INFORMATION

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1. SAFETY FIRST

⚠ SAFETY FIRST

- **This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.**
- **It is essential that you read the instructions and safety regulations before you try to repair or use this unit.**

⚠ DANGER
- **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

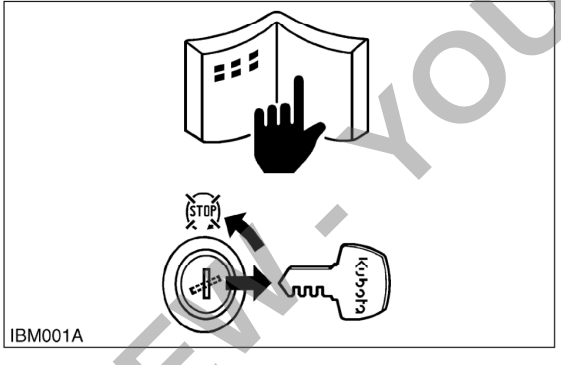
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ CAUTION
- **Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.**

■ IMPORTANT
- **Indicates that equipment or property damage could result if instructions are not followed.**

■ NOTE
- **Gives helpful information.**

WSM000001INI0001US1



BEFORE YOU START SERVICE

- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a stable and level ground.
- Stop the engine.
- Hang a **"DO NOT OPERATE"** tag on the machine.

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START SAFELY

- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not alter or remove any part of machine safety system.

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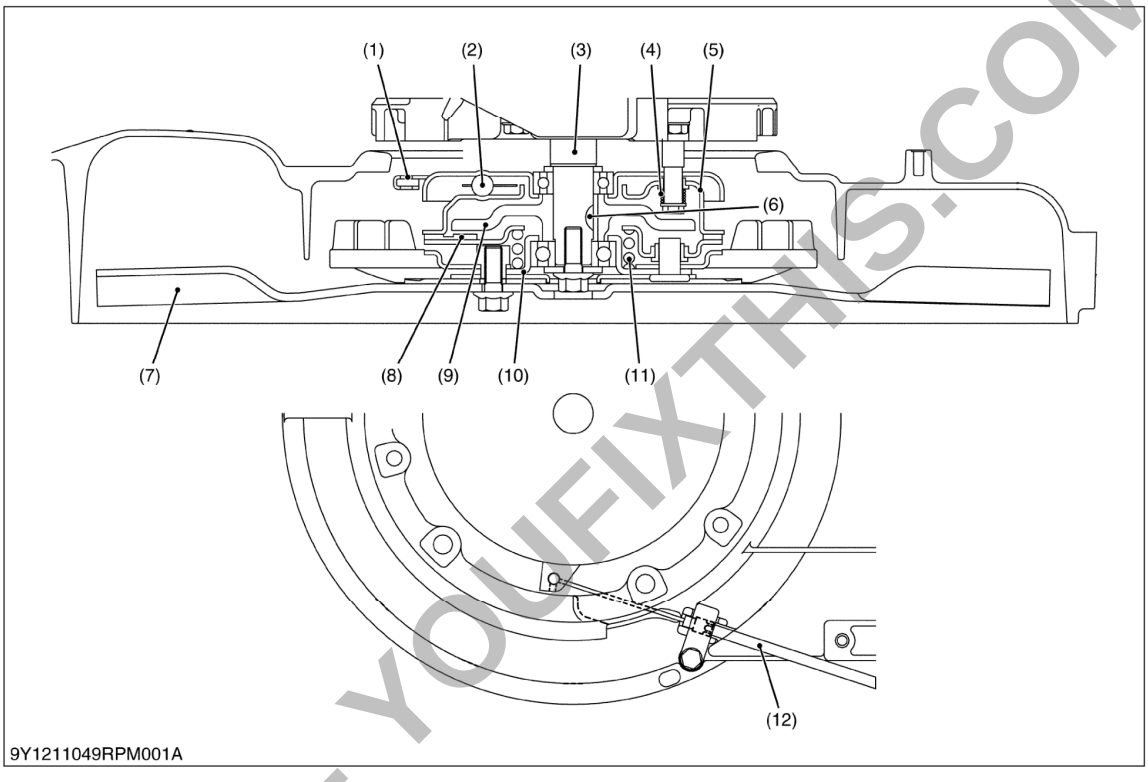
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1. MECHANISM

Mower Blade Clutch (W821SC-AU, W821S-AU)

■ **Braking**

W821SC-AU and W821S-AU are equipped the mower blade clutch. When mower blade clutch lever is OFF position, blade is hold by brake system. When mower clutch lever is operation position, brake system is released and mower blade rotates.



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(1) Ball Control Plate
(2) Ball Plate
(3) Crankshaft
(4) Spring
(5) Brake Plate
(6) Key
(7) Mower Blade
(8) Clutch Disk
(9) Drive Disk
(10) Blade Holder
(11) Spring
(12) Mower Blade Clutch Cable

When the mower blade clutch lever disengaged, the mower blade clutch cable (11) is not in the position to pull the ball control plate (1). The ball control plate (1) is pulled by tow springs toward level direction.

In this position, the ball control plate (1) pushes the clutch disk (8) through the ball plate (2).

At the same time, the drive disk (9) which is engaged with the crankshaft (3) through the brake plate (5) and the key (6) is running idle without contact with the lining on the clutch disk (8).

(To be continued)

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5. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

Tighten screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual according to the table below.

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Indication on top of nut	 No-grade or 4T												 6T		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M6	7.9 to 9.3	0.80 to 0.95	5.8 to 6.8	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	9.81 to 11.2	1.00 to 1.15	7.24 to 8.31	7.9 to 8.8	0.80 to 0.90	5.8 to 6.5	12.3 to 14.2	1.25 to 1.45	9.05 to 10.4
M8	18 to 20	1.8 to 2.1	13 to 15	17 to 19	1.7 to 2.0	13 to 14	24 to 27	2.4 to 2.8	18 to 20	18 to 20	1.8 to 2.1	13 to 15	30 to 34	3.0 to 3.5	22 to 25
M10	40 to 45	4.0 to 4.6	29 to 33	32 to 34	3.2 to 3.5	24 to 25	48 to 55	4.9 to 5.7	36 to 41	40 to 44	4.0 to 4.5	29 to 32	61 to 70	6.2 to 7.2	45 to 52
M12	63 to 72	6.4 to 7.4	47 to 53	–	–	–	78 to 90	7.9 to 9.2	58 to 66	63 to 72	6.4 to 7.4	47 to 53	103 to 117	10.5 to 12.0	76.0 to 86.7
M14	108 to 125	11.0 to 12.8	79.6 to 92.5	–	–	–	124 to 147	12.6 to 15.0	91.2 to 108	–	–	–	167 to 196	17.0 to 20.0	123 to 144
M16	167 to 191	17.0 to 19.5	123 to 141	–	–	–	197 to 225	20.0 to 23.0	145 to 166	–	–	–	260 to 304	26.5 to 31.0	192 to 224
M18	246 to 284	25.0 to 29.0	181 to 209	–	–	–	275 to 318	28.0 to 32.5	203 to 235	–	–	–	344 to 402	35.0 to 41.0	254 to 296
M20	334 to 392	34.0 to 40.0	246 to 289	–	–	–	368 to 431	37.5 to 44.0	272 to 318	–	–	–	491 to 568	50.0 to 58.0	362 to 419

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[2] STUD BOLTS

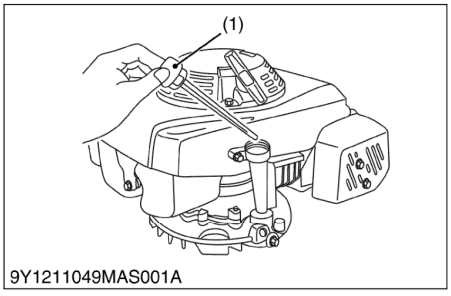
Material of opponent part	Ordinariness			Aluminum		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	12 to 15	1.2 to 1.6	8.7 to 11	8.9 to 11	0.90 to 1.2	6.5 to 8.6
M10	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12	30 to 49	3.0 to 5.0	22 to 36	31	3.2	23
M14	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18	172 to 201	17.5 to 20.5	127 to 148	–	–	–

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[2] CHECK AND MAINTENANCE
(1) DAILY CHECK



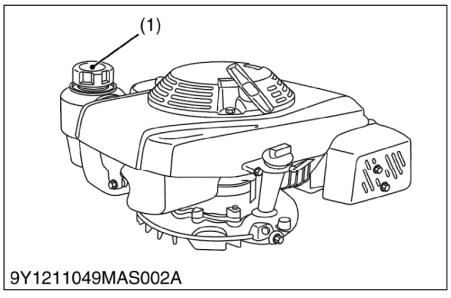
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Checking the Engine Oil Amount

1. Remove oil tank cap (1), pull out the oil gauge, and then insert it not screwing it.
2. Remove oil tank cap (1), and confirm that the oil level is between the upper and lower limits of the oil gauge.
3. Replenish oil if oil level is near the lower limit.
4. Firmly close oil tank cap (1) after confirmation.

(1) Oil Tank Cap

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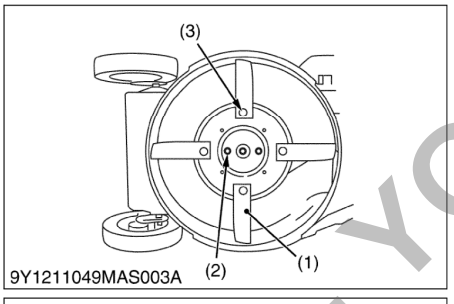
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Refueling

1. Open fuel tank cap (1) and refuel gasoline. Immediately wipe off with a rag if gasoline is split.
2. Firmly close fuel tank cap (1) after refueling.

(1) Fuel Tank Cap

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Checking the Blade Mounting Bolts

DANGER

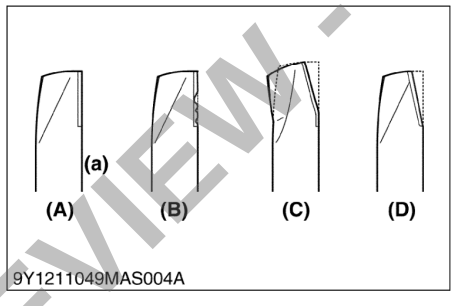
- **Stop the engine and remove the ignition plug when you check the blade.**

CAUTION

- **Wear thick gloves when you check or attach or detach the blade.**

1. Confirm that there is no chip, bend, or wear with blade (1).
2. If blade (1), its holder bolts (2) or its setting bolts (3) are "worn", "broken" or "deformed", exchange with new one(s) specified by us.
3. Confirm that blade holder bolts (2) and its setting bolts (3) are tightening by the specified torque.

Tightening torque	Holder bolt Blade setting bolt	29 to 39 N·m 3.0 to 3.9 kgf·m 22 to 28 lbf·ft



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(1) Blade
(2) Holder Bolt
(3) Blade Setting Bolt

(A) New Blade
(B) Chip
(C) Bend
(D) Wear
(a) Flat

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TROUBLESHOOTING GUIDE

When troubles occur, be sure to check simple causes which, at first, may seem too obvious to be considered. For example, a starting problem could be caused by an empty fuel tank.

Some general common causes of engine troubles are listed below and vary by engine specification. Use these to locate causing factors.

Engine Cranks But Will Not Start

- Battery connected backwards.
- Blown fuse.
- Carburetor solenoid malfunction.
- Choke not closing.
- Clogged fuel line or fuel filter.
- Diode in wiring harness failed in open circuit mode.
- DSAI or DSAM malfunction.
- Empty fuel tank.
- Faulty electronic control unit.
- Faulty ignition coil(s).
- Faulty spark plug(s).
- Fuel pump malfunction-vacuum hose clogged or leaking.
- Fuel shut-off valve closed.
- Ignition module(s) faulty or improperly gapped.
- Insufficient voltage to electronic control unit.
- Interlock switch is engaged or faulty.
- Key switch or kill switch in OFF position.
- Low oil level.
- Quality of fuel (dirt, water, stale, mixture).
- SMART-SPARK$_{TM}$ malfunction.
- Spark plug lead(s) disconnected.

Engine Starts But Does Not Keep Running

- Faulty carburetor.
- Faulty cylinder head gasket.
- Faulty or misadjusted choke or throttle controls.
- Fuel pump malfunction-vacuum hose clogged or leaking.
- Intake system leak.
- Loose wires or connections that intermittently ground ignition kill circuit.
- Quality of fuel (dirt, water, stale, mixture).
- Restricted fuel tank cap vent.

Engine Starts Hard

- Clogged fuel line or fuel filter.
- Engine overheated.
- Faulty ACR mechanism.
- Faulty or misadjusted choke or throttle controls.
- Faulty spark plug(s).
- Flywheel key sheared.
- Fuel pump malfunction-vacuum hose clogged or leaking.
- Interlock switch is engaged or faulty.
- Loose wires or connections that intermittently ground ignition kill circuit.
- Low compression.
- Quality of fuel (dirt, water, stale, mixture).
- Weak spark.

Engine Will Not Crank

- Battery is discharged.
- Faulty electric starter or solenoid.
- Faulty key switch or ignition switch.
- Interlock switch is engaged or faulty.
- Loose wires or connections that intermittently ground ignition kill circuit.
- Pawls not engaging in drive cup.
- Seized internal engine components.

Engine Runs But Misses

- Carburetor adjusted incorrectly.
- Engine overheated.
- Faulty spark plug(s).
- Ignition module(s) faulty or improperly gapped.
- Incorrect crankshaft position sensor air gap.
- Interlock switch is engaged or faulty.
- Loose wires or connections that intermittently ground ignition kill circuit.
- Quality of fuel (dirt, water, stale, mixture).
- Spark plug lead(s) disconnected.
- Spark plug lead boot loose on plug.
- Spark plug lead loose.

Engine Will Not Idle

- Engine overheated.
- Faulty spark plug(s).
- Idle fuel adjusting needle(s) improperly set.
- Idle speed adjusting screw improperly set.
- Inadequate fuel supply.
- Low compression.
- Quality of fuel (dirt, water, stale, mixture).
- Restricted fuel tank cap vent.

Engine Overheats

- Cooling fan broken.
- Excessive engine load.
- Fan belt failed/off.
- Faulty carburetor.
- High crankcase oil level.
- Lean fuel mixture.
- Low cooling system fluid level.
- Low crankcase oil level.
- Radiator, and/or cooling system components clogged, restricted, or leaking.
- Water pump belt failed/broken.
- Water pump malfunction.

Engine Knocks

- Excessive engine load.
- Hydraulic lifter malfunction.
- Incorrect oil viscosity/type.
- Internal wear or damage.
- Low crankcase oil level.
- Quality of fuel (dirt, water, stale, mixture).

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3. SPECIFICATIONS

[1] W821SC-AU, W821S-AU

Model	W821SC-AU	W821S-AU
Engine	HONDA GXV160	
Engine type	Air-cooled, 4-cycle OHV, Single-cylinder, gasoline engine	
Fuel	Unleaded gasoline for automobiles	
Displacement (Bore x Stroke)	163 cm^3 (68 mm x 45 mm) (10.3 in^3 (ϕ 2.7 x 1.8 in.))	
Max. Output	3.2 kW / 3600 rpm (4.3 hp / 3600 rpm)	
Max. Torque	9.6 N·m / 2500 rpm (0.98 kgf·m / 2500 rpm)	
Operating speed	3100 rpm	
Fuel tank capacity	1.8 L (1.9 U.S.qts, 1.6 Imp.qts)	
Engine oil capacity	0.65 L (0.69 U.S.qts, 1.6 Imp.qts)	
Ignition system	Transistorized magnet ignition	
Ignition plug	NGK : BPR 5 ES / DENSO : W 16 EPR-U	
Starting method	Recoil method	
Outside dimensions (L x W x H)	1830 x 580 x 1270 mm (72.05 x 22.80 x 50.00 in.)	1810 x 580 x 1260 mm (71.26 x 22.80 x 49.61 in.)
Dry weight	62 kg (140 lbs)	53 kg (120 lbs)
Grass bag capacity	75 L (79 U.S.qts, 66 Imp.qts)	
Mowing width	530 mm (20.9 in.)	
Mowing height	22, 32, 42, 52, 62, 72, 82 mm (0.9, 1.2, 1.7, 2.0, 2.5, 2.8, 3.2 in.)	15, 26, 37, 47, 57, 67, 77 mm (0.6, 1.0, 1.5, 1.8, 2.3, 2.6, 3.0 in.)
Mowing speed	2-step gearshift Low speed : 1.0 m / sec (2.2 mi/h) High speed : 1.4 m / sec (3.1 mi/h)	2-step gearshift Low speed : 0.8 m / sec (2 mi/h) High speed : 1.2 m / sec (2.7 mi/h)
Wheel diameter	9.6" Aluminum wheel	8" Resin wheel

The specifications above may change for improvement without prior notice.

Technical data

Sound power level	75 dB	
Vibration level (ISO 5349, EN1033)	3.5 m/s^2 (0.36 G)	4.0 m/s^2 (0.4 G)

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1. INSPECTION AND ADJUSTMENTS

[1] MAINTENANCE CHECK LIST

(1) W821SC-AU, W821S-AU

Inspection item		timing	Refer-ence page
Engine oil	Check	Every time	1-S3
	Replace	* Every 50 hours	1-S4
Air cleaner	Cleaning	Every 25 hours	–
Loose bolt	Check	Every time	–
Fuel	Refueling	Every time	–
Ignition plug	Cleaning	Every 100 hours	1-S7
	Adjust	Every 100 hours	
Blade	Check	Every time	1-S3
Grass bag	Check	Every time	–
	Cleaning	Every time	
Throttle wire	Adjust	Every 100 hours	–
Drive dutch wire	Adjust	Every 50 hours	–
Blade wire	Adjust	Every 50 hours	–
	Check	Every 50 hours	
Gearshift wire	Adjust	Every 50 hours	–
Valve clearance	Adjust	** Every 100 hours	–
Combustion chamber	Cleaning	** Every 100 hours	–
Fuel tank	Cleaning	** Every 100 hours	–
Strainer	Cleaning	** Every 100 hours	–
Fuel tube	Check	Every 100 hours	–

* Exchange oil after using the machine for 25 hours only for the first time after purchase.
After that, exchange oil at 50-operating hour intervals according to the degree of dirtiness.
** Maintenance techniques and special tools are necessary for this check item. Therefore, consult our distributor near you.

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