JOHN DEERE
WORLDWIDE COMMERCIAL & CONSUMER EQUIPMENT DIVISION

Walk-Behind Rotary Mowers
JS60, JS60H, JS61, JS63, JS63H, JS63E

TM1710 NOVEMBER 2003

TECHNICAL MANUAL



JOHN DEERE

North American Version
Litho in U.S.A.

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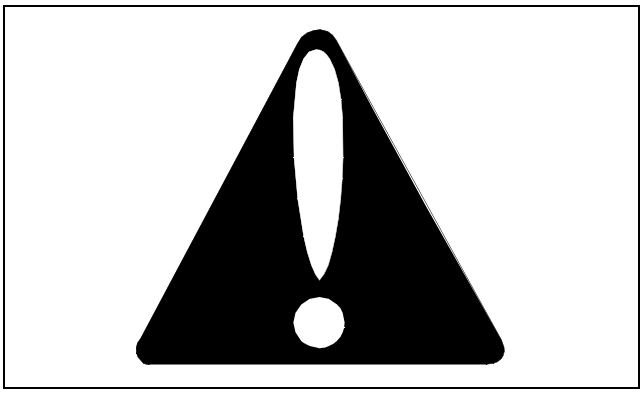
Table of Contents

Fastener Torques.....7
Metric Fastener Torque Values.....7
Metric Fastener Torque Value - Grade 7.....8
Inch Fastener Torque Values.....9
General Information.....10
Gasoline.....10
Gasoline Storage.....10
Engine Oil.....10
Engine Break-In Oil.....11
Lubricants.....12
Anti-Corrosion Grease.....12
Chassis Grease.....12
Alternative Lubricants.....13
Synthetic Lubricants.....13
Lubricant Storage.....13
Mixing Of Lubricants.....13
Identification Numbers.....13
Product Identification Number.....13
Engine.....13
Transaxle PIN (1 Speed Shown).....13

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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 servicing practices.

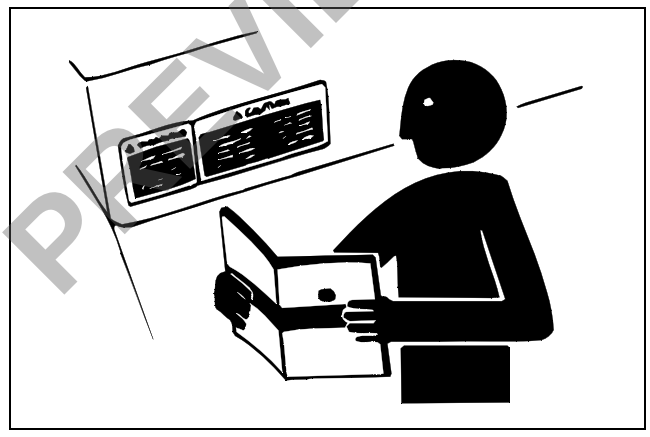
Understand Signal Words

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

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

Replace Safety Signs

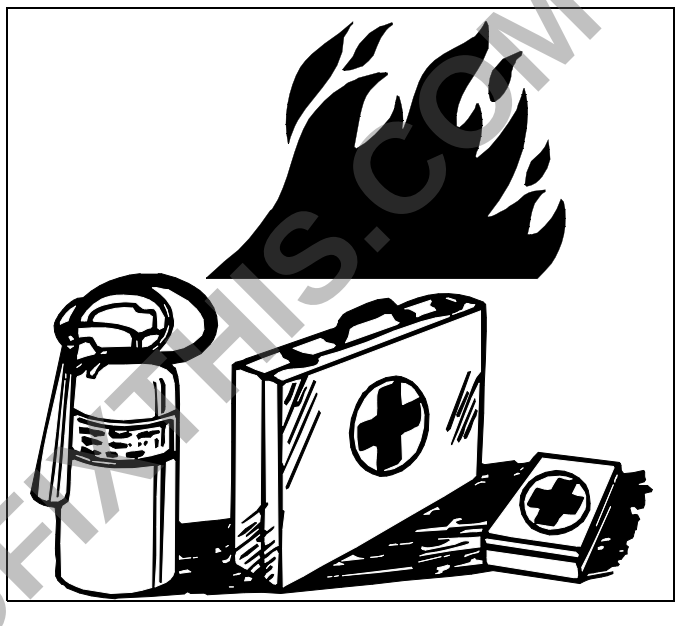
Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



WARNING: California Proposition 65 Warning

Gasoline engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Be Prepared For Emergencies



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.

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

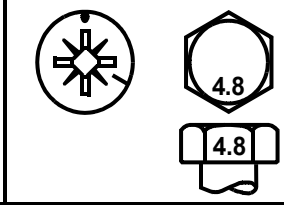
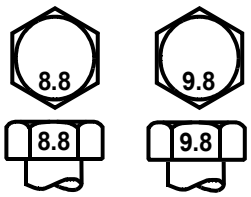
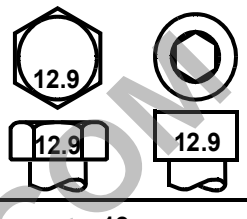
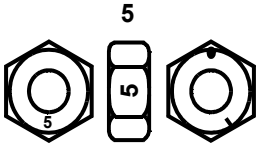
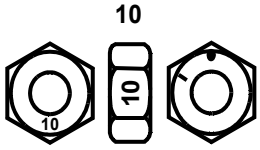
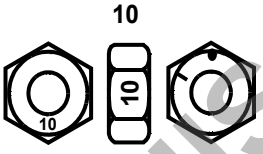
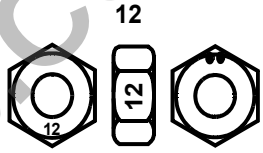
Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

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Fastener Torques

Metric Fastener Torque Values

Property Class and Head Markings	4.8 	8.8 9.8 	10.9 	12.9 
Property Class and Nut Markings	5 	10 	10 	12 

MIF

	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated a		Dry a		Lubricated a		Dry a		Lubricated a		Dry a		Lubricated a		Dry a	
SIZE	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	109
M16	100	73	125	92	190	140	240	175	275	200	350	225	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these hand torque values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only and include a ±10% variance factor. Check tightness of fasteners periodically. DO NOT use air powered wrenches.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same class. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

When bolt and nut combination fasteners are used, torque

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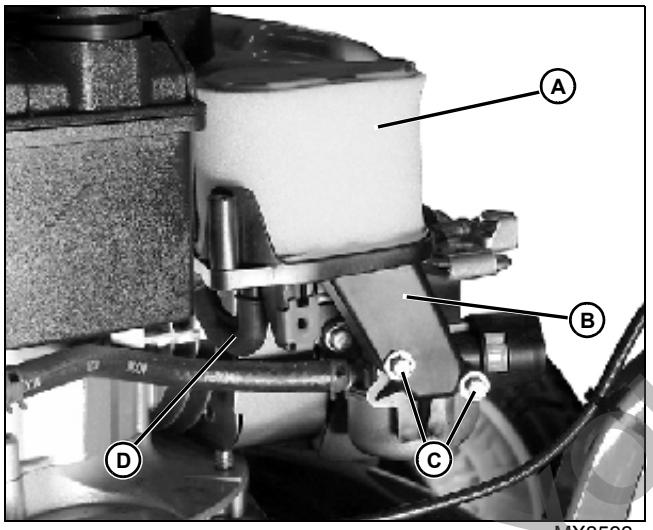
Repair

Carburetor Removal and Installation

CAUTION: Avoid Injury! Gasoline is explosive. Do not expose to sparks or flame. Serious personal injury can result.

NOTE: Before removing carburetor obtain a suitable gasoline container to drain fuel tank.

1. Remove engine cover. See “Engine Cover Removal” on page 43.

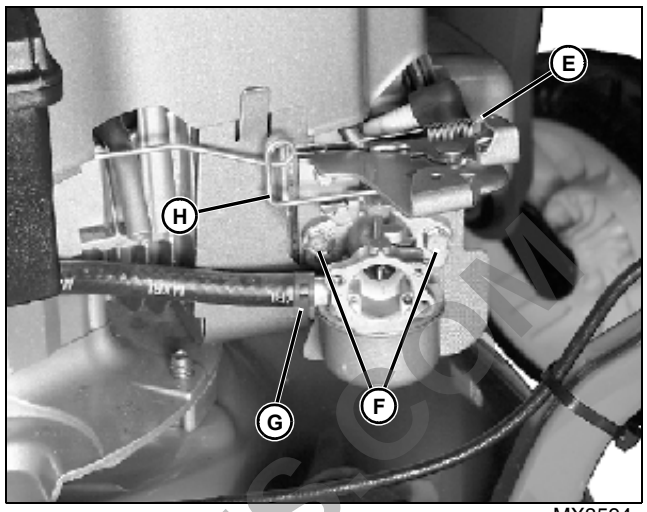


MX8593

2. Remove air filter (A).

NOTE: When removing air cleaner base (B) from carburetor, be careful to not damage base gasket.

3. Remove two screws (C) holding air cleaner base (B) to carburetor body, and remove base and gasket from carburetor. Breather tube (D) should also be disconnected from fitting on air cleaner base.



MX8594

4. Unhook loop of governor spring (E) from tang on throttle lever.

5. Slide hose clamp (G) back and disconnect fuel hose from carburetor and drain fuel tank into suitable gasoline container.

6. Remove two carburetor mounting cap screws (F).

7. Pull carburetor from engine and unhook end of throttle link (H) from governor lever.

8. Inspect gasket between carburetor and cylinder head for cracking or damage. Replace as required.

9. Installation is in reverse order of removal.

Torque Specification:

Air Cleaner Base Mounting Bolts . . .	**10 N•m (89 lb-in.)**
Carburetor Mounting Bolts	**10 N•m (89 lb-in.)**

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INDEX

A

Air Gap Adjustment (6.0 HP) 85
Air Gap Adjustment (6.5/6.75 HP) 38
Air Intake
  System Operation (6.0 HP) 73
  System Operation (6.5/6.75 HP) 26
Air Intake (6.5/6.75 HP)
  Component Location 23
Alternator
  Diode Test - JS63E 40
Automatic Compression Release (ACR) Test 33
Automatic Compression Release (ACR) Test (6.5/6.75 HP) 33
Axle Replacement - Front
  JS60, JS61, and JS63 129

B

Bagger
  Safety Door Spring Replacement
    New Style 133
    Newest Style 134
    Old Style 133
Battery - JS63E
  Test 39
Battery-JS63E
  Removal and Installation 59
Belt Guide Adjustment (JS61) 112
Blade Assembly
  Removal and Installation 132
Blower Housing
  6.0 HP
    Installation 90
    Removal 90
  6.5/6.75 HP
    Installation 45
    Removal 45
Brake Cable (Flywheel)
  6.0 HP
    Removal and Installation 93
  6.5/6.75 HP
    Removal and Installation 44
Breather
  6.0 HP
    Installation 92
    Removal and Inspection 91
  6.5/6.75 HP
    Installation 47
    Removal and Inspection 46

C

Camshaft Inspection (6.0 HP) 95
Camshaft Inspection (6.5/6.75 HP) 53
Carburetor
  6.0 HP
    Adjustment 86
    Component Location 69
    Inspection 88
    Main Circuit Operation 72
    Primer Circuit Operation 71
    Removal and Installation 87
  6.5/6.75 HP
    Adjustment 39
    Component Location 22
    Inspection 42
    Main Circuit Operation 26
    Primer Circuit Operation 25
    Removal and Installation 41
Caster Locking Cable Assembly
  Removal and Installation - JS63C Only 134
Clutch Linkage and Traction Drive Test 111
Clutch/Belt Inspection 111
Component Location
  6.0 HP
    Air Intake 23
    Carburetor 69
    Engine 68
    Piston and Valves 21
  6.5/6.75 HP
    Air Intake 23
    Carburetor 22
    Engine 20
    Piston and Valves 21
  Power Train 108
Connecting Rod Inspection
  (6.0 HP) 98
  (6.5/6.75 HP) 56
Crankcase
  6.0 HP
    Cover Installation 95
    Cover Removal 94
    Vacuum Test 82
  6.5/6.75 HP
    Cover Installation 54
    Cover Removal 52
    Vacuum Test 35
Crankshaft
  6.0 HP
    Removal and Installation 99
  6.5/6.75 HP
    Removal and Installation 56
Cylinder
  6.0 HP
    Bore Measurement 98
    Cylinder Leak-Down Test 81
  6.5/6.75 HP
    Bore Measurement 56
    Cylinder Leak-Down Test 34
Cylinder Head
  6.0 HP
    Inspection 91
    Installation 91
    Removal 90

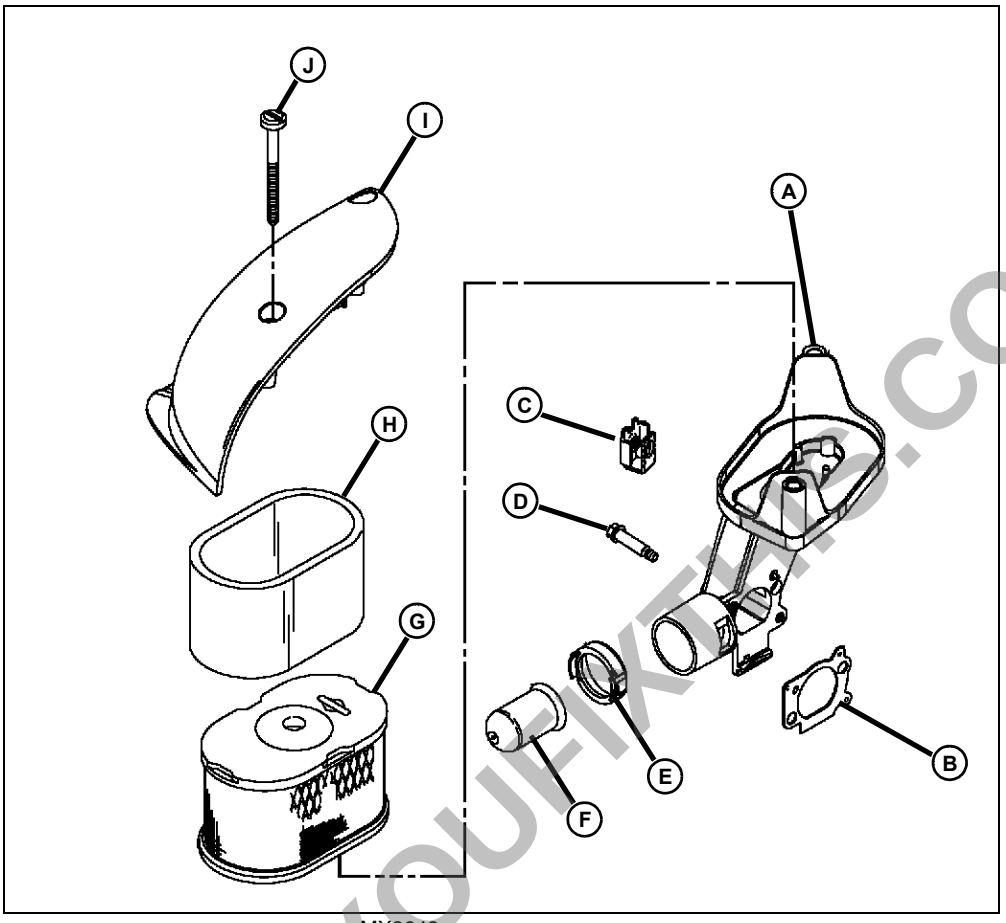
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Air Intake Component Location



MX8642

A - Base
B - Bracket
C - Screw
D - Screw
E - Primer Plate
F - Primer
G - Air Filter (Paper)
H - Air Filter (Foam)
I - Cover
J - Screw

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9. Install carburetor and fuel tank.

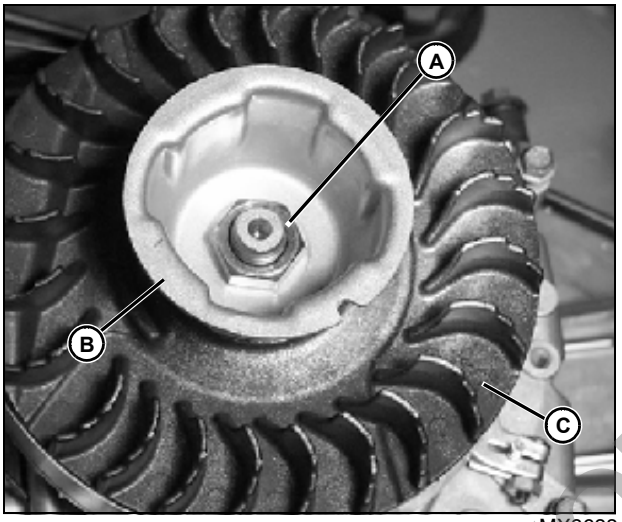
10.Adjust governor. See “Governor Adjustment” on page 36.

Flywheel Removal and Installation

1. Remove blower housing. See “Engine Blower Housing Removal” on page 45.

2. Remove ignition module.

3. Secure brake control handle to handlebar with a tie wrap to disengage flywheel brake.



MX8688

4. Using a strap wrench to hold flywheel, loosen flywheel nut (A) about three turns.

5. Tap on back side of flywheel with a soft faced hammer until flywheel becomes loose. Remove flywheel nut and starter cup (B), and plastic fan (C) on top of flywheel. Remove flywheel.

6. Inspect flywheel and cooling fins on fan for chips or cracks. Replace damaged flywheel and/or fan.

7. Inspect crankshaft key for wear from shearing.

8. Hold screwdriver **25 mm (1 in.)** from flywheel magnet. Replace flywheel if magnet does not attract screwdriver.

9. Clean flywheel taper of all grease, oil and dirt.

10.Slide flywheel onto crankshaft and line up both keyways. Insert key.

11.Install fan, cup and nut. Use strap wrench to hold flywheel and tighten nut to specification.

Torque Specification:

Flywheel Nut . . . . . 81 N•m (60 lb-ft)

Installation:

- Install ignition module.
- Adjust ignition module. Set air gap to **0.15 - 0.30 mm (0.006 - 0.012 in.)**. Tighten ignition module screws to **3 N•m (25 lb-in.)**.
- Remove tie wrap securing brake control handle.
- Install blower housing, fuel tank, and engine cover.

Crankcase Breather Removal and Inspection

1. Place mower on level surface.

2. Disconnect spark plug lead wire.

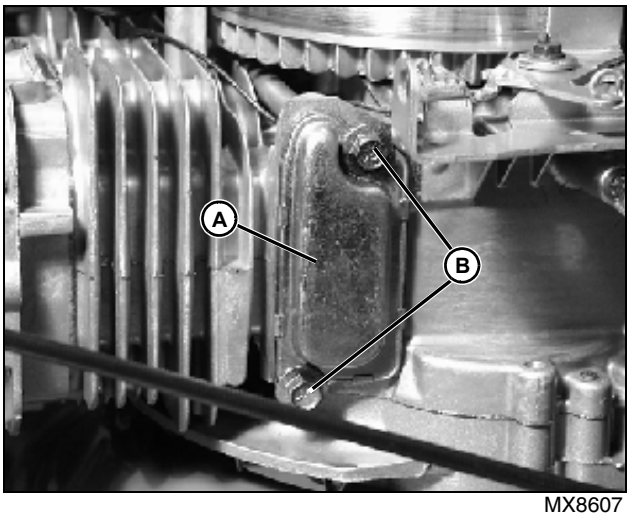
3. Remove engine cover.

4. Remove fuel tank. See “Fuel Tank Removal and Installation” on page 44.

5. Remove engine blower housing. See “Engine Blower Housing Removal” on page 45.

6. Remove muffler. See “Muffler Removal and Installation” on page 42.

IMPORTANT: Avoid damage! The fiber disc valve inside breather housing is held in place by an internal bracket which will be distorted if pressure is applied to the fiber disc valve. Do not apply excessive force when cleaning, or checking clearance.



MX8607

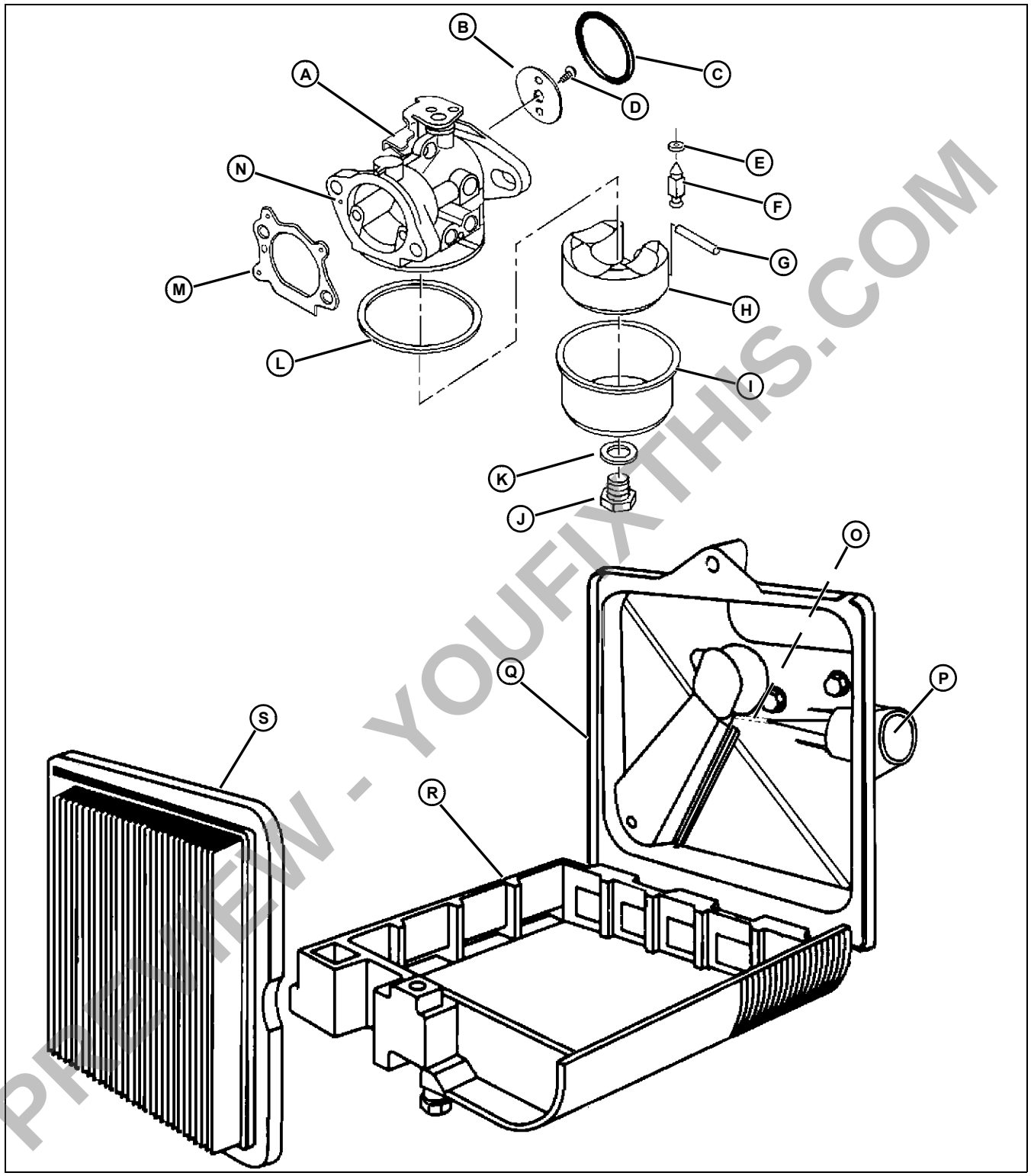
7. Remove cover screws (B) and breather cover (A).

8. Clean breather with solvent, being careful not to scratch or bend disc inside housing. Blow dry.

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Component Location - Carburetor



M91037/81029

A - Throttle Lever
B - Throttle Valve
C - O-ring
D - Screw
E - Needle Valve Seat
F - Needle Valve
G - Float Pin
H - Float
I - Float Bowl
J - Screw
K - Gasket

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Crankcase Breather Installation

NOTE: Install breather with drain hole on bottom.

1. Install gasket on breather housing with drain holes of gasket aligned with holes on breather. Place assembly into engine block with drain holes facing downward.
2. Install and tighten cover screws.
3. Install shoulder bolts into muffler and through gasket.
4. Tighten muffler shoulder bolts to specification.

Torque Specification:

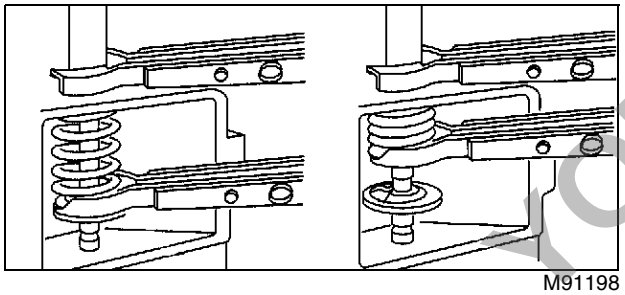
Shoulder Bolt . . . . . 10 N•m (87 lb-in.)

- Bend lock tabs to secure shoulder bolts.
- Install muffler shield and two screws.

Valve Removal and Installation

Removal:

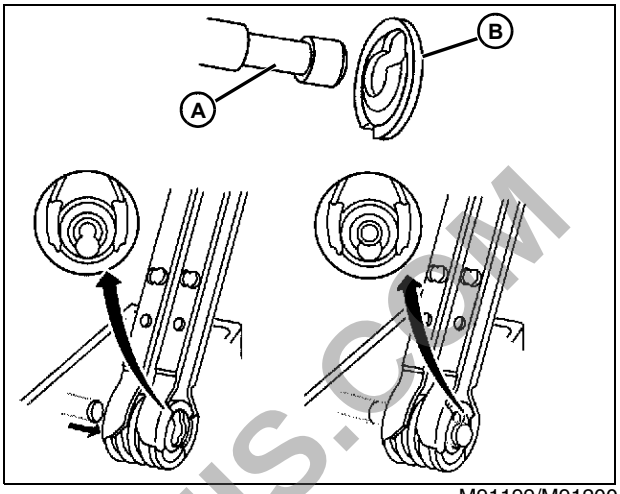
1. Remove cylinder head and crankcase breather.



M91198

2. Using a valve spring compressor, adjust the jaws of the compressor until they just touch the top and bottom of the valve chamber.
3. Push the compressor in until the lower jaw slips over the end of the spring.
4. Tighten the jaws to compress the spring and remove the retainer from the valve stem.
5. Remove valve.
6. Repeat for second valve.

Installation:



M91199/M91200

1. Place valve spring and retainer (B) into valve spring compressor.
2. Compress spring until solid.
3. Insert the compressed spring and retainer into the valve chamber.
4. Slide the valve through the valve guide and large hole of the retainer.
5. Push down and in on the compressor until the retainer bottoms on the valve stem shoulder (A).
6. Release the valve spring compressor until it is just free of spring tension and withdraw compressor.

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8. Remove mower blade. See “Blade Assembly Removal and Installation” on page 132.

Installation:

1. To replace belt, reverse procedure.
2. Turn mower onto its LEFT SIDE.
3. Route belt around engine pulley and through mower deck.
4. Install mower blade. See “Blade Assembly Removal and Installation” on page 132.
5. Set mower down onto level surface.
6. Push drive sheave forward and place belt around sheave. Recheck engine pulley under mower deck to be sure belt is properly installed on pulley.
7. Install protective belt shield and debris shield.
8. Reconnect spark plug.

Drive Belt Inspection

1. Examine belt to determine if it is worn, stretched, cracked, frayed, or damaged beyond the point of continued use.
2. Measure and compare removed belt to the following specifications:
3. Replace belt if dimensions are not found, or belt is frayed, worn, cracked or split.

New Belt Dimensions:

JS61:

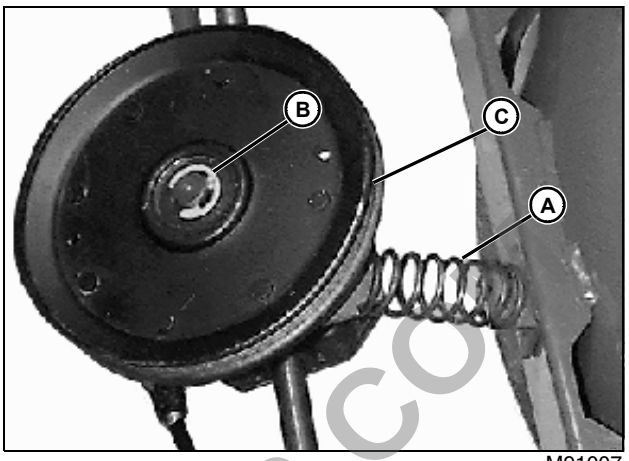
Type 3L
Effective Length . . . . . 993 mm (39.09 in.)

JS63, JS63C, and JS63E:

Type 3L
Effective Length . . . . . 882.5 mm (34.74 in.)

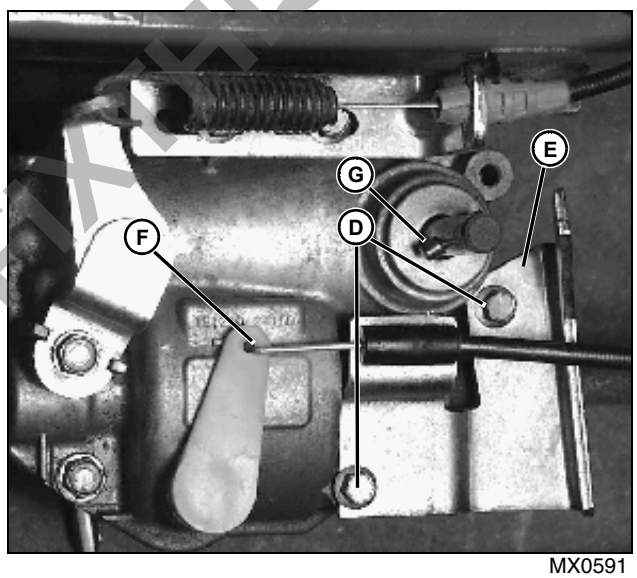
Transaxle Removal (All Models Except New Style JS63 Series)

1. Place mower on level surface.
2. Disconnect spark plug lead wire.
3. Remove recoil start pull cord from handle bracket.
4. Remove drive belt. See “Drive Belt Removal And Installation” on page 114.



M91007

Early Model JS61 Shown



MX0591

Early Model JS63 Model Shown

5. Remove tension spring (A), e-ring (B), drive sheave (C), and pin (G) (JS63 only) from transaxle input shaft.
6. On model JS63 remove screws (D) securing the shifter cable bracket to transaxle. Remove bracket (E) and unhook cable (F) from transaxle.

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