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
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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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TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION
Section I General Information 1-2
Section II Equipment Description and Data 1-4
Section III Technical Principles of Operation 1-6

CHAPTER 2
OPERATION INSTRUCTIONS
Section I Description and Use of Operator's Controls and Indicators 2-2
Section II Preventive Maintenance Checks and Services (PMCS) 2-23
Section III Operation Under Usual Conditions 2-43
Section IV Operation Under Unusual Conditions 2-59
Section V Towing and Special Techniques 2-67

CHAPTER 3
MAINTENANCE INSTRUCTIONS
Section I Lubrication 3-1
Section II Operator/Crew Troubleshooting Procedures 3-2
Section III Maintenance Procedures 3-12

APPENDIX A REFERENCES
APPENDIX B COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST
APPENDIX C ADDITIONAL AUTHORIZATION LIST
APPENDIX D EXPENDABLE ITEMS AND MATERIALS LIST

ALPHABETICAL INDEX
ERROR REPORTING FORM (DA 2028-2)
METRIC CONVERSION TABLE


Change 1 i
Legend
1. Fuel tank 9. Tool box
2. Hydraulic tank 10. Operator's compartment
3. Centershift 11. Antipivot pin
4. End bit 12. Air cleaner
5. Fuse box 13. Circle
7. Radiator 15. Cutting edge
8. Wheel lean lock pin 16. Moldboard
CHAPTER 1
INTRODUCTION

CHAPTER OVERVIEW

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

INDEX

Section Title | Paragraph | Page
-------------|-----------|-----
I | GENERAL INFORMATION | 1-1 | 1-2
| Scope | 1-1 | 1-2
| Maintenance Forms and Records | 1-2 | 1-2
| Hand Receipts (10 HR) | 1-3 | 1-2
| Reporting Equipment Improvement Recommendations (EIR’s) | 1-4 | 1-2
| Warranty Information | 1-5 | 1-3
| List of Abbreviations | 1-6 | 1-3

II | EQUIPMENT DESCRIPTION AND DATA | 1-7 | 1-4
| Equipment Characteristics, Capabilities and Features | 1-7 | 1-4
| Location and Description of Major Components | 1-8 | 1-4
| Equipment Data | 1-9 | 1-6

III | TECHNICAL PRINCIPLES OF OPERATION | 1-10 | 1-8
| Engine | 1-10 | 1-8
| Fuel System | 1-11 | 1-8
| Exhaust System | 1-12 | 1-9
| Cooling System | 1-13 | 1-10
| Electrical System | 1-14 | 1-10
| Transmission and Controls | 1-15 | 1-15
| Rear Axle and Differential Lock Switch and Indicator | 1-16 | 1-16
| Air System | 1-17 | 1-16
| Brakes | 1-18 | 1-17
| Steering | 1-19 | 1-18
| Earth Moving Equipment | 1-20 | 1-19
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.


NOTE

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


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.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>A</td>
<td>after</td>
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<tr>
<td>AAL</td>
<td>Additional Authorization List</td>
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<tr>
<td>B</td>
<td>before</td>
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<td>BII</td>
<td>Basic Issue Item</td>
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<tr>
<td>B.O.</td>
<td>blackout</td>
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<td>oC</td>
<td>degrees Celsius</td>
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<td>CAT.</td>
<td>Caterpillar</td>
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<td>COE</td>
<td>Commercial Construction Equipment</td>
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<tr>
<td>COEI</td>
<td>Components of End Item</td>
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<td>D</td>
<td>during</td>
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<td>DA</td>
<td>Department of Army</td>
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<tr>
<td>D.C.</td>
<td>District of Columbia</td>
</tr>
<tr>
<td>EIR</td>
<td>Equipment Improvement Recommendations</td>
</tr>
<tr>
<td>EMS</td>
<td>Electronic Monitoring System</td>
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<td>F</td>
<td>full</td>
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<td>F of</td>
<td>degrees Fahrenheit</td>
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<tr>
<td>FOPS</td>
<td>Falling object protective structure</td>
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<tr>
<td>FSCM</td>
<td>Federal Supply Code for Manufacturer</td>
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<tr>
<td>ft</td>
<td>feet</td>
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<td>gal</td>
<td>gallons</td>
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<td>H</td>
<td>high</td>
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<td>-HR</td>
<td>Hand Receipts Manual</td>
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<tr>
<td>ICOEI</td>
<td>Integral Components of End Item</td>
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<tr>
<td>in</td>
<td>inch</td>
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<tr>
<td>kg</td>
<td>kilogram</td>
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<td>km/h</td>
<td>kilometer per hour</td>
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<td>1</td>
<td>liter</td>
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<td>L</td>
<td>low</td>
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<td>pound</td>
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<td>mm</td>
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<td>miles per hour</td>
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<tr>
<td>N2</td>
<td>neutral</td>
</tr>
<tr>
<td>N</td>
<td>dry nitrogen</td>
</tr>
<tr>
<td>NBC</td>
<td>Nuclear Biological Chemical</td>
</tr>
<tr>
<td>No.</td>
<td>number</td>
</tr>
<tr>
<td>PHICS</td>
<td>Preventive Maintenance Checks and Services</td>
</tr>
<tr>
<td>psi</td>
<td>pounds per square inch</td>
</tr>
<tr>
<td>Qty</td>
<td>quantity</td>
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<tr>
<td>R</td>
<td>reverse</td>
</tr>
<tr>
<td>Rec’d.</td>
<td>received</td>
</tr>
<tr>
<td>ROPS</td>
<td>Roll over protective structure</td>
</tr>
<tr>
<td>rpm</td>
<td>revolutions per minute</td>
</tr>
<tr>
<td>SER.</td>
<td>service</td>
</tr>
<tr>
<td>TANES</td>
<td>The Army Maintenance Management System</td>
</tr>
<tr>
<td>U/N</td>
<td>unit of measure</td>
</tr>
</tbody>
</table>
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)
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.**

- **Muffler.** Muffles engine noise.

- **Exhaust Pipe.** Discharges engine smoke into the atmosphere.