

**5E / 2BV BLOWER,  
113 / 172 CLIPPER,  
110G, 210G,  
240G / 260G  
TRIMMER/CUTTERS**

**John Deere Horicon Works  
TM1430 (18APR90)**

LITHO IN U.S.A.  
ENGLISH

# INTRODUCTION

## FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product support program.

### FOS MANUALS—REFERENCE

### TECHNICAL MANUALS—MACHINE SERVICE

### COMPONENT MANUALS—COMPONENT SERVICE

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand-alone manuals covering multiple machine applications.

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INDX

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# Section 10 GENERAL INFORMATION

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## RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.



O53,ALERT -19-26JAN90

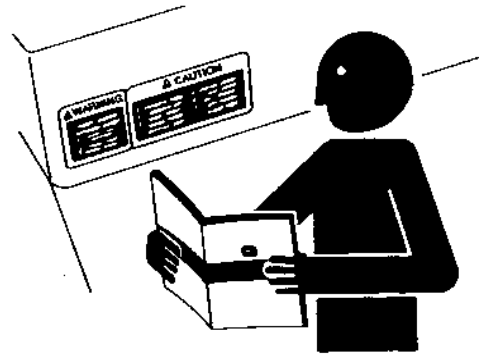
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## FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



O53,READ -19-26JAN90

-UN-23AUG88  
TS201

## UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



**▲ WARNING**

**▲ CAUTION**

O53,SIGNAL -19-26JAN90

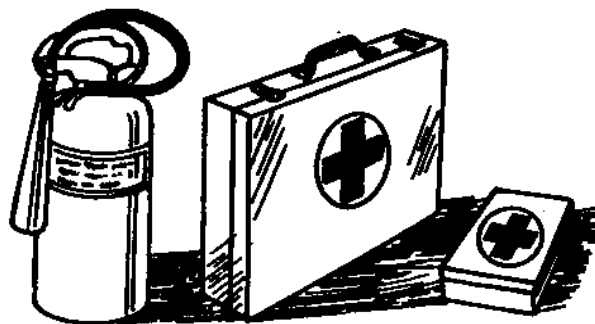
-19-30SEP88  
TS187

## PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



O53,FIRE2 -19-26JAN90

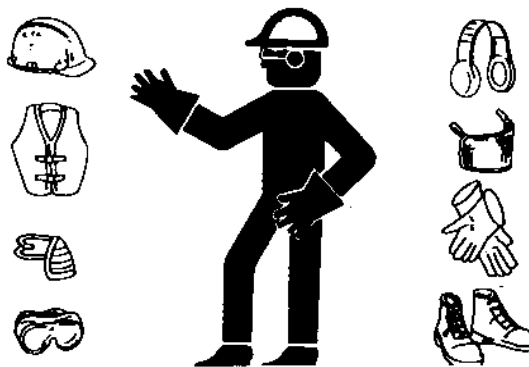
TS291 -UN-23AUG88

## WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



O53,WEAR -19-26JAN90

TS206 -UN-23AUG88

## HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



O53,FLAME -19-26JAN90

TS227 -UN-23AUG88

## INSPECT THE CUTTING AREA

Remove all debris (string, wire or cords) which might clog cutting head.

Remove objects (bottles, cans or sticks) that might be thrown by clipper, trimmer/edger or cutter.



6M3,1010E,A3 -19-15MAR88

TY14127 -UN-02MAY89

## OPERATE BLOWER SAFELY

Keep people and pets out of the area where you are using the blower.

Do not let children operate the blower.

Do not point blower air pipes in the direction of people or pets.

Keep your hair from being drawn into the blower.

Do not touch cylinder or muffler assembly when you handle blower.

Start blower on the ground, not on operator's back.

Move air pipe or fan intake to avoid air flow restriction.

Before your service, adjust, clean, fuel, or inspect blower:

—Stop engine.

—Wait for engine to cool.

Keep blower engine clean. Remove grass, leaves, oil, and dirt before you start engine.

M22,SAJ,A -19-24AUG87

## OPERATE CLIPPER AND TRIMMERS SAFELY

Keep people and pets out of the area where you are using the machine.

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

Do not run engine in an enclosed area. Exhaust fumes contain carbon monoxide, an odorless and deadly poison.

Keep machine hand grips clean and dry.

When operating machine, hold firmly with both hands. Keep proper footing and balance.

Move machine away from your body. Do not draw blades or cutting head toward you. Do not reach to make a cut.

When operating trimmer with optional blade installed, always use shoulder harness and grip handlebars securely.

Use metal shield when using blades on trimmer/cutter.

Take precautions to avoid “kickback”.

If cutting blade or blades are cracked, replace immediately.

Do not attempt to fill fuel tank, make adjustment or clean while engine is running.

6M3,1010E,A4 -19-19APR88

## 5E AND 2BV BLOWER SPECIFICATIONS

| <b>Engine:</b>            |       | <b>5E BLOWER:</b>                                                                                    | <b>2BV BLOWER:</b>                                                                                   |
|---------------------------|-------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Type                      | ..... | 2-Cycle, air cooled                                                                                  | 2-Cycle, air cooled                                                                                  |
| Displacement              | ..... | 44 cm <sup>3</sup> (2.7 cu in.)                                                                      | 21 cm <sup>3</sup> (1.3 cu in.)                                                                      |
| Bore                      | ..... | 40 mm (1.60 in.)                                                                                     | 32 mm (1.3 in.)                                                                                      |
| Stroke                    | ..... | 35 mm (1.40 in.)                                                                                     | 26 mm (1.0 in.)                                                                                      |
| Compression Ratio         | ..... | 7.0:1                                                                                                | 7.0:1                                                                                                |
| Carburetor                | ..... | Diaphragm pump (Walbro WA-191A)                                                                      | Diaphragm pump (ZAMA C1U-K11)                                                                        |
| Lubrication               | ..... | Positive mist type (fuel/oil mix)                                                                    | Positive mist type (fuel/oil mix)                                                                    |
| Fuel                      | ..... | Regular (leaded or unleaded)<br>gasoline and 2-cycle engine oil.<br>(See Group 15, in this section.) | Regular (leaded or unleaded)<br>gasoline and 2-cycle engine oil.<br>(See Group 15, in this section.) |
| Idle Speed                | ..... | 2300—2700 rpm                                                                                        | 2500—3400 rpm                                                                                        |
| Operating Speed           | ..... | 2500—7200 rpm                                                                                        | 2500—7200 rpm                                                                                        |
| Starter                   | ..... | Pull start, auto-rewind                                                                              | Pull start, auto-rewind                                                                              |
| <b>Electrical System:</b> |       |                                                                                                      |                                                                                                      |
| Ignition                  | ..... | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                                       | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                                       |
| Spark Plug                | ..... | John Deere AM54611<br>(Champion CJ-6Y)                                                               | Champion CJ-7Y or equivalent                                                                         |
| Spark Plug Gap            | ..... | 0.65 mm (0.025 in.)                                                                                  | 0.65 mm (0.025 in.)                                                                                  |
| Spark Plug Torque         | ..... | 15 N·m (133 lb-in.)                                                                                  | 15 N·m (133 lb-in.)                                                                                  |
| Ignition Timing           | ..... | BTDC 25°                                                                                             | BTDC 30°                                                                                             |
| Magneto Air Gap           | ..... | 0.35 mm (0.014 in.)                                                                                  | 0.35 mm (0.014 in.)                                                                                  |
| <b>Capacities:</b>        |       |                                                                                                      |                                                                                                      |
| Fuel Tank                 | ..... | 1.5 L (1.6 qt)                                                                                       | 0.45 L (15.2 fl. oz.)                                                                                |
| <b>Blower:</b>            |       |                                                                                                      |                                                                                                      |
| Type                      | ..... | Centrifugal (Single stage)                                                                           | Centrifugal (Single stage)                                                                           |
| Air Volume (MAX)          | ..... | 11 m <sup>3</sup> /min (388 cfm)                                                                     | 11 m <sup>3</sup> /min (388 cfm)                                                                     |
| High Speed (MAX)          | ..... | 290 km/h (180 mph)                                                                                   | 161 km/h (100 mph)                                                                                   |
| Discharge Pipe I.D.       | ..... | 58 mm (2.25 in.)                                                                                     | 70 mm (2.75 in.)                                                                                     |
| Length                    | ..... | 352 mm (13.9 in.)                                                                                    | 325 mm (12.8 in.)                                                                                    |
| Height                    | ..... | 466 mm (18.4 in.)                                                                                    | 330 mm (13.0 in.)                                                                                    |
| Width                     | ..... | 426 mm (16.8 in.)                                                                                    | 216 mm (8.5 in.)                                                                                     |
| Dry Weight                |       |                                                                                                      |                                                                                                      |
| Without Blower Pipe       | ..... | 7.5 kg (16.5 lb)                                                                                     | 3.5 kg (7.7 lb)                                                                                      |
| With Blower Pipe          | ..... | 9 kg (19.8 lb)                                                                                       | 3.9 kg (8.5 lb)                                                                                      |

(Specifications and design subject to change without notice.)

6M3,1020E,A1 -19-19APR88

## 113 AND 172 HEDGE CLIPPER SPECIFICATIONS

|                             |                                                                                                      |                                                                                                       |
|-----------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Engine:</b>              | <b>113 HEDGE CLIPPER:</b>                                                                            | <b>172 HEDGE CLIPPER:</b>                                                                             |
| Type . . . . .              | 2-Cycle, air cooled                                                                                  | 2-Cycle, air cooled                                                                                   |
| Displacement . . . . .      | 21 cm <sup>3</sup> (1.3 cu in.)                                                                      | 21 cm <sup>3</sup> (1.3 cu in.)                                                                       |
| Bore . . . . .              | 32 mm (1.27 in.)                                                                                     | 32 mm (1.27 in.)                                                                                      |
| Stroke . . . . .            | 26 mm (1.02 in.)                                                                                     | 26 mm (1.02 in.)                                                                                      |
| Compression Ratio . . . . . | 6.5:1                                                                                                | 6.5:1                                                                                                 |
| Carburetor . . . . .        | Diaphragm pump (Walbro WYL-3)                                                                        | Diaphragm pump (ZAMA C1U-K10)                                                                         |
| Lubrication . . . . .       | Positive mist type (fuel/oil mix)                                                                    | Positive mist type (fuel/oil mix)                                                                     |
| Fuel . . . . .              | Regular (leaded or unleaded)<br>gasoline and 2-cycle engine oil.<br>(See Group 15, in this section.) | Regular (leaded or unleaded)<br>gasoline and 2-cycle engine oil.<br>(See Group 15, in this sections.) |
| Idle Speed . . . . .        | 2500—3000 rpm                                                                                        | 2500—2700 rpm                                                                                         |
| Operating Speed . . . . .   | 6000—8000 rpm                                                                                        | 5000—8000 rpm                                                                                         |
| Clutch . . . . .            | Automatic 2-Shoe Centrifugal Type                                                                    | Automatic 2-Shoe Centrifugal Type                                                                     |
| Starter . . . . .           | Pull start, auto-rewind                                                                              | Pull start, auto-rewind                                                                               |
| <b>Electrical System:</b>   |                                                                                                      |                                                                                                       |
| Ignition . . . . .          | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                                       | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                                        |
| Spark Plug . . . . .        | John Deere AM54450<br>(Champion CJ-8)                                                                | John Deere TY6079 (Champion CJ-8Y)                                                                    |
| Spark Plug Gap . . . . .    | 0.65 mm (0.025 in.)                                                                                  | 0.65 mm (0.025 in.)                                                                                   |
| Spark Plug Torque . . . . . | 15 N·m (133 lb-in.)                                                                                  | 15 N·m (133 lb-in.)                                                                                   |
| Ignition Timing . . . . .   | BTDC 27°                                                                                             | BTDC 23°                                                                                              |
| Magneto Air Gap . . . . .   | 0.35 mm (0.014 in.)                                                                                  | 0.35 mm (0.014 in.)                                                                                   |
| <b>Capacities:</b>          |                                                                                                      |                                                                                                       |
| Fuel Tank . . . . .         | 0.3 L (11.8 fl oz U.S.)                                                                              | 0.25 L (10 fl oz. U.S.)                                                                               |
| <b>Handle:</b>              |                                                                                                      |                                                                                                       |
| Type . . . . .              | Direct                                                                                               | Direct                                                                                                |
| Front . . . . .             | Rubber grip with hand guard                                                                          | Rubber grip with hand guard                                                                           |
| Rear . . . . .              | Rubber grip with throttle trigger                                                                    | Plastic grip with throttle trigger                                                                    |
| <b>Gear Case:</b>           |                                                                                                      |                                                                                                       |
| Reduction Ratio . . . . .   | 1:5.88                                                                                               | 1:5.88                                                                                                |
| Gear Tooth . . . . .        | Spur                                                                                                 | Spur                                                                                                  |
| <b>Cutter:</b>              |                                                                                                      |                                                                                                       |
| Blade Drive . . . . .       | Reciprocating dual-action type                                                                       | Reciprocating dual-action type                                                                        |
| Length . . . . .            | 570 mm (22.4 in.)                                                                                    | 500 mm (19.75 in.)                                                                                    |
| Teeth . . . . .             | Single-edged                                                                                         | Double-edged                                                                                          |
| Length . . . . .            | 23 mm (0.91 in.)                                                                                     | 21 mm (0.83 in.)                                                                                      |
| Pitch . . . . .             | 35 mm (1.40 in.)                                                                                     | 35 mm (1.40 in.)                                                                                      |
| <b>Overall:</b>             |                                                                                                      |                                                                                                       |
| Length . . . . .            | 870 mm (34.3 in.)                                                                                    | 894 mm (35.2 in.)                                                                                     |
| Height . . . . .            | 190 mm (7.5 in.)                                                                                     | 178 mm (7 in.)                                                                                        |
| Width . . . . .             | 240 mm (9.4 in.)                                                                                     | 224 mm (8.8 in.)                                                                                      |
| Dry Weight . . . . .        | 4.2 kg (9.2 lb)                                                                                      | 4.3 kg (9.5 lb)                                                                                       |

(Specifications and design subject to change without notice.)

6M3,1020E,A2 -19-19APR88

**110G, 210G, 240G AND 260G TRIMMER  
SPECIFICATIONS**

|                               | 110G                                                                                                               | 210G                       |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------|
| <b>Engine:</b>                |                                                                                                                    |                            |
| Type .....                    | 2-Cycle, Air Cooled                                                                                                |                            |
| Displacement .....            | 21.2 cm <sup>3</sup> (1.29 cu. in.)                                                                                |                            |
| Bore .....                    | 32 mm (1.27 in.)                                                                                                   |                            |
| Stroke .....                  | 26 mm (1.02 in.)                                                                                                   |                            |
| Compression Ratio .....       | 6.5:1                                                                                                              |                            |
| Carburetor .....              | Diaphragm pump (Walbro WYL-1H7)                                                                                    |                            |
| Lubrication .....             | Positive mist type (fuel/oil mix)                                                                                  |                            |
| Fuel .....                    | Regular (leaded) gasoline and 2-cycle engine oil.<br>(See Group 15, in this section.)                              |                            |
| Idle Speed .....              | 3000—3300 rpm                                                                                                      | 2700—3000 rpm              |
| Clutch Engagement Speed ..... | None                                                                                                               | 3800—4200 rpm              |
| Operating Speed .....         | 8000 rpm                                                                                                           |                            |
| Clutch .....                  | Direct Drive                                                                                                       | Automatic Centrifugal Type |
| Starter .....                 | Pull start, Auto-rewind                                                                                            |                            |
| <b>Electrical System:</b>     |                                                                                                                    |                            |
| Ignition .....                | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                                                     |                            |
| Spark Plug .....              | John Deere TY15207 (Champion CJ-7Y)                                                                                |                            |
| Spark Plug Gap .....          | 0.65 mm (0.025 in.)                                                                                                |                            |
| Spark Plug Torque .....       | 15 N·m (133 lb-in.)                                                                                                |                            |
| Ignition Timing .....         | BTDC 30°                                                                                                           |                            |
| Magneto Air Gap .....         | 0.35 mm (0.014 in.)                                                                                                |                            |
| <b>Capacities:</b>            |                                                                                                                    |                            |
| Fuel Tank .....               | 0.4 L (13.6 fl oz U.S.)                                                                                            |                            |
| <b>Handle:</b>                |                                                                                                                    |                            |
| Front .....                   | Dee-Loop                                                                                                           |                            |
| Rear .....                    | Rubber grip with throttle trigger                                                                                  |                            |
| <b>Driveshaft:</b>            |                                                                                                                    |                            |
| Housing .....                 | Aluminum                                                                                                           |                            |
| O.D./I.D. ....                | 22.3 mm (0.875 in.)/19 mm (0.750 in.)                                                                              |                            |
| Length .....                  | 1222 mm (48.1 in.)                                                                                                 |                            |
| Driveshaft .....              | High tensile steel                                                                                                 |                            |
| Diameter .....                | 6.4 mm (0.250 in.)                                                                                                 |                            |
| Length .....                  | 1219 mm (48.0 in.)                                                                                                 |                            |
| Cutting Fastener .....        | Standard thread 3/8—24 UNF                                                                                         |                            |
| <b>Cutting Parts</b>          |                                                                                                                    |                            |
| Cutting Head .....            | Single exit nylon line cutting head with<br>2.03 mm (0.080 in.) diameter cutting line.<br>Plastic Tri-cutter blade |                            |
| Blade (Optional) .....        |                                                                                                                    |                            |
| <b>Overall:</b>               |                                                                                                                    |                            |
| Length .....                  | 1400 mm (55.1 in.)                                                                                                 |                            |
| Height .....                  | 300 mm (11.8 in.)                                                                                                  |                            |
| Width .....                   | 330 mm (13 in.)                                                                                                    |                            |
| Dry Weight .....              | 3.6 kg (8 lb)                                                                                                      | 4 kg (9 lb)                |
| Cutting Rotation .....        | Clockwise as viewed from top                                                                                       |                            |

(Specifications and design subject to change without notice.)

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| Engine:                       | 240G                                                                                | 260G                |
|-------------------------------|-------------------------------------------------------------------------------------|---------------------|
| Type .....                    | 2-Cycle, Air Cooled                                                                 |                     |
| Displacement .....            | 21.2 cm <sup>3</sup> (1.29 cu. in.)                                                 |                     |
| Bore .....                    | 32 mm (1.27 in.)                                                                    |                     |
| Stroke .....                  | 26 mm (1.02 in.)                                                                    |                     |
| Compression Ratio .....       | 6.5:1                                                                               |                     |
| Carburetor .....              | Diaphragm pump (Zama C1U-K9)                                                        |                     |
| Lubrication .....             | Positive mist type (fuel/oil mix)                                                   |                     |
| Fuel .....                    | Regular (leaded) gasoline and 2-cycle engine oil. (See Group 15, in this section.)  |                     |
| Idle Speed .....              | 2500—3000 rpm                                                                       |                     |
| Clutch Engagement Speed ..... | 3800—4200 rpm                                                                       |                     |
| Operating Speed .....         | 6000—8000 rpm                                                                       |                     |
| Clutch .....                  | Automatic Centrifugal Type                                                          |                     |
| Starter .....                 | Pull start, Auto-rewind                                                             |                     |
| <b>Electrical System:</b>     |                                                                                     |                     |
| Ignition .....                | Flywheel magneto, CDI system<br>(Capacitor Discharge Ignition)                      |                     |
| Spark Plug .....              | John Deere TY15207 (Champion CJ-7Y)                                                 |                     |
| Spark Plug Gap .....          | 0.65 mm (0.025 in.)                                                                 |                     |
| Spark Plug Torque .....       | 15 N·m (133 lb-in.)                                                                 |                     |
| Ignition Timing .....         | BTDC 30°                                                                            |                     |
| Magneto Air Gap .....         | 0.35 mm (0.014 in.)                                                                 |                     |
| <b>Capacities:</b>            |                                                                                     |                     |
| Fuel Tank .....               | 0.4 L (13.6 fl oz U.S.)                                                             |                     |
| <b>Handle:</b>                |                                                                                     |                     |
| Front .....                   | Dee-Loop                                                                            | Angled Dee-Loop     |
| Rear .....                    | Rubber grip with throttle trigger                                                   |                     |
| <b>Driveshaft:</b>            |                                                                                     |                     |
| Housing .....                 | Aluminum                                                                            |                     |
| O.D./I.D. ....                | 25 mm (0.980 in.)/22 mm (0.870 in.)                                                 |                     |
| Length .....                  | 1400 mm (55.1 in.)                                                                  | 1500 mm (59.1 in.)  |
| Driveshaft .....              | High tensile steel                                                                  |                     |
| Diameter .....                | 6.4 mm (0.250 in.)                                                                  |                     |
| Length .....                  | 1422 mm (56.0 in.)                                                                  | 1522 mm (59.9 in.)  |
| Cutting Fastener .....        | Left-hand thread M10 x 1.25 mm pitch                                                |                     |
| <b>Gearcase</b>               |                                                                                     |                     |
| Reduction Ratio .....         | 1:1.36                                                                              |                     |
| Gear Tooth .....              | Spiral Bevel Gear                                                                   |                     |
| <b>Cutting Parts</b>          |                                                                                     |                     |
| Cutting Head .....            | Two exit nylon line cutting head with<br>2.40 mm (0.095 in.) diameter cutting line. |                     |
| Blades (Optional) .....       | Plastic Tri-cutter blade<br>8-Tooth steel blade<br>80-Tooth steel blade             |                     |
| <b>Overall:</b>               |                                                                                     |                     |
| Length .....                  | 1665 mm (65.60 in.)                                                                 | 1770 mm (69.70 in.) |
| Height .....                  | 300 mm (11.8 in.)                                                                   |                     |
| Width .....                   | 330 mm (13 in.)                                                                     |                     |
| Dry Weight .....              | 4.4 kg (9.7 lb)                                                                     | 5.0 kg (11 lb)      |
| Cutting Rotation .....        | Counterclockwise as viewed from top                                                 |                     |

(Specifications and design subject to change without notice.)

6M3,1020E,A4 -19-15MAR88

## PRELIMINARY ENGINE TESTS

**IMPORTANT:** Perform the following service operations prior to any machine disassembly to avoid unnecessary repairs.

| OPERATION                                                                                   | SPECIFICATIONS                                | REFERENCE  |
|---------------------------------------------------------------------------------------------|-----------------------------------------------|------------|
| Test Compression                                                                            |                                               |            |
| 5E Blower . . . . .                                                                         | 690 kPa, 6.9 Bar<br>(100 psi) (MIN) . . . . . | Section 20 |
| 2BV Blower<br>113 and 172 Hedge Clippers,<br>110G, 210G, 240G and<br>260G Trimmer . . . . . | 540 kPa, 5.4 Bar<br>(78 psi) (MIN) . . . . .  | Section 20 |
| Test Crankcase Leakage . . . . .                                                            |                                               | Section 20 |
| Test Carburetion . . . . .                                                                  |                                               | Section 30 |
| Test Ignition . . . . .                                                                     |                                               | Section 40 |

6M3,1025E,A1 -19-15MAR88

**TUNE-UP AND ADJUSTMENT GUIDE**

**IMPORTANT;** Perform the following service operations prior to any machine disassembly to avoid unnecessary repairs.

| <b>OPERATION</b>                                 | <b>SPECIFICATIONS</b>            | <b>REFERENCE</b> |
|--------------------------------------------------|----------------------------------|------------------|
| Clean and Regap Spark Plug . . . . .             | 0.65 mm<br>(0.025 in.) . . . . . | Section 40       |
| Adjust Magneto Air Gap . . . . .                 | 0.35 mm<br>(0.014 in.) . . . . . | Section 40       |
| Clean Muffler and Exhaust Port . . . . .         |                                  | Section 20       |
| Clean Carbon from Combustion Chamber . . . . .   |                                  | Section 20       |
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| Check Throttle Linkage and Cable . . . . .       |                                  | Section 30       |
| Clean Fuel Filter . . . . .                      |                                  | Section 30       |
| Adjust Carburetor . . . . .                      |                                  | Section 30       |
| Check Cutting Head . . . . .                     |                                  | Section 50       |
| Adjust Blade Tension . . . . .                   |                                  | Section 50       |
| Check Lubricant in Housing or Gearcase . . . . . |                                  | Section 50       |

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## TWO-CYCLE GASOLINE ENGINE OIL

Mix oil and gasoline according to instructions.

John Deere Two-Cycle Engine Oil is recommended.

Also recommended are oils containing ashless-type additives and certified by BIA for Service TC-W.

Other oils may be used if they are two-cycle engine oils containing ashless-type additives.

O53,GAS2 -19-26JAN90

## MIXING FUEL

**IMPORTANT:** Use leaded or unleaded gasoline with a minimum octane rating of 87. Do not use ethyl gasoline, gasohol, or other alcohol blended fuels.

When using oil meeting BIA certification for TC-W service, use 32:1 ratio fuel-oil mixture.

When using John Deere 2-Cycle Engine Oil, use a 50:1 ratio fuel-oil mixture.

| FUEL MIX CHART (32:1 Mixture) |                 |           |                 |               |                 |
|-------------------------------|-----------------|-----------|-----------------|---------------|-----------------|
| U.S.                          |                 | IMPERIAL  |                 | S.I. (Metric) |                 |
| Gas                           | Oil To Be Added | Gas       | Oil To Be Added | Petrol        | Oil To Be Added |
| 1 gal                         | 4 oz            | 1 gal     | 5 oz            | 4 L           | 125 mL          |
| 2 gal                         | 8 oz            | 2 gal     | 10 oz           | 8 L           | 250 mL          |
| 2-1/2 gal                     | 10 oz           | 2-1/2 gal | 12.5 oz         | 10 L          | 313 mL          |
| 3 gal                         | 12 oz           | 3 gal     | 15 oz           | 12 L          | 375 mL          |
| 4 gal                         | 16 oz           | 4 gal     | 20 oz           | 16 L          | 500 mL          |
| 5 gal                         | 20 oz           | 5 gal     | 25 oz           | 20 L          | 625 mL          |
| 6 gal                         | 24 oz           | 6 gal     | 30 oz           | 24 L          | 750 mL          |

| FUEL MIX CHART (50:1 Mixture) |                 |           |                 |               |                 |
|-------------------------------|-----------------|-----------|-----------------|---------------|-----------------|
| U.S.                          |                 | IMPERIAL  |                 | S.I. (Metric) |                 |
| Gas                           | Oil To Be Added | Gas       | Oil To Be Added | Petrol        | Oil To Be Added |
| 1 gal                         | 2.5 oz          | 1 gal     | 3.2 oz          | 4 L           | 80 cc           |
| 2 gal                         | 5.0 oz          | 2 gal     | 6.4 oz          | 8 L           | 160 cc          |
| 2-1/2 gal                     | 6.4 oz          | 2-1/2 gal | 8.0 oz          | 10 L          | 200 cc          |
| 3 gal                         | 7.5 oz          | 3 gal     | 9.6 oz          | 12 L          | 240 cc          |
| 4 gal                         | 10.0 oz         | 4 gal     | 12.8 oz         | 16 L          | 320 cc          |
| 5 gal                         | 12.5 oz         | 5 gal     | 16.0 oz         | 20 L          | 400 cc          |
| 6 gal                         | 15.0 oz         | 6 gal     | 19.2 oz         | 24 L          | 480 cc          |

6M3,1015E,A1 -19-15MAR88

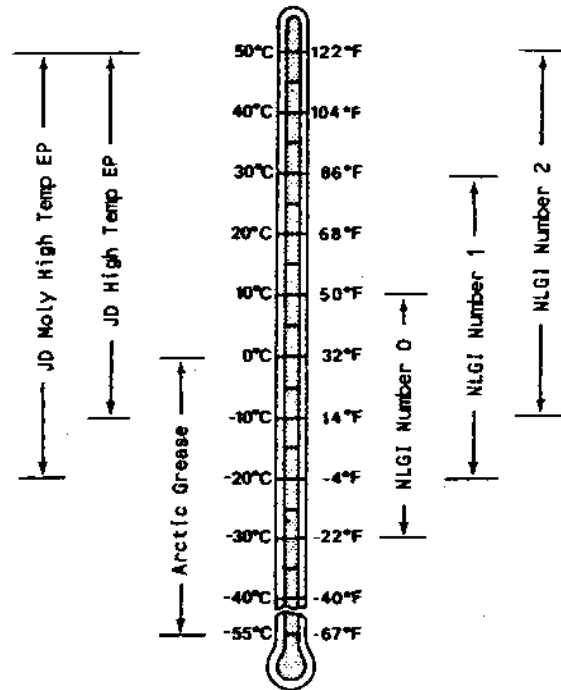
## EXTREME PRESSURE GREASE

Use grease based on the expected air temperature range during the service interval.

John Deere Moly High Temperature EP Grease and John Deere High Temperature EP Grease are recommended.

Other greases that may be used are:

- SAE Multipurpose EP Grease with 3 to 5 percent molybdenum disulfide.
- SAE Multipurpose EP Grease.
- Greases meeting Military Specification MIL-G-10924C may be used as arctic grease.



O53,GREA1 -19-26JAN90

TS248 -19-07OCT88

## BLADE OIL

John Deere TORQ-GARD SUPREME® or John Deere PLUS 4® engine oil is recommended for lubricating the cutting blades. If other oils are used, they must be premium quality engine oils meeting performance requirements of:

—API Service Classification SD, SE or SF.

Y05,62LU,F -19-20JAN86

# Section 20

## ENGINE

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## DESCRIPTION

The engine used in these machines is of a single-cylinder, 2-cycle, air-cooled, piston-ported design.

Crankshafts are made of chromium molybdenum steel with case-hardened bearing surfaces. The crankshaft is supported by two large ball bearings.

Select-fit needle bearings are used on both ends of the connecting rod.

The cylinders have porous, chrome-plated or alfed plated bores.

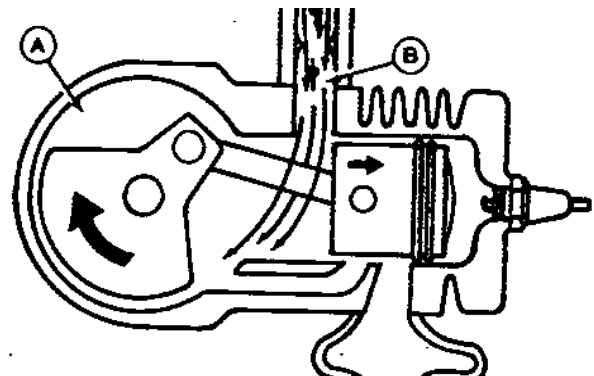
6M3,2005E,A1 -19-15MAR88

## PRINCIPLE OF OPERATION

The 2-cycle engine is used on these machines because of its excellent horsepower-to-weight ratio, ability to operate in any position, and good cold weather starting.

The 2-cycle engine provides a power stroke with every revolution of the crankshaft.

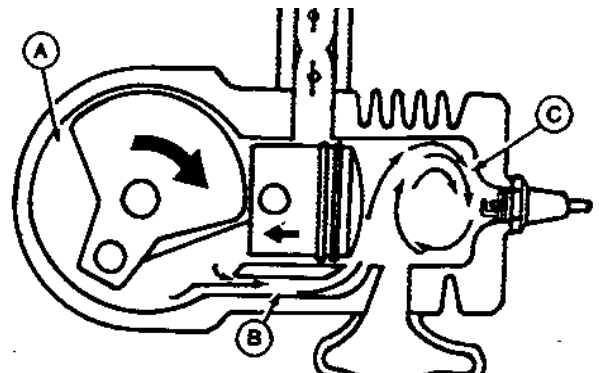
As the piston moves upward, it lowers the pressure in the crankcase (A) and exposes the intake port (B), drawing a fuel-air mixture into the crankcase through the carburetor.



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As the piston moves downward, it pressurizes the crankcase (A) and causes this fuel-air mixture to move up the transfer ports (B), into the combustion chamber (C).



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