic tank
5. ROPS
6. Centershift
7. Wheels and tires
8. Blade
9. Scarifier
10. Circle
11. Articulation hitch
12. Batteries
13. Transmission
14. Radiator
15. Tool box

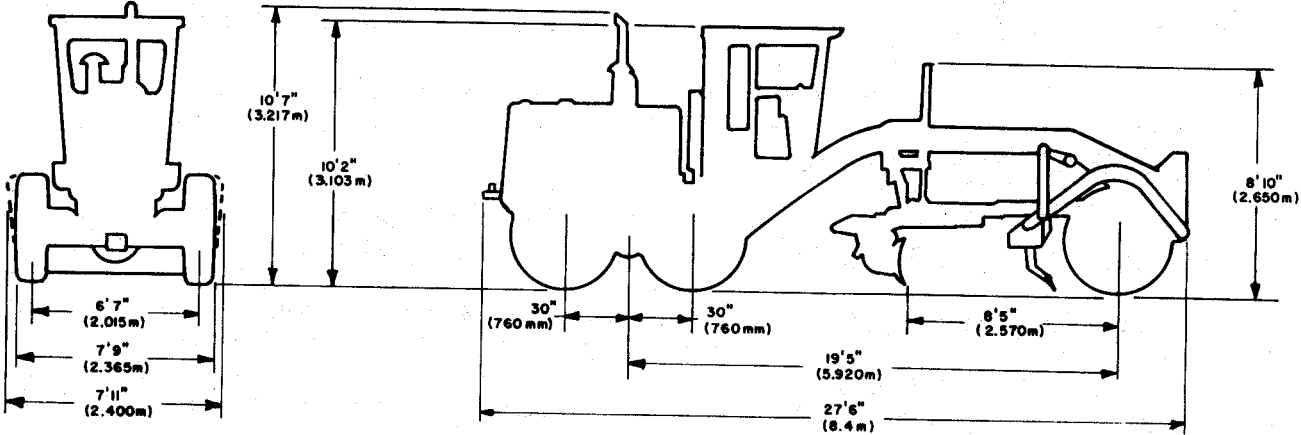


1-8. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS.

- a. Engine (1). Four cylinder, turbocharged diesel.
- b. Fuel Tank (2). 75 gallon (280 liters) capacity. Dipstick in filler neck. Drain valve in side of tank for sediment and moisture removal.
- c. Muffler and Exhaust Pipe (3). Muffler reduces noise. Exhaust pipe directs exhaust gases into air.
- d. Hydraulic Tank (4). 18 gallon (68.4 liters) capacity. Sight gage on side of tank.
- e. ROPS (5). Rollover protective structure. Also serves FOPS (Falling object protective structure).
- f. Centershift (6). Provides five different blade positions for high and low bank work and other operations needing extending side reach.
- g. Wheels and Tires (7). Interchangeable rim and wheel assemblies. Tubeless tires, 1300 x 24 size. Operating pressure, 35 psi (240 kPa).
- h. Blade (8). Hydraulically controlled from cab, 12 ft (3658 mm) wide. Manual and hydraulic side shift. Front to rear tip.
- i. Scarifier (9). Front mounted V-type. Removable shanks. Replaceable tips. Shank storage in front of vehicle.
- j. Circle (10). Hydraulically driven from control in cab. Rotates blade.
- k. Articulation Hitch (11). Provides 20 degree frame articulation, right or left. Hydraulically controlled from cab.
- l. Batteries (12). Two 12 volt batteries, one on each side, connected in series providing a 24 volt system.
- m. Transmission (13). Direct drive power shift transmission. Transmits power to differential.
- n. Radiator (14). 10 gallon (38 liter) capacity. Low and full marks in filler neck indicate proper coolant level.

1-9. EQUIPMENT DATA.

- a. Manufacturer. Caterpillar Inc.
- b. Model. R038 130 G
- c. Dimensions.



- d. Weight (Ready to work).
 - Weight on front wheels 9, 820 lb (4, 330 kg)
 - Weight on rear wheels 21, 360 lb (9, 445 kg)
 - Total weight 31, 180 lb. (13, 775 kg)
- e. Speeds.
 - 1st Forward and Reverse 2.3 mph (3.7 km/h)
 - 2nd Forward and Reverse 3.7 mph (6.0 km/h)
 - 3rd Forward and Reverse 5.9 mph (9.5 km/h)
 - 4th Forward and Reverse 9.7 mph (15.6 km/h)
 - 5th Forward and Reverse 15.5 mph (25.0 km/h)
 - 6th Forward and Reverse 24.5 mph (39.4 km/h)
- f. Circle Range.
- g. Blade Range.
 - Circle centershift,
 - Right 20.5 in (520 mm)
 - Left 25.5 in (650 mm)
- h. Blade Sideshift.
 - Manual,
 - Right 15 in (380 mm)
 - Left None
 - Hydraulic,
 - Right 26.5 in (670 mm)
 - Left 20.5 in (520 mm)

1-9. EQUIPMENT DATA.

i. Maximum Shoulder Reach Outside of Tires.*

Manual sideshift,	
Right	5 ft, 1 in (1.549 mm)
Left	4 ft, 3 in (1.295 mm)
Hydraulic.	
Right	6 ft, 1.5 in (1.867 mm)
Left	5 ft, 11 in (1.803 mm)

* With frame in crab position, add 3 ft, 11 in (940 mm) right or left.

j. Maximum Blade Position Angle, Right and Left.

90 degrees

k. Maximum Lift Above Ground.

17.25 in (440 mm)

l. Maximum Depth of Cut.

17.75 in (450 mm)

m. Hydraulic Blade Tip.

40 degrees forward; 5 degrees rear

n. Steering.

- Front wheels - Full hydraulic power.
Supplemental power steering (electric)
- Steering range 50 degrees left or right
Frame - Hydraulically -
actuated steering 20 degrees left or right
Minimum turning radius
outside front tires) 24 ft (7, 315 mm)**

** Using front wheel steering, frame articulation and differential unlock.

o. Capacities.

Fuel tank	75 gal (284 l)
Radiator	10 gal (38 l)
Crankcase	5.5 gal (21 l)
Transmission and final drive	21 gal (79 l)
Tandem housing (each)	17 gal (64 l)
Hydraulic system	18 gal (68 l)

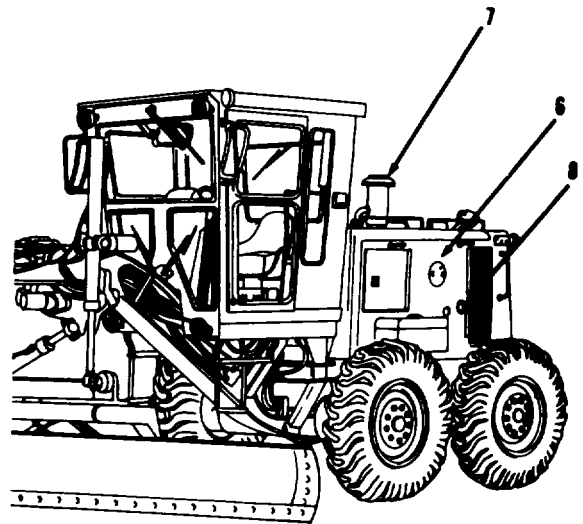
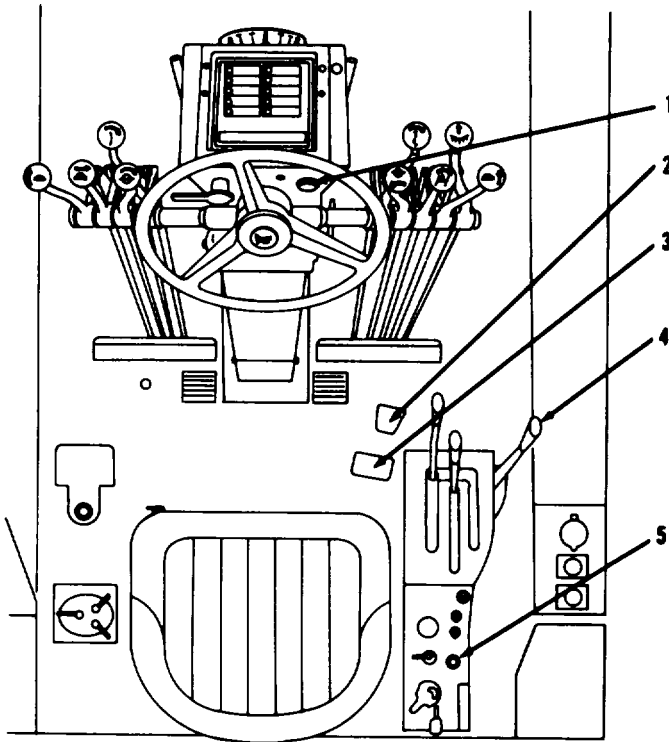
Section III. TECHNICAL PRINCIPLES OF OPERATION

1-10. **ENGINE.** Model Number 3304. Four cylinder turbocharged diesel.

1-11. **FUEL SYSTEM.**

Legend

1. EMS-Fault light
2. Accelerator
3. Decelerator
4. Governor
5. Ether starting aid
6. Fuel tank
7. Air cleaner
8. Fuel tank drain valve



- a. Accelerator (2). Increases engine speed above governor control setting. Also used in starting and stopping the engine.
- b. Governor (4). Controls the amount of fuel needed to maintain desired engine rpm.
- c. Decelerator (3). Decreases engine speed below governor control setting.

1-11. FUEL SYSTEM.

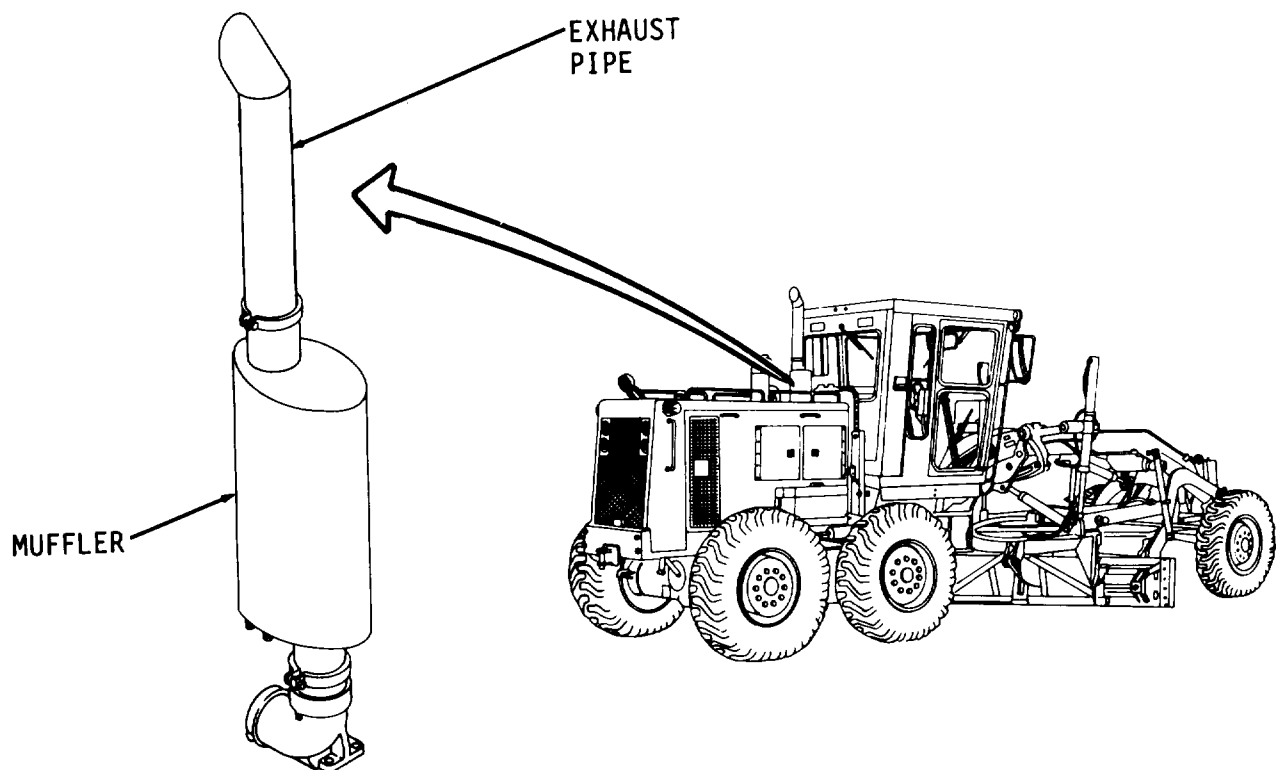
d. Fuel Tank (6). The fuel tank, 75 gal (284 liter) capacity, contains a dipstick in the filler neck for checking the fuel level. A shut-off valve is located in the lower right front of the tank. A drain valve (8) is located on the left side of the tank and is used to drain sediment and moisture from the tank.

e. Air Cleaner (7). Removes dust and dirt from air before it enters the engine. An air cleaner indicator is located on air cleaner elbow. It indicates when air flow is blocked by dirty filters.

f. Fault Light (1) and Alarm. The fault light will blink on and off and the fault alarm will sound if the fuel pressure drops.

g. Ether Start Aid (5). Injects a metered amount of ether into the engine fuel system to aid in cold weather starting.

1-12. EXHAUST SYSTEM.



a. Muffler. Muffles engine noise.

b. Exhaust Pipe. Discharges engine smoke into the atmosphere.