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.**

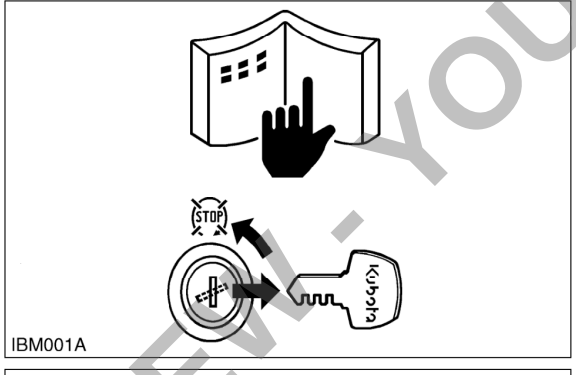
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ CAUTION
- **Indicates a potentially hazardous situation which, if not avoided, could 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



IBM001A


IBM002A

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, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a **"DO NOT OPERATE"** tag in the operator station.

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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.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

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3. SPECIFICATIONS

Model			Z122E-AU	Z121S-AU	Z125E-AU	Z125S-AU
Engine	Model		GH731V-1	GH736V	GH733V-1	GH750V
	Max. engine power (Gross)		16.4 kw (22 HP) *1*2	15.7 kw (21 HP) *1*3	18.6 kw (25 HP) *1*2	18.6 kw (25 HP) *1*3
	Type		Air-cooled gasoline engine			
	Number of cylinders		2 (V-Twin)			
	Bore and stroke		79 × 73 mm (3.11 × 2.87 in.)	83 × 67 mm (3.27 × 2.64 in.)	79 × 73 mm (3.11 × 2.87 in.)	83 × 69 mm (3.27 × 2.72 in.)
	Total displacement		724 cm^3 (44 cu. in.)	725 cm^3 (44 cu. in.)	724 cm^3 (44 cu. in.)	747 cm^3 (46 cu. in.)
	Rated revolution		3600 rpm			
	Fuel		Unleaded gasoline			
	Starter		Electric			
	Lubrication		Full pressure lubrication			
	Cooling		Air cooled			
	Battery		U1 (12 V, RC: 45 min, CCA: 300, CA: 410)			
Capacities	Fuel tank		16 L (4.2 U.S.gals, 0.92 Imp.gals)			
	Engine crankcase (with filter)		1.8 L (1.9 U.S.qts, 1.6 Imp.qts)			
	Transmission case including Rear axle gear case		4.8 L (5.1 U.S.qts, 4.2 Imp.qts) *4			
Dimensions	Overall length		1940 mm (76.4 in.)			
	Overall width w/o mower deck		1207 mm (47.5 in.)			
	Overall height	With ROPS	1652 mm (65.0 in.)			
	Wheelbase		1155 mm (45.5 in.)			
	Min. ground clearance		123 mm (4.84 in.) W/48"		123 mm (4.84 in.) W/54"	
	Tread	Front	796 mm (31.3 in.)			
		Rear	954 mm (37.6 in.)			
Weight (W/MOWER DECK)			335 kg (739 lbs) with 48"	340 kg (750 lbs) with 48"	340 kg (750 lbs) with 54"	350 kg (772 lbs) with 54"
Traveling system	Tread	Front	11 × 4 - 5 (4PR) Smooth			
		Rear	22 × 10 - 14 (4PR) Turf			
	Traveling speeds	Forward	0 to 12.9 km/h (0 to 8.0 mph)			
		Reverse	(0 to 6.4 km/h (0 to 4.0 mph)			
	Steering		2 - Hand levers			
	Transmission		2 - HST w / Gear			
	Parking brake		Hand lever applied, released			
	Min. turning radius		0 mm (0 in.)			
PTO	Drive system		Belt			
	Clutch type		Electric			

(Specifications and design subject to change without notice)

■ **NOTE**

- ***1: Manufacturer's estimate**

  ***2: The gross power rating for individual gas engine models is labeled in accordance with SAE (Society of Automotive Engineers) code J1940 (Small Engine Power & Torque Rating Procedure), and rating performance has been obtained and corrected in accordance with SAE J1995 (Revision 2002-05). Torque values are derived at 3060 RPM; horsepower values are derived at 3600 RPM. Actual gross engine power will be lower and is affected by, among other things, ambient operating conditions and engine-to-engine variability. Given both the wide array of products on which engines are placed and the variety of environmental issues applicable to operating the equipment, the gas engine will not develop the rated gross power when used in a given piece of power equipment (actual "onsite" or net power). This difference is due to a variety of factors including, but not limited to, accessories (air cleaner, exhaust, charging, cooling, carburetor, fuel pump, etc.), application limitations, ambient operating conditions (temperature, humidity, altitude), and engine-to-engine variability. Due to manufacturing and capacity limitations, Briggs & Stratton may substitute an engine of higher rated power for this Series engine.**

  ***3: Horsepower ratings exceed Society of Automotive Engineers Small Engine Test Code J1940. Actual engine horsepower is lower and affected by, but not limited to, accessories (air cleaner, exhaust, charging, cooling, fuel pump, etc.), application, engine speed and ambient operating conditions (temperature, humidity, and altitude).**

  Kohler reserves the right to change product specifications, design, and standard equipment without notice and without incurring obligation.

  ***4: Oil amount when the oil level is at the upper level.**

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6. MAINTENANCE

SERVICE INTERVALS

The following servicing tasks should be carried out on the machine at the stated running-time intervals.

[Z122E, Z125E]

No.	Item			Indication on hour meter														After since	Reference page	Important
				5	25	50	100	150	200	250	300	350	400	450	500	550	600			
1	Engine oil		Change	★		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr or every 1 year	G-23	*6
2	Engine oil filter		Replace			☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr or every 1 year	G-24	*1
3	Transaxle oil filter		Replace				★						☆					every 400 Hr	G-34	*7
4	Transaxle fluid		Change				★						☆					every 400 Hr	G-34	*7
5	Engine start system		Check			☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22	
6	OPC system		Check			☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-23	
7	Air cleaner	Precleaner element (only Z122E)	Clean		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 25 Hr or every 1 year	G-20	*2
			Replace				☆		☆		☆		☆		☆		☆	every 100 Hr or every 1 year	G-26	
		Air cleaner element	Clean		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 25 Hr or every 1 year	G-21	*2
			Replace				☆		☆		☆		☆		☆		☆	every 100 Hr or every 1 year	G-26	
8	Fuel filter		Check				☆		☆		☆		☆		☆		☆	every 100 Hr	G-29	
			Replace				☆		☆		☆		☆		☆		☆	every 100 Hr or every 1 year	G-29	
9	Fuel line		Check															every 1 year	G-29	*3
			Replace															every 4 years	G-42	
10	Battery condition		Check				☆		☆		☆		☆		☆			every 100 Hr	G-30	
11	Throttle cable		Adjust				☆		☆		☆		☆		☆			every 100 Hr	G-32	
12	Muffler and spark arrester (if equipped)		Check			☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr or every 1 year	G-25	
13	Spark plug		Check				☆		☆		☆		☆		☆		☆	every 100 Hr	G-28	
			Replace															every 1 year	G-28	
14	Hydraulic hose		Check															every 1year	G-39	*3
			Replace															every 4 years	G-41	
15	Engine breather hose		Replace															every 2 years	G-41	
16	Engine shroud		Clean				☆		☆		☆		☆		☆		☆	every 100 Hr or every 1 year	G-27	
17	Electric clutch		Adjust												☆			every 500 Hr	G-36	
18	Combustion chamber		Clean															*4	G-37	
19	Fuse		Replace															Service as required	G-42	
20	Blade		Replace																G-43	
21	Mower belt		Replace																G-44	
22	Engine valve clearance		Check															every 1 year	G-40	*5

■ **IMPORTANT**

- **The jobs indicated by ★ must be done initially.**

***1 This maintenance should be done every 50 hours or every 1 year if using a standard oil filter. If using a high-efficiency oil filter, it may be extended to every 100 hours or every 1 year. A genuine KUBOTA oil filter is a high-efficiency oil filter.**

***2 This maintenance should be done daily or more often in dusty condition than in normal conditions. Suggested cleaning interval is every 25 hours or every 1 year in normal conditions.**

***3 Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.**

***4 On every after 500 Hr, clean it if necessary.**

***5 Not required unless engine performance problems are noted.**

***6 The initial 5 hours should not be a replacement cycle.**

***7 The initial 100 hours should not be a replacement cycle.**

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1. TROUBLESHOOTING

Refer to
- ZG124E, ZG127E, BRIGGS & STRATTON ENGINE SERVICE MANUAL (SUPPLEMENT).
- Z121S, Z125S, KOHLER ENGINE SERVICE MANUAL (SUPPLEMENT).

■ **NOTE**
- **B&S uses the same manual with the previous model.**

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Engine Is Difficult to Start or Will Not Start	1. No operator on the seat	Sit on the operator's seat	G-22
	2. Parking brake lever not in the proper position	Apply the parking brake	G-22
	3. PTO switch not in the proper position	Make sure PTO switch is in "DISENGAGED" (OFF) position	G-22
	4. Motion control levers not in the proper position	Make sure motion control levers are in "NEUTRAL LOCK" position	G-22
	5. Main switch is not in the proper position	Make sure main switch is in "ON" position	G-22
	6. No fuel	Fill fuel	G-9, G-17, G-29
	7. Fuse is blown	Replace the fuse	G-42
	8. Air cleaner is clogged	Clean or replace the air cleaner	G-21, G-26
	9. Over choking or choke is adjusted incorrectly	Check and adjust	G-32
	10.Battery becomes weak	1. Clean battery cables and terminals	G-30
		2. Charge the battery	G-31
		3. In cold weather, always remove the battery from the engine, charge and store it indoors Install it on the machine only when you use the machine	G-31
	11.Spark plug damaged	1. Check the spark plug wire connection	G-28
		2. Adjust the spark plug gap or replace the spark plug	G-28
	12.Fuel hose or fuel filter clogged or damaged	Clean or replace fuel lines	G-9, G-29, G-41
	13.Engine oil viscosity is wrong	Use oils of different viscosities, depending on ambient temperature	G-9, G-23, G-26

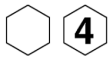
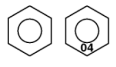
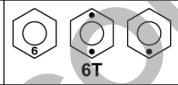
KiSC issued 11, 2015 A

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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	–	–	–

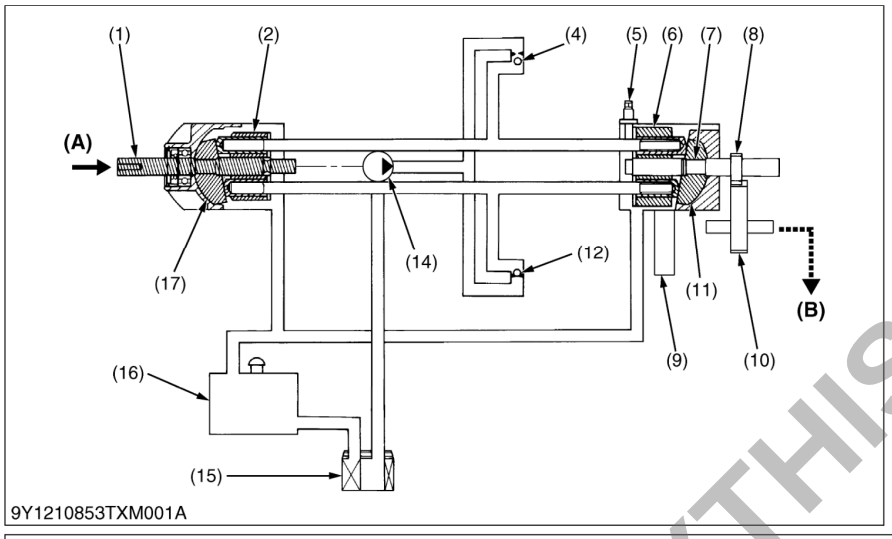
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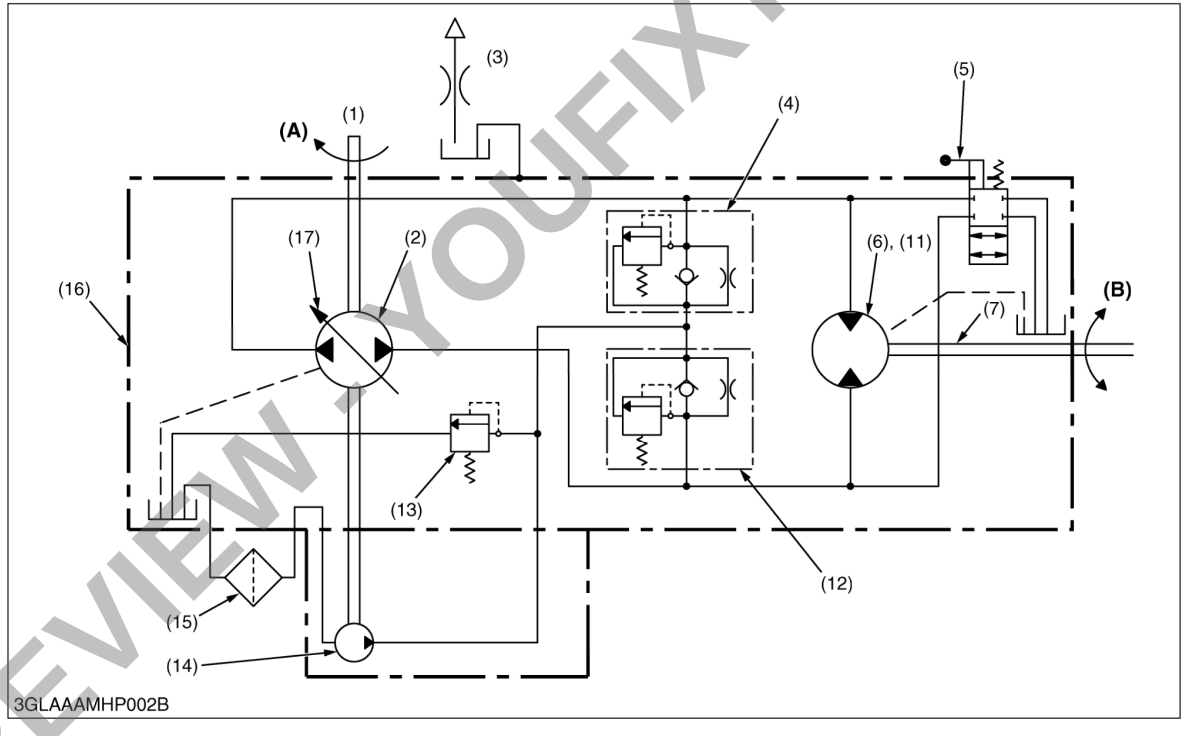
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1. STRUCTURE

[1] HYDRAULIC CIRCUIT



9Y1210853TXM001A



3GLAAAMHP002B

(1) Input Shaft
(2) Cylinder Block Assembly (Variable Displacement Pump)
(3) Vent
(4) Check Valve
(5) Bypass Actuator
(6) Cylinder Block Assembly (Fixed Displacement Motor)
(7) Motor Shaft
(8) 14T Pinion Gear
(9) Brake Pawl
(10) 45T Gear
(11) Fixed Swashplate
(12) Check Valve
(13) Charge Relief Valve
(14) Charge Pump
(15) Oil Filter
(16) Transaxle Housing
(17) Variable Swashplate

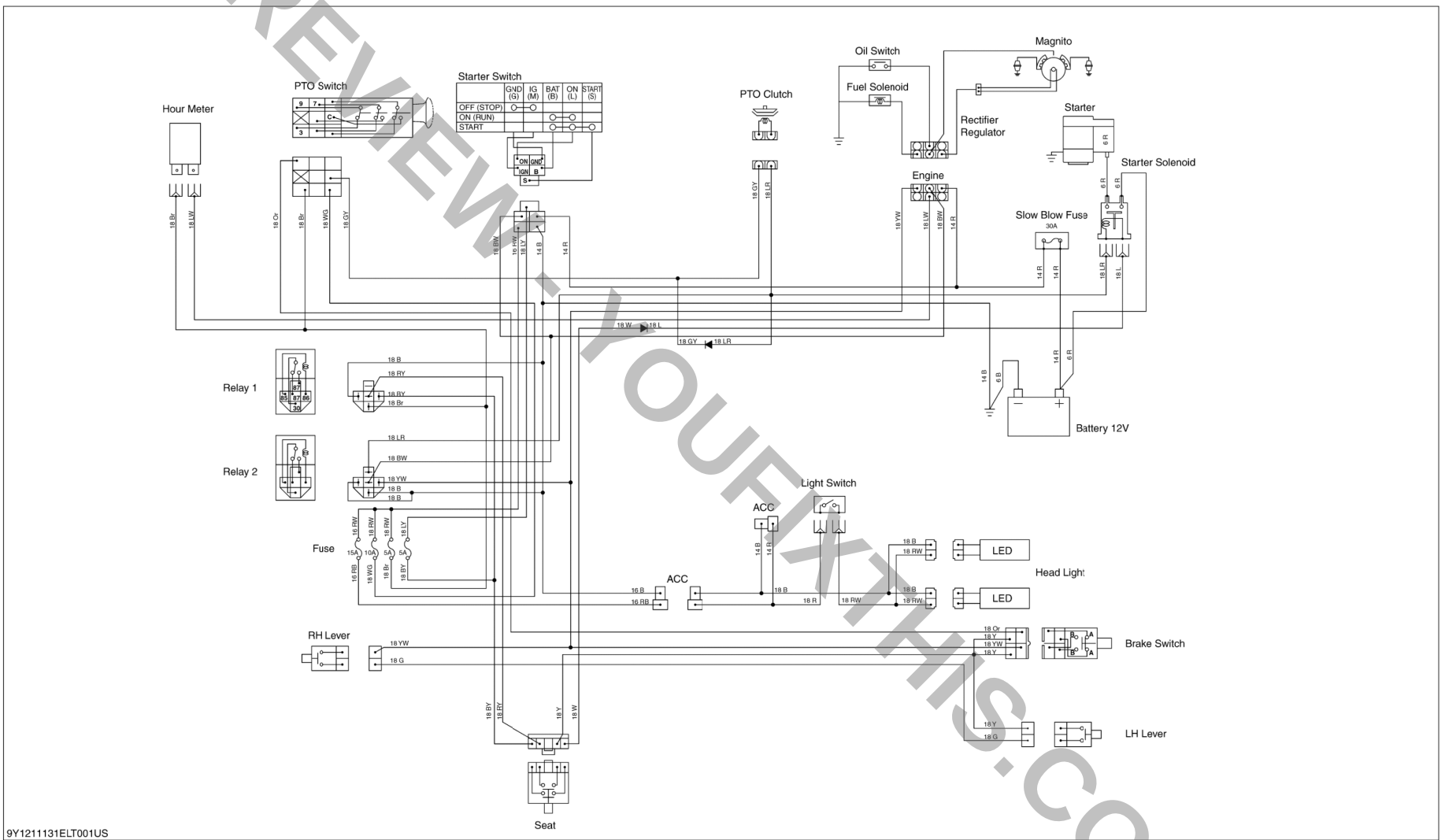
(A) From Engine
(B) To Rear Axle

(To be continued)

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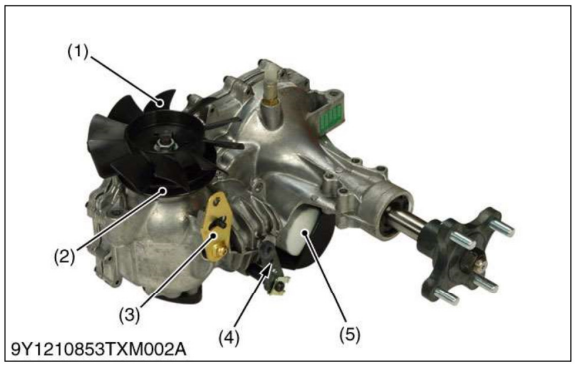
1. WIRING DIAGRAM



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[2] EXTERNAL COMPONENTS

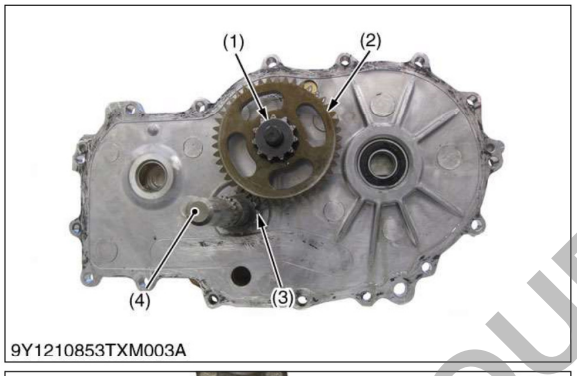


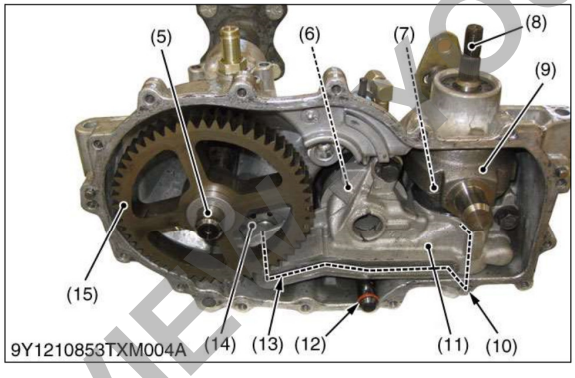
- Variable displacement pump with a maximum displacement of 10 cc/rev.
- Motor with a fixed displacement of 16 cc/rev. HYDRO-GEAR (R) ZT-3100

(1) Fan
(2) Pulley
(3) Control Arm (Speed change)
(4) Brake Arm
(5) Oil Filter

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[3] INNER COMPONENTS





(1) Reduction Gear 11T
(2) Reduction Gear 45T
(3) Pinion Gear 14T
(4) Motor Shaft
(5) Axle Shaft
(6) Motor
(7) Pump
(8) Input Shaft
(9) Swashplate
(10) Charge Pump
(11) Center Section
(12) Brake Shaft
(13) Oil Flow
(14) Oil Filter
(15) Bull Gear 54T

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4. CHECKING, DISASSEMBLING AND SERVICING

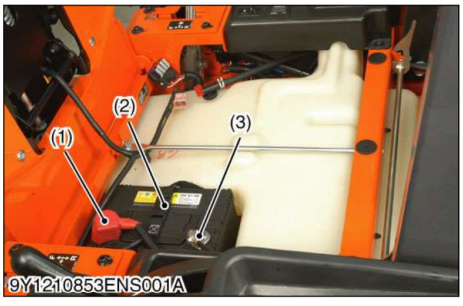
[1] CHECKING AND ADJUSTING

Refer to
- ZG124E, ZG127E, BRIGGS & STRATTON ENGINE SERVICE MANUAL (SUPPLEMENT).
- Z121S, Z125S, KOHLER ENGINE SERVICE MANUAL (SUPPLEMENT).

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[2] DISASSEMBLING AND ASSEMBLING

(1) Separating Engine



Battery

WARNING

To avoid serious injury:
- **When disconnecting the battery cables, disconnect the negative cable from the battery first. When connecting, connect the positive cable to the battery first.**

1. Lift up the seat.
2. Disconnect the negative cable (3) from the battery (2).
3. Disconnect the positive cable (1) from the battery (2).

(1) Positive Cable
(2) Battery
(3) Negative Cable

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Tension Spring

1. Loosen the spring tension of mower pulley.

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I INFORMATION

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(Continued)

The transaxle is a self-contained unit designed for the transfer and control of power.

We add a charge pump (14) to supply filling fluid to the motor (6).

It provides an infinitely variable speed range between zero and maximum in both forward and reverse modes of operation.

The hydrostatic transaxle uses a variable displacement pump (2) with a maximum displacement of 10 cc (0.011 U.S.qts., 0.009 Imp.qts.) per revolution, and a motor (6) with a fixed displacement of 16 cc (0.017 U.S.qts., 0.014 Imp.qts.) per revolution. The variable displacement pump (2) features a cradle swashplate (variable swashplate) (17) with a direct-proportional displacement control. Reversing the direction of tilt of the swashplate reverses the direction of the pump to the motor and thus reverses the direction of the motor output rotation. The fixed displacement motor (6) uses a fixed swashplate (11). The pump and motor are of the axial piston design, and both use spherical nosed pistons which are held against a thrust race by internal compression springs.

The hydrostatic transaxle has a self-contained fluid supply and an integral filter. The fluid is forced through the oil filter (15).

Charge check valves (4), (12) in the center section are used to control the makeup flow of fluid to the low pressure side of the loop.

The hydrostatic transaxle has an internal cog style parking brake. It is essential to fully disengage the brake prior to operation.

A cam style, block lifting bypass actuator (5) is used in the hydrostatic transaxle to permit moving the machine for short distance at a maximum of 3.2 km/h (2 mph) without starting the engine.

The brake must be disengaged prior to actuating the bypass mechanism.

9Y1211131TXM0001US0

CAUTION

- **Actuating the bypass will result in the loss of hydrostatic braking capacity. The machine must be stationary and on a level surface and in neutral when actuating the bypass.**

Overall Transaxle Reduction		24.74: 1
Input Speed	Maximum Hi-idle (No Load)	3000 rpm Non-Charge – 3600 rpm Charged
	Minimum	1800 rpm
Output Torque	Intermittent	461 N·m (24.9 kgf·m, 340 lbf·ft)
	Continuous	244 N·m (47.0 kgf·m, 180 lbf·ft)
Weight on Tires (per unit)	Maximum with 18" tires	217kg (480 lbs)
	Maximum with 20" tires	199 kg (440 lbs)
	Maximum with 22" tires	181 kg (400 lbs)
	Maximum with 23" tires	–
Axle Shaft Diameter		25.4 mm (1.00 in.)
Axle Shaft End Options		Tapered 4-Bolt Flange
Parking Brake Type		Internal
Weight of Unit		14.5 kg (32.0 lbs)

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