WSM

WORKSHOP MANUAL

ZG327A

Kubota

KiSC issued 10, 2019 A

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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.**

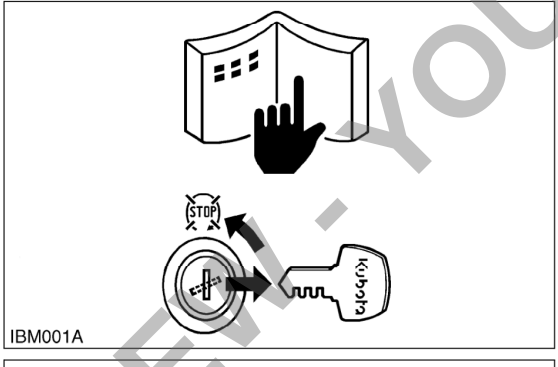
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ 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.**

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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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5. LUBRICANTS AND FUEL

No.	Place	Capacity	Lubricants, fuel and coolant
		ZG327PA, ZG327RPA, ZG327PA-AU	
1	Fuel	48 L 12.7 U.S.gals 10.6 Imp.gals	• Automobile unleaded or regular gasoline • Unleaded gasoline 87 octane or higher
2	Engine crankcase	2.0 L * 2.1 U.S.qts 1.8 Imp.qts	Engine oil: API Service Classification SG, SH, SJ or higher Above −18 °C (0 °F): SAE10W-30 or 10W-40 Below 0 °C (32 °F): SAE5W-20 or 5W-30
3	Transmission case with filter, hose and rear axle gear case (R.H. and L.H.)	12.1 L 12.8 U.S.qts 10.6 Imp.qts	KUBOTA SUPER UDT-2 fluid
4	Mower gear box	0.4 L 0.4 U.S.qts 0.4 Imp.qts	SAE 90 gear oil (API service classification: more than GL-3)

■ **NOTE**
- *** Oil amount when the oil level is the upper of the oil level gauge.**

■ **IMPORTANT**
- **To prevent serious damage to hydraulic system, use only KUBOTA genuine fluid or its equivalent.**

■ **NOTE**

Engine Oil
- **Oil used in the engine should have an American Petroleum Institute (API) service classification and Proper SAE Engine Oil according to the ambient temperatures as shown above.**

Transmission oil
- **The oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and to complete lubrication of the transmission, it is important that a multi-grade transmission fluid is used in this system. We recommend the use of KUBOTA UDT or SUPER UDT fluid for optimum protection and performance.**
  Do not mix different brands together.

■ **Indicated capacities of water and oil are manufacturer's estimate.**

■ **Gasohol (up to 10 % ethyl alcohol, 90 % unleaded gasoline by volume) is approved for the engine. Other gasoline/alcohol are not approved.**

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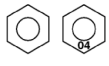
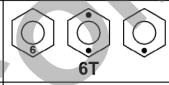
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6. TIGHTENING TORQUES

[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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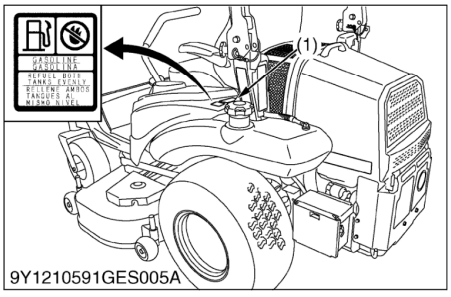
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7. MAINTENANCE CHECK LIST

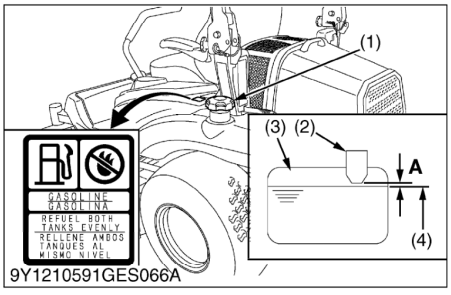
No.	Item		Service Interval												After since	Reference page	
			50	100	150	200	250	300	350	400	450	500	550	600			
1	Engine oil	Change	★		☆		☆		☆		☆		☆		every 100 Hr	G-22	
2	Engine oil filter	Replace	★				☆				☆				every 200 Hr	G-21	
3	HST transmission oil filter	Replace	★			☆				☆				☆	every 200 Hr	G-22	
4	Hydraulic oil filter	Replace								★					every 400 Hr	G-23	
5	Transmission fluid and rear axle gear case (R.H. and L.H.) fluid	Change								★					every 400 Hr	G-24	
6	Mower gear box oil	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-26	
		Change			☆			☆			☆			☆	every 150 Hr	G-42	
7	Safety device	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-25	
8	Greasing (except mower)	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-28	
9	Oiling	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-30	
10	Air cleaner primary element	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31	*1
		Replace													every 1 year	G-47	
	Secondary element	Replace													every 1 year	G-47	
11	Carbon canister air filter	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-32	*2
		Replace													every 2 years	G-48	
12	Fuel filter element	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-33	
		Replace								☆					every 400 Hr	G-44	*2
13	Fuel line	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-33	
		Replace													every 2 years	G-48	*2
14	Parking brake	Adjust		☆		☆		☆		☆		☆		☆	every 100 Hr	G-35	*2
15	Battery condition	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-36	
16	Engine shroud panel	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-39	*2
17	Engine oil cooler fins	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-40	*1 *2
18	Fuel filter bowl	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-41	
19	Throttle cable	Oil		☆		☆		☆		☆		☆		☆	every 100 Hr	G-41	
20	Spark plug condition and gap	Check				☆				☆				☆	every 200 Hr	G-42	
21	Hydraulic hose	Check				☆				☆				☆	every 200 Hr	G-43	
		Replace													every 2 years	G-48	*2
22	Intake air line	Check				☆				☆				☆	every 200 Hr	G-43	
		Replace													every 2 years	G-48	*3

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9Y1210591GES066A


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Checking Amount of Fuel and Refueling

CAUTION

To avoid personal injury:

- **Handle fuel carefully. If the engine is running, do not fill the fuel tank. If engine is hot, let engine cool several minutes before adding fuel. Do not smoke while filling the fuel tank or servicing the fuel system. Fill fuel tank only to bottom of filler neck. Do not fill completely full. The empty space in the tank allows gasoline to expand, when it heats up. Never remove the fuel tank cap or add fuel when the fuel tank is hot.**

Check the fuel level. Take care that the fuel tank does not become empty.

Fuel tank capacity	48 L 12.7 U.S.gals 10.6 Imp.gals

■ **IMPORTANT**

- **Do not mix oil with gasoline.**
- **Tighten the fuel cap until it clicks.**
- **Do not use the fuel cap other than KUBOTA approved one.**
- **Do not permit dirt or trash or water to get into the fuel system.**
- **Be careful not to let the fuel tank become empty, otherwise air will enter the fuel system, necessitating bleeding before next engine start.**
- **Be careful not to spill fuel during refueling. If a spill should occur, wipe it off at once, or it may cause a fire.**

Use only unleaded gasoline with an octane rating index of 87 or higher may be used.

■ **NOTE**

- **Use fuel within approximately 30 days after purchase to avoid deterioration in fuel quality, or add fuel stabilizer to keep fuel fresh and stabilized.**
- **Fuel blend differs from season to season for the best seasonal engine performance. To prevent engine performance troubles such as vapor lock or hard starting, use fuel within the season in which the fuel is purchased.**
- **Infrequent use of the engine during a season can make fuel stale in the fuel tank of the machine. Stale fuel condition can cause engine performance troubles by varnish and plugged carburetor components.**
- **Seal the fuel storage container tightly and store it out of sunlight and heat to prevent fuel degradation.**
- **Condensation in the fuel tank may occur because of various operating or environmental conditions. To reduce condensation and avoid affecting machine operation, fill the fuel tank at the end of daily operation and store fuel in the plastic container.**

(1) Fuel Tank Cap
(2) Fuel Tank Filter Neck
(3) Empty Space
(4) Max. Fuel Level

A: Clearance (Fuel Level is under the Filter Neck.)

(To be continued)

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1. TROUBLESHOOTING

The engine malfunctions can result from a large number of cause. The following describes symptoms that are encountered relatively more often than others, their major causes and remedies.

Symptom	Probable Cause	Solution	Reference Page
Starter Does Not Run	Battery discharged	Charge	G-36
	Improper or imperfect wiring	Check the wiring	–
	Main switch malfunctioning	Replace	–
	Starter malfunctioning	Repair or replace	1-S19, 5-S15
	Safety switch malfunctioning	Replace	5-S8
Engine Does Not Start	No fuel	Fill fuel	–
	Air Cleaner clogged	Clean or replace	G-31
	Fuel pipe clogged	Clean or replace	G-33
	Fuel filter clogged	Replace	G-33
	Spark plug electrodes are wet with gasoline	Dry electrode and restart, being careful not to close choke excessively. Check to see if there is no overflow from carburetor, if affirmative, disassembled and clean carburetor.	–
	No spark forms in spark plug	Disconnected cord and wrong wiring	1-S12
	Only weak spark forms	Damaged ignition coil Damaged ignition control unit	1-S12
	Insufficient compression	Check the valve clearance	1-S9
		Check degree of contact of intake and exhaust valves with their seat	1-S32
		Check the tightening torque on cylinder head screws	1-S21
		Check the wear of piston ring, piston and cylinder	1-S37, 1-S38, 1-S40
	Fuel pump damaged	Repair or replace	5-S11, 5-S11
Improper Low-Speed Running and Idling	Improper spark plug	Repair or replace	1-S22
	Damaged Igniter	Replace	1-S30
	Damaged carburetor	Clean or replace	5-S11
	Damaged governor	Adjust	1-S21
Engine Speed Does Not Increase	Damaged carburetor	Repair or replace	5-S11
	Damaged governor	Adjust	1-S11

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3. SPECIFICATIONS

[1] NORTH AMERICA AND CANADA MODELS

Model			ZG327PA	ZG327RPA
Engine	Model		KGZ770 -MA1	
	Maximum engine power (Gross)		19.4 kW (26.0 HP)*1	
	Type		Air-cooled gasoline engine	
	Number of cylinders		2 (V-Twin)	
	Bore and stroke		84.2 × 69 mm (3.31 × 2.72 in.)	
	Total displacement		768 cm^3 (46.9 cu.in.)	
	Rated revolution		3200 min^{-1} (rpm)	
	Fuel		Automobile unleaded or regular gasoline	
	Starter		Electric starter with battery	
	Lubrication		Full pressure lubrication	
	Cooling		Forced air cooled	
	Battery		U1L-10 (12 V, RC: 22 min, CCA: 300, CA: 365)	
Capacities	Fuel tank		48 L (12.7 U.S.gals, 10.6 Imp.gals)	
	Engine crankcase (with filter)		2.0 L (2.1 U.S.qts, 1.8 Imp.qts)	
	Transmission including rear axle gear case		12.1 L (12.8 U.S.qts, 10.6 Imp.qts)*3	
Dimensions	Overall length		2230 mm (87.8 in.)	
	Overall width Without mower deck		1460 mm (57.5 in.)	
	Overall height	With ROPS upright	1915 mm (75.4 in.)	
		With ROPS folded	1555 mm (61.2 in.)	
	Wheel base		1410 mm (55.5 in.)	
	Minimum ground clearance		130 mm (5.12 in.) with 60"	
	Tread	Front	975 mm (38.4 in.)	
		Rear	1150 mm (45.3 in.)	
Weight (with Mower Deck)			710 kg (1565 lbs) with 60" (side)	710 kg (1565 lbs) with 60" (rear)
Travelling system	Tires	Front	15 × 6.0-6 (Non Flat Tire) Rib	
		Rear	26 × 12.0-12 (4PR) Turf	
	Travelling speeds	Forward	0 to 10.6 mph (0 to 17 km/h)*2	
		Reverse	0 to 5.3 mph (0 to 8.5 km/h)*2	
	Steering		2-Hand levers	
	Transmission		2-Hydrostatic transmission with gear	
	Parking brake		Wet multi disc / foot applied, released	
	Min. turning radius		0 mm (0 in.)	
PTO	Revolution		1 speed (2530 rpm at 3200 engine rpm)	
	Drive system		Shaft drive, KUBOTA 10 tooth in involute spline	
	Clutch type		Wet multi discs	
	PTO brake		Wet single disc	

■ **NOTE**

- **Specifications and design subject to change without notice.**

***1: Power (HP) specifications for individual gasoline engine models are rated pursuant to Society of Automobile Engineers (SAE) J1940 based on gross output testing performed in accordance with SAE J1995 without the air cleaner and muffler.**

***2: At 3200 min^{-1} (rpm)**

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

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1. FEATURE


9Y1210591ENM001A


9Y1210591ENM002A

The KGZ Series consists of V-type, 2-cylinder gasoline engines that make full use of the newly developed C-OHV (or, cross flow overhead valve) combustion system. These engines are compact in design, yet provide high output, high fuel efficiency, and high overall performance while being environmentally friendly through their low-vibration, low-noise, and clean exhaust operation. The Series can readily be characterized by its enhanced ease of use and high reliability.

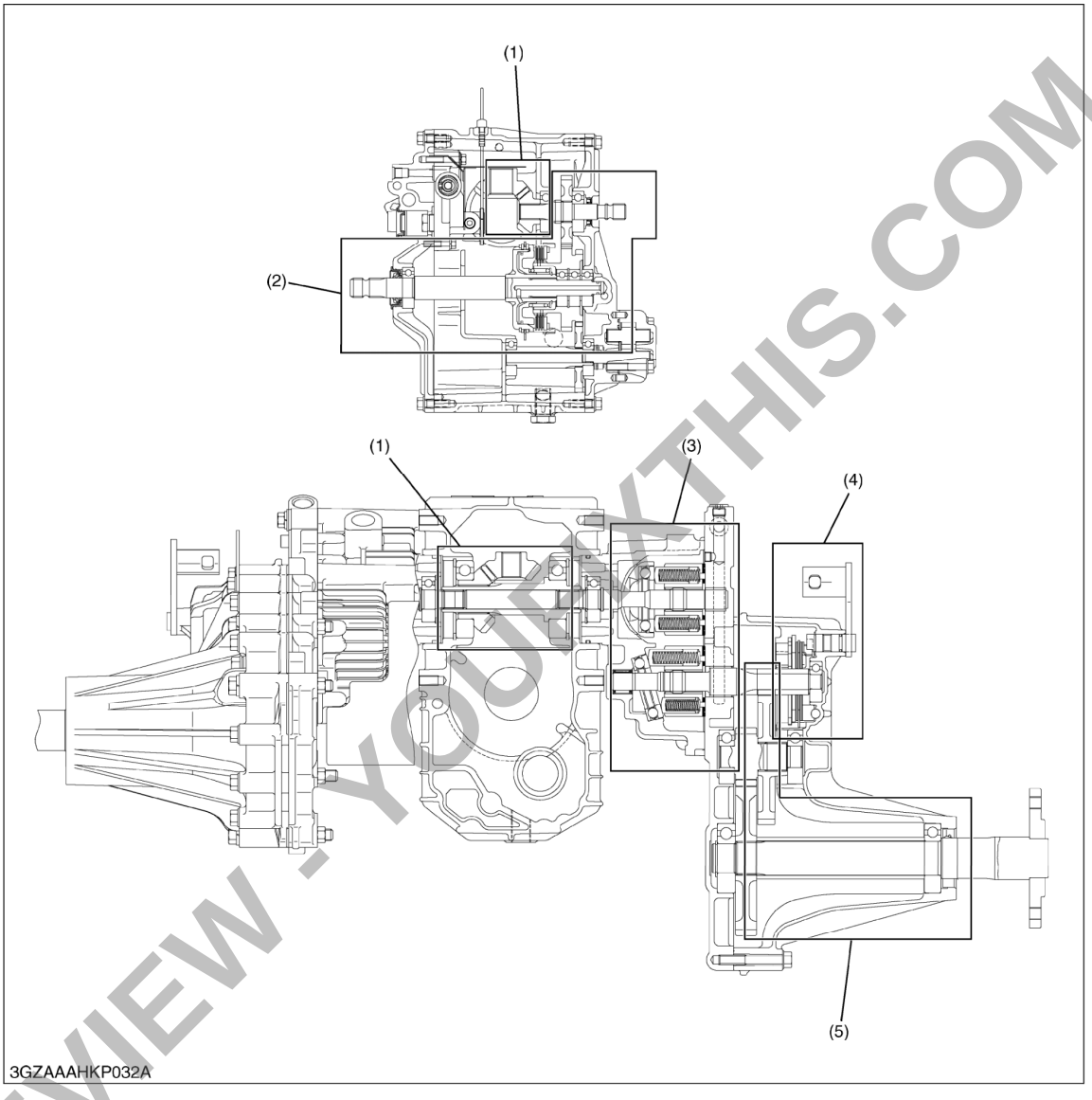
The anti-evaporation system is adopted to ZG327A.

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1. STRUCTURE



(1) Bevel Gear Section (3) Hydrostatic Transmission (4) Brake Section (5) Final Reduction Gear Section
(2) PTO Section

Transmission consists of bevel gear section (1) hydrostatic transmission (3), brake section (4), final reduction gear section (5), and PTO section (2).

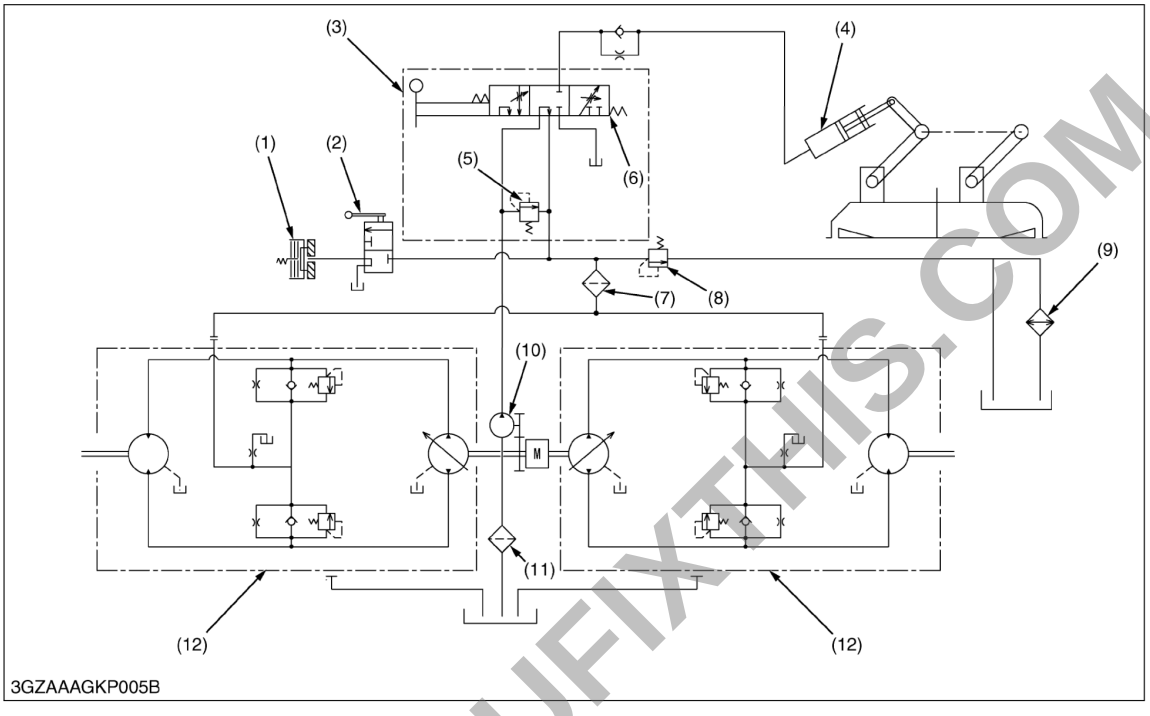
Power from engine is transmitted through transmission to mower and rear wheels.

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1. HYDRAULIC CIRCUIT



(1) PTO Clutch
(2) PTO Clutch Valve
(3) Hydraulic Control Valve Assembly
(4) Hydraulic Cylinder
(5) Relief Valve
(6) Control Valve
(7) Oil Filter (HST)
(8) Regulator Valve
(9) Oil Cooler
(10) Hydraulic Pump
(11) Oil Filter (Transmission)
(12) Hydrostatic Transmission

The hydraulic system of this machine is composed of a hydraulic pump (10), control valve (6), hydraulic cylinder (4) and other components.

This system has the following functions.

Oil is supplied by hydraulic pump (10) which is driven by engine.

Power from the input shaft (pump shaft) is distributed right and left with the bevel gears and drives each hydrostatic transmission (12).

Moreover, oil from the hydraulic pump (10) is sent to the transmission center case through the control valve. On the other hand, oil is regulated with the regulator valve (8) to constant pressure and sent to the hydrostatic transmission (12) and PTO clutch (1).

9Y1210591HYM0001US0

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