12PB/12PC/12SB
14PB/14PT/14PZ
14SB/14SC/14SX
14SE/14ST/14SZ
Walk-Behind Mowers

(S.N. GX—010001—)

John Deere Horicon Works
TM1471 (16JUL96)
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 and service parts kits.

Section 10, Group 15—Specifications consist of all applicable specifications, near tolerances and specific torque values for various components on each individual engine.

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.

MX,TM1471,IFC -19-01OCT92

JOHN DEERE DEALERS

This is a complete revision for TM1471, 21-Inch Rear-Discharge Walk-Behind Rotary Mowers (S.N. 010,001-).

Discard old TM1471 dated O1 Oct 92 and replace it with this manual.

New information added to this manual includes:

1. Repair and diagnosis information for the new 14SX mower.

2. Repair information for Kawasaki (FC150V) 4-cycle engine.

3. This book has been divided into two parts; Repair Sections, Sections 10 through 80 (providing remove and install procedures), and Operation and Tests Sections, Sections 210 through 255 (providing theory of operation, test and adjustment procedures, and diagnostic information).

4. Model designation is broken down as follows:

1 = Derived from 21-inch cutting width
2 = 2-Cycle Engine Design
4 = 4-Cycle Engine Design
B = Blade Brake Clutch (BBC)
C = Commercial Mower
E = Electric Start
P = Push Mower
S = Self-Propelled Mower (2 or 5 speed transaxle)
T = Tri-Cycler Mower
Z = Zone Start (from Operator's station or ZONE) with flywheel band brake

5. The new 1995 K-Series and B-Series 4-Cycle Engines are classified as 5.5-HP engines.

MX,DPS,TM1471 -19-16JUL96

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Continued on next page

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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Continued on next page

Section 10
GENERAL INFORMATION

Contents

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

DX,FLAME -19-04JUN90

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16˚C (60˚F).

TS204 -UN-23AUG88

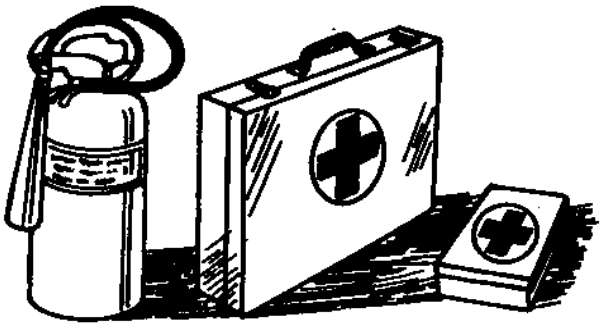
DX,SPARKS -19-03MAR93

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

DX,FIRE2 -19-03MAR93

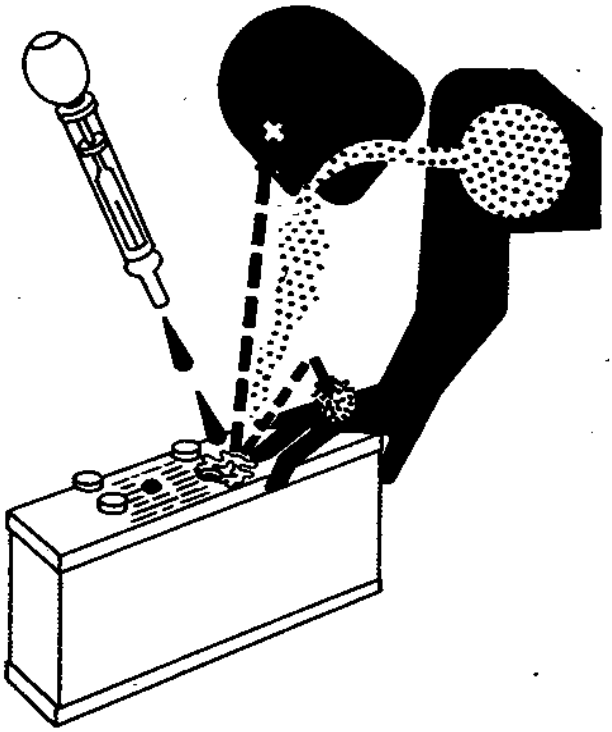
PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:
1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:
1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 -UN-23AUG88

DX,POISON -19-21APR93

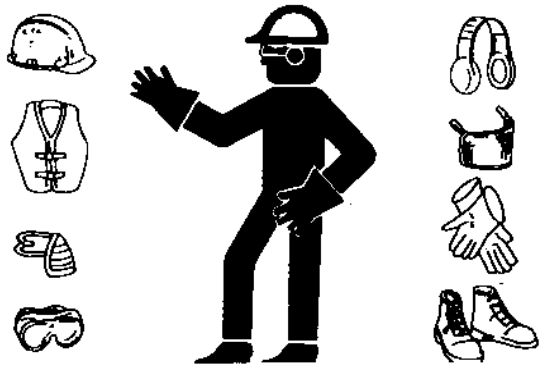
WEAR PROTECTIVE CLOTHING

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.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

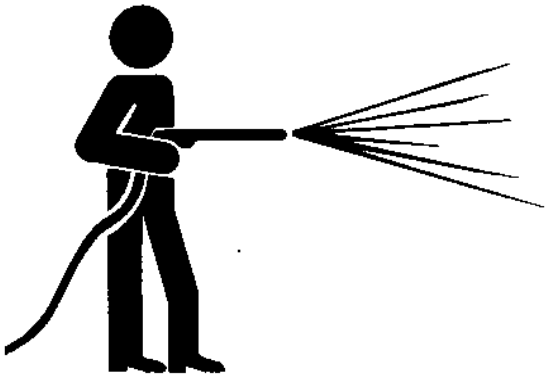


TS206 -UN-23AUG88

DX,WEAR -19-10SEP90

WORK IN CLEAN AREA

Before starting a job:
- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



T6642EJ -UN-18OCT88

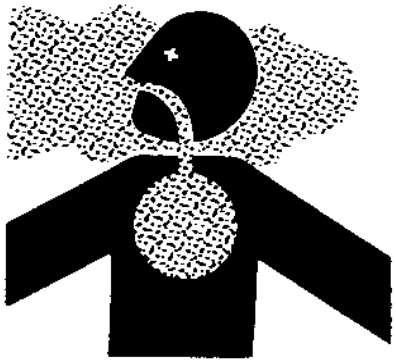
DX,CLEAN -19-04JUN90

WORK IN VENTILATED AREA

WARNING
California Proposition 65 Warning: Gasoline engine exhaust from this product contains chemicals known to to State of California to cause cancer, birth defects, or other reproductive harm.

Engine exhaust fumes can cause sickness or death, If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.



TS220 -UN-23AUG88

MX,AIR -19-16JUL96

ILLUMINATE WORK AREA SAFELY

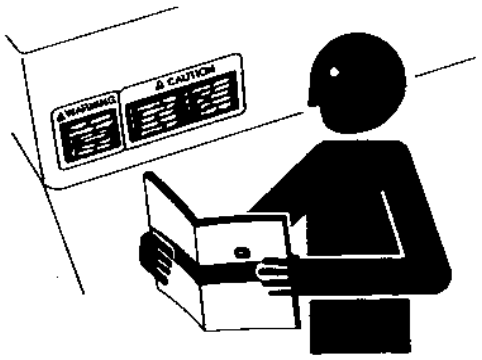
Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

TS223 -UN-23AUG88

DX,LIGHT -19-04JUN90

REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



TS201 -UN-23AUG88

DX,SIGNS1 -19-04JUN90

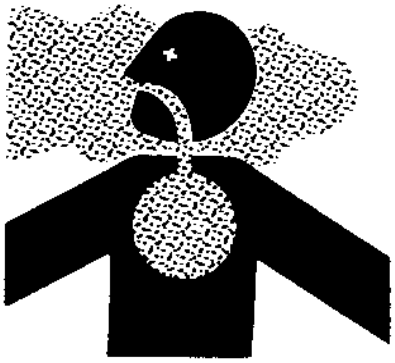
AVOID HARMFUL ASBESTOS DUST

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.

Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.

Keep bystanders away from the area.



TS220 -UN-23AUG88

DX,DUST -19-15MAR91

USE PROPER TOOLS

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.

TS779 -UN-08NOV89

DX,REPAIR -19-04JUN90

DISPOSE OF WASTE PROPERLY

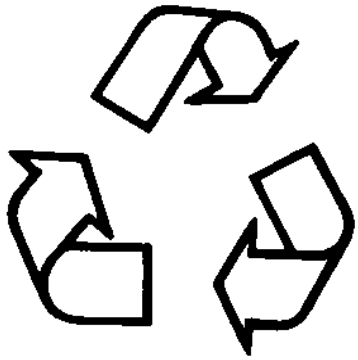
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 -UN-26NOV90

DX,DRAIN -19-03MAR93

LIVE WITH SAFETY

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05
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Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

TS231 -19-07OCT88

DX,LIVE -19-25SEP92

MACHINE SPECIFICATIONS—12PB, 12PC, AND 12SB

MODEL	12PB	12PC	12SB
Engine:			
Type	Briggs & Stratton 2-Cycle Design	Briggs & Stratton 2-Cycle Design	Briggs & Stratton 2-Cycle Design
Series	96722 I/C	96722 I/C	96722 I/C
Horsepower—			
Early Models	3.0 kW (4 hp)	3.0 kW (4 hp)	3.0 kW (4 hp)
1991 Models	N/A	3.7 kW (5 hp)	3.7 kW (5 hp)
Displacement	141 cm^3 (8.60 cu. in.)	141 cm^3 (8.60 cu. in.)	141 cm^3 (8.60 cu. in.)
Bore x Stroke	60 x 50 mm (2.34 x 1.95 in.)	60 x 50 mm (2.34 x 1.95 in.)	60 x 50 mm (2.34 x 1.95 in.)
Idle Speed	1750 ±200 rpm	1750 ±200 rpm	1750 ±200 rpm
Operation Range	3100 ±100 rpm	3100 ±100 rpm	3100 ±200 rpm
Starting	Recoil	Recoil	Recoil
Ignition	MAGNETRON®	MAGNETRON®	MAGNETRON®
Governor	Mechanical Flyweight	Mechanical Flyweight	Mechanical Flyweight
Carburetor	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet
Air Cleaner	Dual Stage	Dual Stage	Dual Stage
Lubrication	50:1 Fuel/Oil Mix	50:1 Fuel/Oil Mix	50:1 Fuel/Oil Mix
Power Train:			
Type	Push	Push	5-Speed Transaxle
Travel Speeds	N/A	N/A	1st.—1.9 kph (1.2 mph) 2nd.—2.9 kph (1.8 mph) 3rd.—3.9 kph (2.4 mph) 4th.—4.8 kph (3.0 mph) 5th.—6.6 kph (4.1 mph)
Capacities:			
Fuel/Oil Tank	1.9 L (2 qt)	1.9 L (2 qt)	1.9 L (2 qt)
Transaxle	N/A	N/A	70 g (2.5 oz) John Deere Non-Clay, High-Temperature EP Grease®—JDM J13E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLG1 Grade 2 (Europe)

MX,1010BV,1 -19-16JUL96

MACHINE SPECIFICATIONS—14PB, 14PT, 14PZ AND 14SB

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2

MODEL	14PB	14PT	14PZ	14SB
Engine:				
Type	Kawasaki 4-Cycle Design	Kawasaki 4-Cycle Design	Briggs & Stratton 4-Cycle Design	Kawasaki 4-Cycle Design
Series	FC150V	FC150V	122700	FC150V
Horsepower—				
Early Models	3.4 kW (4.5 hp)	N/A	3.0 kW (4.0 hp)	3.4 kW (4.5 hp)
1991 Models	3.7 kW (5.0 hp)	N/A	3.7 kW (5.0 hp)	3.7 kW (5.0 hp)
1993 Models	N/A	3.7 kW (5.0 hp)	N/A	N/A
1995 Models	4.1 kW (5.5 hp)	4.1 kW (5.5 hp)	3.7 kW (5.0 hp)	4.1 kW (5.5 hp)
Displacement	153 cm^3 (9.34 cu. in.)	153 cm^3 (9.34 cu. in.)	190 cm^3 (11.57 cu. in.)	153 cm^3 (9.34 cu. in.)
Bore x Stroke	65 x 46 mm (2.56 x 1.81 in.)	65 x 46 mm (2.56 x 1.81 in.)	68 x 51.8 mm (2.64 x 2.04 in.)	65 x 46 mm (2.56 x 1.81 in.)
Idle Speed	1500 ±200 rpm	1500 ±200 rpm	1750 ±200 rpm	1500 ±200 rpm
Operation Range	3075 ±75 rpm	3075 ±75 rpm	3000 ±100 rpm	3075 ±75 rpm
Starting	Recoil	Recoil (Zone Start)	Recoil (Zone Start)	Recoil
Ignition	Flywheel Magneto	Flywheel Magneto	MAGNETRON®	Flywheel Magneto
Governor	Mechanical Flyweight	Mechanical Flyweight	Mechanical Flyweight	Mechanical Flyweight
Carburetor	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet
Air Cleaner	Dual Stage w/ Mechanical Pre-Cleaner	Dual Stage w/ Mechanical Pre-Cleaner	Dual Stage	Dual Stage w/ Mechanical Pre-Cleaner
Lubrication	Pressure (Optional Oil Filter Kit)	Splash Lube	Splash Lube	Pressure (Optional Oil Filter Kit)
Power Train:				
Type	Push	Push	Push	5-Speed Transaxle
Travel Speeds	N/A	N/A	N/A	1st.—1.9 kph (1.2 mph) 2nd.—2.9 kph (1.8 mph) 3rd.—3.9 kph (2.4 mph) 4th.—4.8 kph (3.0 mph) 5th.—6.6 kph (4.1 mph)
Capacities:				
Fuel Tank	1.3 L (1.4 qt)	1.3 L (1.4 qt)	1.4 L (1.5 qt)	1.3 L (1.4 qt)
Crankcase	0.60 L (1.25 pt) (without filter)	0.60 L (1.25 pt)	0.60 L (1.25 pt)	0.60 L (1.25 pt) (without filter)
Transaxle	N/A	N/A	N/A	70 g (2.5 oz) John Deere Non-Clay, High-Temperature EP Grease®—JDM J13E4, NLGI Grade 2 (North America) or Grease-Gard™—JDM J13E4, NLGI Grade 2 (Europe)

MX,1010BV,2 -19-16JUL96

MACHINE SPECIFICATIONS—14SC/14SX, 14SE, AND 14ST

MODEL	14SC/14SX	14SE	14ST
Engine:			
Type	Kawasaki 4-Cycle Design	Kawasaki 4-Cycle Design	Kawasaki 4-Cycle Design
Series	FC150V	FC150V	FC150V
Horsepower—			
Early Models	3.4 kW (4.5 hp)	3.4 kW (4.5 hp)	N/A
1991 Models	3.7 kW (5.0 hp)	3.7 kW (5.0 hp)	N/A
1993 Models	N/A	N/A	3.7 kW (5.0 hp)
1995 Models	4.1 kW (5.5 hp)	4.1 kW (5.5 hp)	4.1 kW (5.5 hp)
Displacement	153 cm^3 (9.34 cu. in.)	153 cm^3 (9.34 cu. in.)	153 cm^3 (9.34 cu. in.)
Bore x Stroke	65 x 46 mm (2.56 x 1.81 in.)	65 x 46 mm (2.56 x 1.81 in.)	65 x 46 mm (2.56 x 1.81 in.)
Idle Speed	1500 ±200 rpm	1500 ±200 rpm	1500 ±200 rpm
Operation Range	3075 ±75 rpm	3075 ±75 rpm	3075 ±75 rpm
Starting	Recoil (Zone Start)	Electric (Key Start)	Recoil (Zone Start)
Ignition	Flywheel Magneto	Flywheel Magneto	Flywheel Magneto
Governor	Mechanical Flyweight	Mechanical Flyweight	Mechanical Flyweight
Carburetor	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet
Air Cleaner	Dual Stage w/Mechanical Pre-Cleaner	Dual Stage w/Mechanical Pre-Cleaner	Dual Stage w/Mechanical Pre-Cleaner
Lubrication	Pressure (Optional Oil Filter Kit)	Pressure (Optional Oil Filter Kit)	Splash Lube
Power Train:			
Type	5-Speed Transaxle	5-Speed Transaxle	2-Speed Transaxle
Travel Speeds	1st.—1.9 kph (1.2 mph) 2nd.—2.9 kph (1.8 mph) 3rd.—3.9 kph (2.4 mph) 4th.—4.8 kph (3.0 mph) 5th.—6.6 kph (4.1 mph)	1st.—1.9 kph (1.2 mph) 2nd.—2.9 kph (1.8 mph) 3rd.—3.9 kph (2.4 mph) 4th.—4.8 kph (3.0 mph) 5th.—6.6 kph (4.1 mph)	1st.—3.2 kph (2.0 mph) 2nd.—5.3 kph (3.3 mph)
Capacities:			
Fuel Tank	1.3 L (1.4 qt.)	1.3 L (1.4 qt.)	1.3 L (1.4 qt.)
Crankcase	0.6 L (1.25 pt) (Without Filter)	0.6 L (1.25 pt) (Without Filter)	0.6 L (1.25 pt)
Transaxle	70 g (2.5 oz.) John Deere Non-Clay High-Temperature EP Grease®—JDM J13E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLGI Grade 2 (Europe)	70 g (2.5 oz.) John Deere Non-Clay High-Temperature EP Grease®—JDM J12E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLGI Grade 2 (Europe)	70 g (2.5 oz.) John Deere Non-Clay High-Temperature EP Grease®—JDM J13E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLGI Grade 2 (Europe)

MX,1010BV,2A -19-16JUL96

MACHINE SPECIFICATIONS—14SZ

MODEL	14SZ	14SZ
Engine:		
Type	Briggs & Stratton 4-Cycle Design	Briggs & Stratton 4-Cycle Design
Series	122700	124700
Horsepower—		
Early Models	3.0 kW (4 hp)	N/A
1991 Models	3.7 kW (5.0 hp)	N/A
1993 Models	N/A	N/A
1995 Models	3.7 kW (5.0 hp)	3.7 kW (5.0 hp)
Displacement	183 cm^3 (11.17 cu. in.)	189 cm^3 (11.59 cu. in.)
Bore x Stroke	68.0 x 51.8 mm (2.64 x 2.04 in)	68.3 x 51.8 mm (2.69 x 2.04 in.)
Idle Speed	1750 ±200 rpm	1750 ±200 rpm
Operation Range	3000 ±100 rpm	3000 ±100 rpm
Starting	Recoil (Zone Start)	Recoil (Zone Start)
Ignition	MAGNETRON®	MAGNETRON®
Governor	Mechanical Flyweight	Mechanical Flyweight
Carburetor	Float Type With Fixed Main Jet	Float Type With Fixed Main Jet
Air Cleaner	Dual Stage	Dual Stage
Lubrication	Splash Lube	Splash Lube
Power Train:		
Type	2-Speed Transaxle	2-Speed Transaxle
Travel Speeds	1st.—3.2 kph (2.0 mph) 2nd.—5.3 kph (3.3 mph)	1st.—3.2 kph (2.0 mph) 2nd.—5.3 kph (3.3 mph)
Capacities:		
Fuel Tank	1.4 L (1.5 qt.)	1.4 L (1.5 qt)
Crankcase	0.6 L (1.25 pt)	0.6 L (1.25 pt)
Transaxle	70 g (2.5 oz.) John Deere Non-Clay High-Temperature EP Grease®—JDM J13E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLGI Grade 2 (Europe)	70 g (2.5 oz.) John Deere Non-Clay High-Temperature EP Grease®—JDM J12E4, NLGI Grade 2 (North America) or GREASE-GARD™—JDM J13E4, NLGI Grade 2 (Europe)

MX,1010BV,2B -19-16JUL96

MOWER DECK SPECIFICATIONS

Cutting Width	533 mm (21 in.)
Cutting Height Range	13 to 90 mm (1/2 to 3-1/2 in.)
Number of Cutting Heights in 13 mm (1/2 in.) increments	7
Wheel Diameter	200 mm (8 in.)
Bagger Capacity	3.1 cu ft (2.5 bu)

(Specifications and design subject to change without notice.)

MX,1010BV,5 -19-16JUL96

REPAIR SPECIFICATIONS—BRIGGS & STRATTON 2-CYCLE ENGINE (12PB/12PC/12SB)

Item	Specification
Inspection Specifications:	
Piston Rings Inspection Depth (In Cylinder Bore)	32 mm (1.26 in.)
Maximum Piston Rings End Gap	1.01 mm (0.039 in.)
Minimum Piston Skirt O.D.	59.85 mm (2.357 in.)
Minimum Piston Pin O.D.	13.98 mm (0.551 in.)
Maximum Piston Pin Bore I.D.	14.04 mm (0.552 in.)
Maximum Cylinder Bore I.D.	60.17 mm (2.368 in.)
Minimum Crankshaft Main Bearing Journals O.D.	24.97 mm (0.983 in.)
Maximum Crankshaft Journals Out-Of-Round	0.0127 mm (0.0005 in.)
Maximum Connecting Rod End Bore I.D.	18.05 mm (0.710 in.)
Minimum BBC Brake Pad Thickness	0.76 mm (0.030 in.)
Ignition Coil Air Gap	0.20—0.40 mm (0.008—0.016 in.)
Spark Plug Gap	0.762 mm (0.030 in.)
Engine Drive Sheave Installation (From End Of Crankshaft To Bottom Of Sheave)	38 mm (1.5 in.)
Torque Specifications:	
Crankcase Cap Screws	7 N·m (62 lb-in.)
Cylinder Head Socket Cap Screws [In Increments of 4 N·m (35 lb-in.)]	12 N·m (110 lb-in.)
Flywheel Nut	41 N·m (30 lb-ft)
Muffler Cap Screws	10 N·m (87 lb-in.)
Engine Drive Sheave Set Screw	5 N·m (44 lb-in.)
Engine Mount Cap Screws	27 N·m (20 lb-ft)
Blade Mount Cap Screw(s)	41 N·m (30 lb-ft)
BBC Socket Head Cap Screw	54 N·m (40 lb-ft)
Spark Plug	18 N·m (160 lb-in.)
Recoil Start Retainer Cap Screw	3 N·m (27 lb-in.)
Recoil Start Assembly Cap Screws	7 N·m (62 lb-in.)
Recoil Start Cup To Flywheel Screen Cap Screws	7 N·m (62 lb-in.)
Recoil Start Cover Cap Screws	3 N·m (27 lb-in.)
Ignition Coil Cap Screws	4 N·m (35 lb-in.)
Governor Lever Cap Screw and Nut	3 N·m (27 lb-in.)
Carburetor Spacer Mounting Cap Screws	6 N·m (50 lb-in.)
Carburetor/Air Filter Nuts	4 N·m (35 lb-in.)
Engine Shroud Cap Screws	4 N·m (35 lb-in.)
Fuel Tank/Engine Cover Cap Screws	3 N·m (27 lb-in.)

MX,1015BV,1 -19-01OCT92

REPAIR SPECIFICATIONS—BRIGGS & STRATTON 4-CYCLE ENGINE (14PZ/14SZ)

10 15 2

Item	Specification
Inspection Specifications:	
Piston Rings Inspection Depth (In Cylinder Bore)	25 mm (1.0 in.)
Maximum Piston Compression Rings End Gap	0.89 mm (0.035 in.)
Maximum Piston Oil Ring End Gap	1.14 mm (0.045 in.)
Maximum Piston Rings Side Clearance	0.178 mm (0.007 in.)
Minimum Piston Skirt O.D.	59.85 mm (2.357 in.)
Minimum Piston Pin O.D.	12.42 mm (0.489 in.)
Maximum Piston Pin Bore I.D.	12.47 mm (0.491 in.)
Maximum Piston Pin Bearing I.D.	12.50 mm (0.492)
Maximum Standard Cylinder Bore I.D.	68.288 mm (2.6885 in.)
Maximum Cylinder Bore Out-Of-Round	0.0635 mm (0.0025 in.)
Maximum Cylinder Bore Allowable Wear	Oversized—0.076 mm (0.003 in.)
Minimum Crankshaft Main Bearing Journal O.D. (Flywheel End)	22.17 mm (0.873 in.)
Minimum Crankshaft Main Bearing Journal O.D. (Output End)	26.92 mm (1.060 in.)
Minimum Crankshaft Connecting Rod Journal O.D.	25.30 mm (0.996 in.)
Maximum Crankshaft Main Bearings I.D.	25.43 mm (1.001 in.)
Maximum Crankshaft Runout (TIR)	0.05 mm (0.002 in.)
Allowable Crankshaft End Play	0.051—0.762 mm (0.002—0.030 in.)
Minimum Camshaft Journals O.D.	12.65 mm (0.498 in.)
Maximum Camshaft Bearings O.D.	12.78 mm (0.503 in.)
Maximum Crankcase Bearing I.D. (Cylinder Half)	22.30 mm (0.878 in.)
Maximum Crankcase Bearing I.D. (Cover Half)	26.92 mm (1.060)
Crankcase Gasket Thickness (New)	0.38 mm (0.015 in.)
Intake Valve Clearance	0.127—0.179 mm (0.005—0.007 in.)
Exhaust Valve Clearance	0.179—0.229 mm (0.007—0.009 in.)
Maximum Valve Guide I.D.	7.94 mm (0.310 in.)
Minimum Intake Valve Face Margin	0.40 mm (0.016 in.)
Minimum Exhaust Valve Face Margin	0.40 mm (0.016 in.)
Valve Seats Surface	1.19—1.59 mm (0.047—0.063 in.)
Intake Valve Seat Angle	30˚ or 45˚
Exhaust Valve Seat Angle	45˚ Only
Intake Valve Face Angle	30˚
Exhaust Valve Face Angle	45˚
Valves Narrowing Angle	30˚
Maximum Breather Disc Valve Clearance	1.14 mm (0.045 in.)
Ignition Coil Air Gap	0.15—0.25 mm (0.007—0.010 in.)
Spark Plug Gap	0.762 mm (0.030 in.)
Engine Drive Sheave Installation (From End Of Crankshaft To Bottom Of Sheave)	38 mm (1.5 in.)

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