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.

O53,TMIFC -19-26JAN90

Contents

Section 10
GENERAL INFORMATION

Contents

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.

T81389 -UN-07DEC88

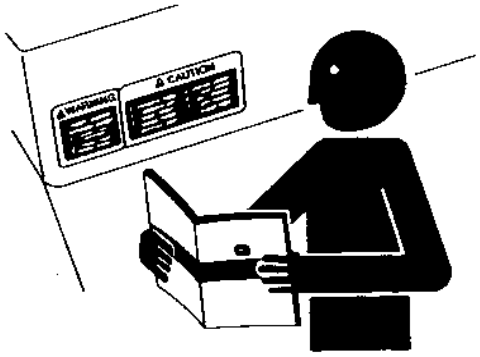
O53,ALERT -19-26JAN90

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.



TS201 -UN-23AUG88

O53,READ -19-26JAN90

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.

TS187 -19-30SEP88

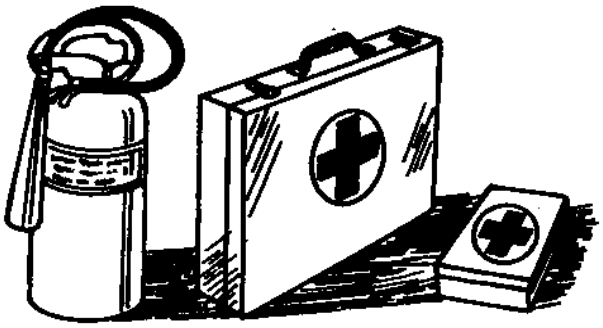
O53,SIGNAL -19-26JAN90

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.



TS291 -UN-23AUG88

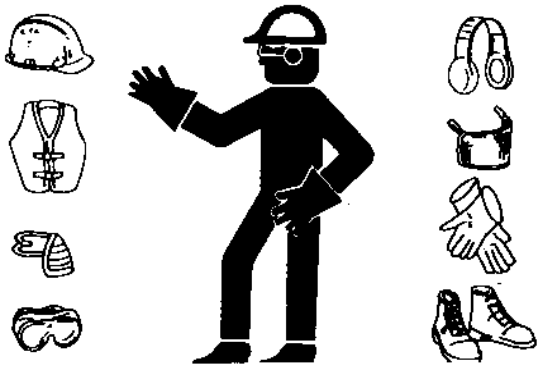
O53,FIRE2 -19-26JAN90

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.



TS206 -UN-23AUG88

O53,WEAR -19-26JAN90

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.

TS227 -UN-23AUG88

O53,FLAME -19-26JAN90

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.

TY14127 -UN-02MAY89

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

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

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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

	5E BLOWER:	2BV BLOWER:
Engine:		
Type	2-Cycle, air cooled	2-Cycle, air cooled
Displacement	44 cm^3 (2.7 cu in.)	21 cm^3 (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) gasoline and 2-cycle engine oil. (See Group 15, in this section.)	Regular (leaded or unleaded) gasoline and 2-cycle engine oil. (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
Electrical System:		
Ignition	Flywheel magneto, CDI system (Capacitor Discharge Ignition)	Flywheel magneto, CDI system (Capacitor Discharge Ignition)
Spark Plug	John Deere AM54611 (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.)
Capacities:		
Fuel Tank	1.5 L (1.6 qt)	0.45 L (15.2 fl. oz.)
Blower:		
Type	Centrifugal (Single stage)	Centrifugal (Single stage)
Air Volume (MAX)	11 m^3/min (388 cfm)	11 m^3/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

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	113 HEDGE CLIPPER:	172 HEDGE CLIPPER:
Engine:		
Type	2-Cycle, air cooled	2-Cycle, air cooled
Displacement	21 cm^3 (1.3 cu in.)	21 cm^3 (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) gasoline and 2-cycle engine oil. (See Group 15, in this section.)	Regular (leaded or unleaded) gasoline and 2-cycle engine oil. (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
Electrical System:		
Ignition	Flywheel magneto, CDI system (Capacitor Discharge Ignition)	Flywheel magneto, CDI system (Capacitor Discharge Ignition)
Spark Plug	John Deere AM54450 (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.)
Capacities:		
Fuel Tank	0.3 L (11.8 fl oz U.S.)	0.25 L (10 fl oz. U.S.)
Handle:		
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
Gear Case:		
Reduction Ratio	1:5.88	1:5.88
Gear Tooth	Spur	Spur
Cutter:		
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.)
Overall:		
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
Engine:		
Type	2-Cycle, Air Cooled	
Displacement	21.2 cm^3 (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. (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	
Electrical System:		
Ignition	Flywheel magneto, CDI system (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.)	
Capacities:		
Fuel Tank	0.4 L (13.6 fl oz U.S.)	
Handle:		
Front	Dee-Loop	
Rear	Rubber grip with throttle trigger	
Driveshaft:		
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	
Cutting Parts		
Cutting Head	Single exit nylon line cutting head with 2.03 mm (0.080 in.) diameter cutting line.	
Blade (Optional)	Plastic Tri-cutter blade	
Overall:		
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.)

6M3,1020E,A3 -19-19APR88

	240G	260G
Engine:		
Type	2-Cycle, Air Cooled	
Displacement	21.2 cm ^{3} (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	
Electrical System:		
Ignition	Flywheel magneto, CDI system (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.)	
Capacities:		
Fuel Tank	0.4 L (13.6 fl oz U.S.)	
Handle:		
Front	Dee-Loop	Angled Dee-Loop
Rear	Rubber grip with throttle trigger	
Driveshaft:		
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	
Gearcase		
Reduction Ratio	1:1.36	
Gear Tooth	Spiral Bevel Gear	
Cutting Parts		
Cutting Head	Two exit nylon line cutting head with 2.40 mm (0.095 in.) diameter cutting line.	
Blades (Optional)	Plastic Tri-cutter blade 8-Tooth steel blade 80-Tooth steel blade	
Overall:		
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 (100 psi) (MIN)	Section 20
2BV Blower 113 and 172 Hedge Clippers, 110G, 210G, 240G and 260G Trimmer	540 kPa, 5.4 Bar (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

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

OPERATION	SPECIFICATIONS	REFERENCE
Clean and Regap Spark Plug	0.65 mm (0.025 in.)	Section 40
Adjust Magneto Air Gap	0.35 mm (0.014 in.)	Section 40
Clean Muffler and Exhaust Port		Section 20
Clean Carbon from Combustion Chamber		Section 20
Clean and Inspect Air Cleaner		Section 30
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

6M3,1025E,A2 -19-19APR88

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

TY10172 -19-02MAY89

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

TY12405 -19-05DEC89

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

EXTREME PRESSURE GREASE

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

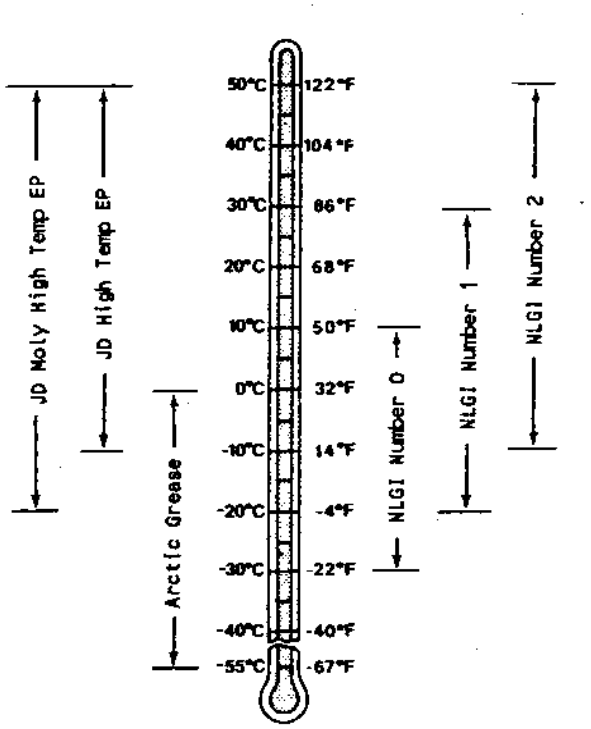
John Deere Moly High Temperature EP Grease and John Deere High Temperature EP Grease are recommended.

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

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

Contents

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.

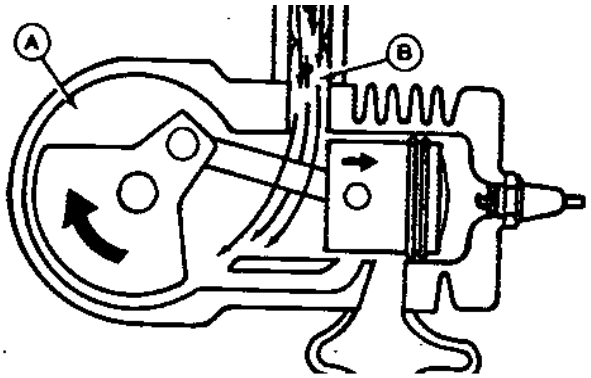
6M3,2005E,A1 -19-15MAR88

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.

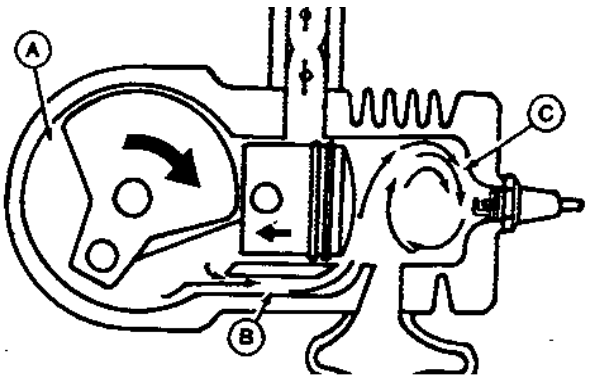
As the piston moves upward, it lowers the pressure in the crankcase (A) and exposes the intake port (B), drawing a fuel-air mixture into the crankcase through the carburetor.



TY8007 -UN-04MAY89

6M3,2005E,A2 -19-15MAR88

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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