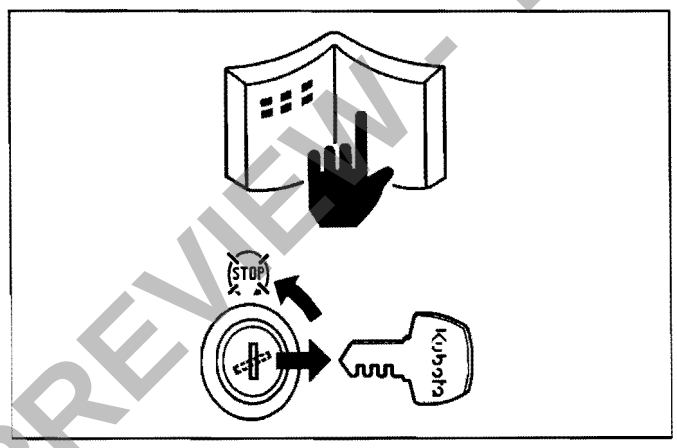
⚠ SAFETY FIRST

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 attempt 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.**



BEFORE SERVICING AND REPAIRING

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

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GENERAL

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SPECIFICATIONS

Model			ZG327P
Engine	Model		KGZ770-E2-M1
	Maximum engine power (Gross)		20.1 kW (27 HP)*1
	Type		Air-cooled gasoline engine
	Number of cylinders		2 (V-Twin)
	Bore and stroke		84.2 x 69 mm (26.38 x 27.17 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-9 (12 V, RC : 30 min, CCA : 285, CA : 340)
Capacities	Fuel tank		49 L (13 U.S.gals, 11 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 in.
	Tread	Front	975 mm (38.4 in.)
		Rear	1150 mm (45.3 in.)
Weight (with Mower Deck)			710 kg (1565 lbs) with 60 in.
Travelling system	Tires	Front	15 x 6.0-6 (Semi-pneumatic Non Flat Tire) Rib
		Rear	26 x 12.0-12 (4PR) Turf
	Travelling speeds	Forward	0 to 17.0 km/h (0 to 10.6 mph)*2
		Reverse	0 to 8.5 km/h (0 to 5.3 mph)*2
	Steering		2-Hand levers
	Transmission		2-Hydrostatic transmission with gear
	Parking brake		Wet multi discs / 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 : Manufacturer's estimate
*2 : At 3200 min^{-1} (rpm)
*3 : Oil amount when the oil level is at the upper level.

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5. LUBRICANTS AND FUEL

No.	Place	Capacity	Lubricants
		ZG327P	
1	Fuel	49 L 13 U.S.gals 11 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 15W-40 Below 0 °C (32 °F) : SAE5W-20 or 5W-30
3	Transmission case with filter, hose and rear axle gear case (RH and LH)	12.1 L 12.8 U.S.qts 10.6 Imp.qts	KUBOTA UDT or SUPER UDT 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 :**
  KUBOTA original transmission hydraulic fluid
  the oil used to lubricate the transmission is also used as hydraulic fluid. To insure proper operation of the hydraulic system and complete lubrication of the transmission, it is important that a multi-grade transmission fluid be 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 capacity of water and oil are manufacture's estimate.**
- **Gasohol (up to 10 % ethyl alcohol, 90 % unleaded gasoline by volume) is approved for the engine. Other gasoline/alcohol blends are not approved.**

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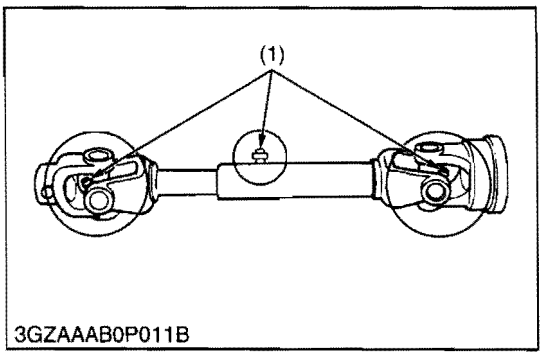
7. MAINTENANCE CHECK LIST

No.	Items	Period	Indication hour meter (Hr)												After since	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600				
1	Engine oil	Change	★	☆		☆		☆		☆		☆		☆	every 100 Hr	G-19		
2	Engine oil filter	Replace	★			☆				☆				☆	every 200 Hr	G-18		
3	HST transmission oil filter	Replace	★			☆				☆				☆	every 200 Hr	G-19		
4	Hydraulic oil filter	Replace	★							☆					every 400 Hr	G-20		
5	Transmission fluid and rear axle gear case (RH and LH) fluid	Change								★					every 400 Hr	G-21		
6	Mower gear box oil	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-23		
		Change			☆			☆			☆			☆	every 150 Hr	G-35		
7	Safety device	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-22		
8	Greasing (without mower)	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-24		
9	Oiling	–	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 Hr	G-25		
10	Air cleaner primary element	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-28	*1	@
		Replace													every 1 year	G-38		
	Secondary element	Replace													every 1 year	G-38		
11	Fuel filter element	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-29		@
		Replace								☆					every 400 Hr	G-37	*2	
12	Fuel line	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-29		@
		Replace													every 2 years	G-39	*2	
13	Parking brake	Adjust		☆		☆		☆		☆		☆		☆	every 100 Hr	G-32		
14	Battery condition	Check		☆		☆		☆		☆		☆		☆	every 100 Hr	G-26		
15	Engine shroud panel	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-30	*2	
16	Engine oil cooler fins	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-31	*1 *2	
17	Fuel filter pot	Clean		☆		☆		☆		☆		☆		☆	every 100 Hr	G-34		
18	Throttle cable	Oil		☆		☆		☆		☆		☆		☆	every 100 Hr	G-25		

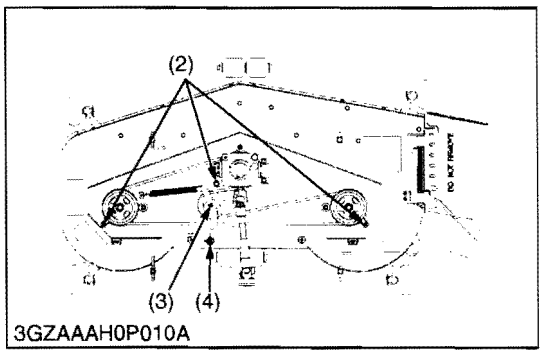
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Greasing (Mower)

CAUTION

To avoid personal injury:

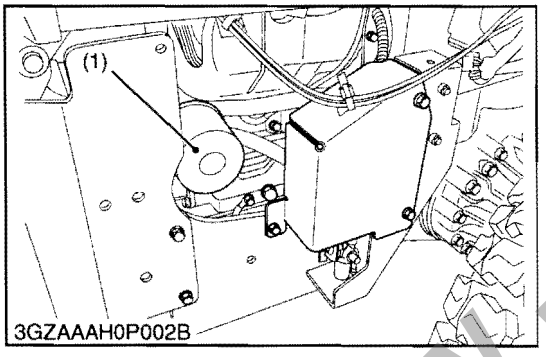
- **Be sure to stop the engine and remove the key before greasing.**

1. Apply grease to the following position as figures.

(1) Mower Universal Joint
(2) Spindle Shaft
(3) Belt Tension Pulley
(4) Belt Tension Pivot

W1043490

[2] CHECK POINTS OF INITIAL 50 HOURS



3GZAAAH0P002B

Replacing Engine Oil Filter Cartridge

CAUTION

To avoid personal injury :

- **Be sure to stop the engine and remove the key before changing the oil and the oil filter cartridge.**
- **Allow engine to cool down sufficiently; oil can be hot and may cause burns.**

1. The oil filter cartridge must be changed every 200 service hours.
2. Apply a slight coat of oil onto the rubber gasket of new cartridge.
3. Tighten the filter quickly until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
4. After the new cartridge has been replaced, the engine oil level normally lowers a little. Add engine oil to proper level. Check for oil leaks around filter gasket.

■ **IMPORTANT**

- **To prevent serious damage to the engine, replacement element of the recommended type must be used. Use only a genuine KUBOTA filter or its equivalent.**

(1) Engine Oil Filter Cartridge

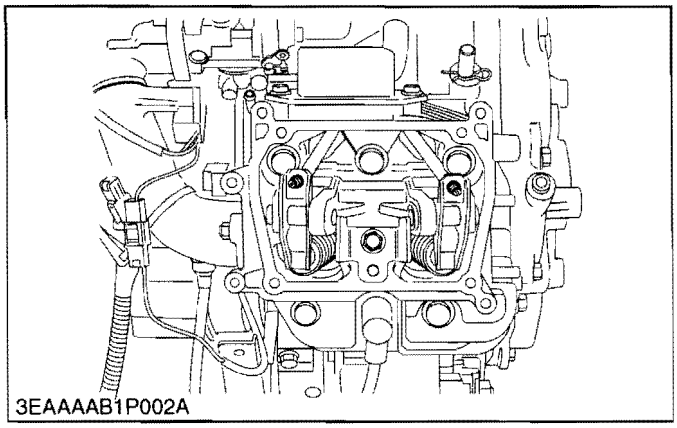
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2. ENGINE BODY

[1] CYLINDER HEAD


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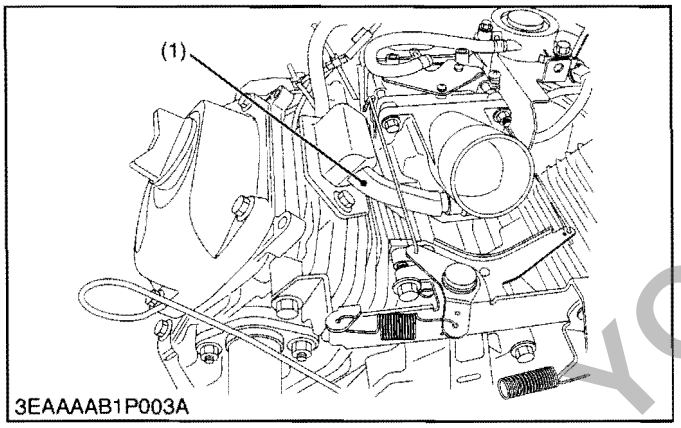
This cylinder head is made of an aluminum alloy for reducing thermal distortion.

In addition, a valve seat made of a sintered alloy is press-fitted to enhance the wear resistance of the seat surface.

The intake port and the exhaust port are of cross-flow type where the intake port is placed on the flywheel side and the exhaust port on the opposite side of it.

W1012750

[2] CLOSED BREATHER



3EAAAAB1P003A

Closed breather system has been adopted to prevent the release of blow-by gas into the atmosphere. After its oil content is filtered by oil shield, the blow-by gas in fed back to the intake manifold through breather valve to be used for re-combustion.

(1) Breather Hose

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2. SERVICING SPECIFICATIONS

ENGINE BODY

Item		Factory Specification	Allowable Limit
Valve Clearance (Cold)	Intake	0.12 to 0.17 mm 0.0048 to 0.0066 in.	–
	Exhaust	0.17 to 0.22 mm 0.0067 to 0.0086 in.	–
Compression Pressure	No. 1 Cylinder	1.19 MPa 12.1 kgf/cm^2 173 psi	0.95 MPa 9.7 kgf/cm^2 140 psi
	No. 2 Cylinder	0.36 MPa 3.7 kgf/cm^2 52 psi	0.20 MPa 2.0 kgf/cm^2 29 psi
Valve Stem to Valve Guide	Clearance	0.045 to 0.075 mm 0.018 to 0.029 in.	0.10 mm 0.0039 in.
Valve Stem	O.D.	6.940 to 6.955 mm 0.2733 to 0.2738 in.	–
Valve Guide	I.D.	7.000 to 7.015 mm 0.2756 to 0.2761 in.	–
Valve Face	Angle (Intake)	0.79 rad 45 °	–
	Angle (Exhaust)	0.79 rad 45 °	–
Valve Seat	Angle (Intake)	0.79 rad 45 °	–
	Angle (Exhaust)	0.79 rad 45 °	–
	Width	1.13 mm 0.0445 in.	–
Valve Spring	Free Length	45.3 to 45.8 mm 1.79 to 1.80 in.	45.0 mm 1.77 in.
	Tilt	–	1.0 mm 0.039 in.
	Setting Load	127 N / 35.7 mm 13.0 kgf / 35.7 mm 28.6 lbf / 35.7 mm	115 N / 35.7 mm 11.7 kgf / 35.7 mm 25.9 lbf / 35.7 mm
Rocker Arm Shaft to Rocker Arm	Clearance	0.011 to 0.052 mm 0.00044 to 0.0020 in.	0.10 mm 0.0039 in.
Rocker Arm Shaft	O.D.	11.973 to 11.984 mm 0.47138 to 0.47181in.	–
Rocker Arm	I.D.	11.995 to 12.025 mm 0.47225 to 0.47342 in.	–
Push Rod	Alignment	–	0.25 mm 0.0098 in.

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6. TIGHTENING TORQUES

[1] GENERAL USE SCREWS, BOLTS AND NUTS

Screws, bolts, and nuts whose tightening torques are not specified in this Workshop Manual should be tightened according to the table below.

Indication on top of bolt	⬡ ④ No-grade or 4T						⑦ 7T						⑨ 9T		
Material of bolt	SS400, S20C						S43C, S48C						SCr435, SCM435		
Material of opponent part	Ordinariness			Aluminum			Ordinariness			Aluminum			Ordinariness		
Diameter \ 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 (6 mm, 0.24 in.)	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 (8 mm, 0.31 in.)	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 (10 mm, 0.39 in.)	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 (12 mm, 0.47 in.)	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 (14 mm, 0.55 in.)	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 (16 mm, 0.63 in.)	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 (18 mm, 0.71 in.)	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 (20 mm, 0.79 in.)	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		
Diameter \ Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8 (8 mm, 0.31 in.)	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 (10 mm, 0.39 in.)	25 to 31	2.5 to 3.2	18 to 23	20 to 25	2.0 to 2.6	15 to 18
M12 (12 mm, 0.47 in.)	29.5 to 49.0	3.0 to 5.0	21.7 to 36.1	31.4	3.2	23.1
M14 (14 mm, 0.55 in.)	62 to 73	6.3 to 7.5	46 to 54	–	–	–
M16 (16 mm, 0.63 in.)	98.1 to 112	10.0 to 11.5	72.4 to 83.1	–	–	–
M18 (18 mm, 0.71 in.)	172 to 201	17.5 to 20.5	127 to 148	–	–	–

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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.

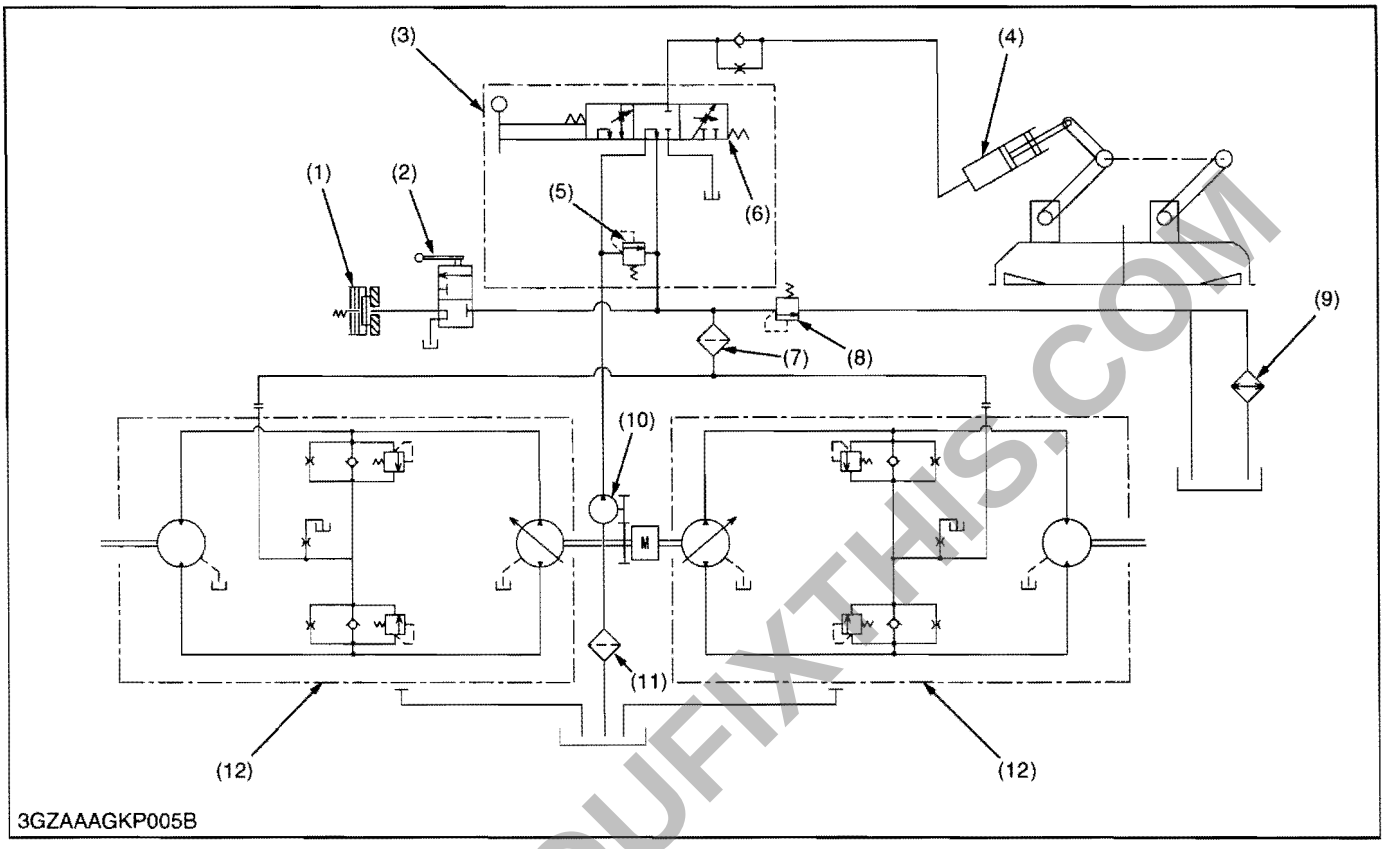
Symptom	Probable Cause	Solution	Reference Page
Starter Does Not Run	Battery discharged	Charge	G-27
	Improper or imperfect wiring	Check the wiring	–
	Main switch malfunctioning	Replace	–
	Starter malfunctioning	Repair or replace	1-S15, 5-S14
	Safety switch malfunctioning	Replace	5-S8
Engine Does Not Start	No fuel	Replenish fuel	–
	Air Cleaner clogged	Clean or replace	G-28
	Fuel pipe clogged	Clean or replace	G-29
	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-S11
	Only weak spark forms	Defective ignition coil Defective ignition control unit	1-S11
	Insufficient compression	Check the valve clearance Check degree of contact of intake and exhaust valves with their seat Check the tightening torque on cylinder head screws Check the wear of piston ring, piston and cylinder	1-S9 1-S26 1-S19 1-S31, S32, S34
Improper Low-Speed Running and Idling	Improper spark plug	Repair or replace	1-S19
	Defective Igniter	Replace	1-S25
	Defective carburetor	Clean or replace	1-S17
	Defective governor	Adjust	1-S10
Engine Speed Does Not Increase	Defective carburetor	Repair or replace	1-S17
	Defective governor	Adjust	1-S10

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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).

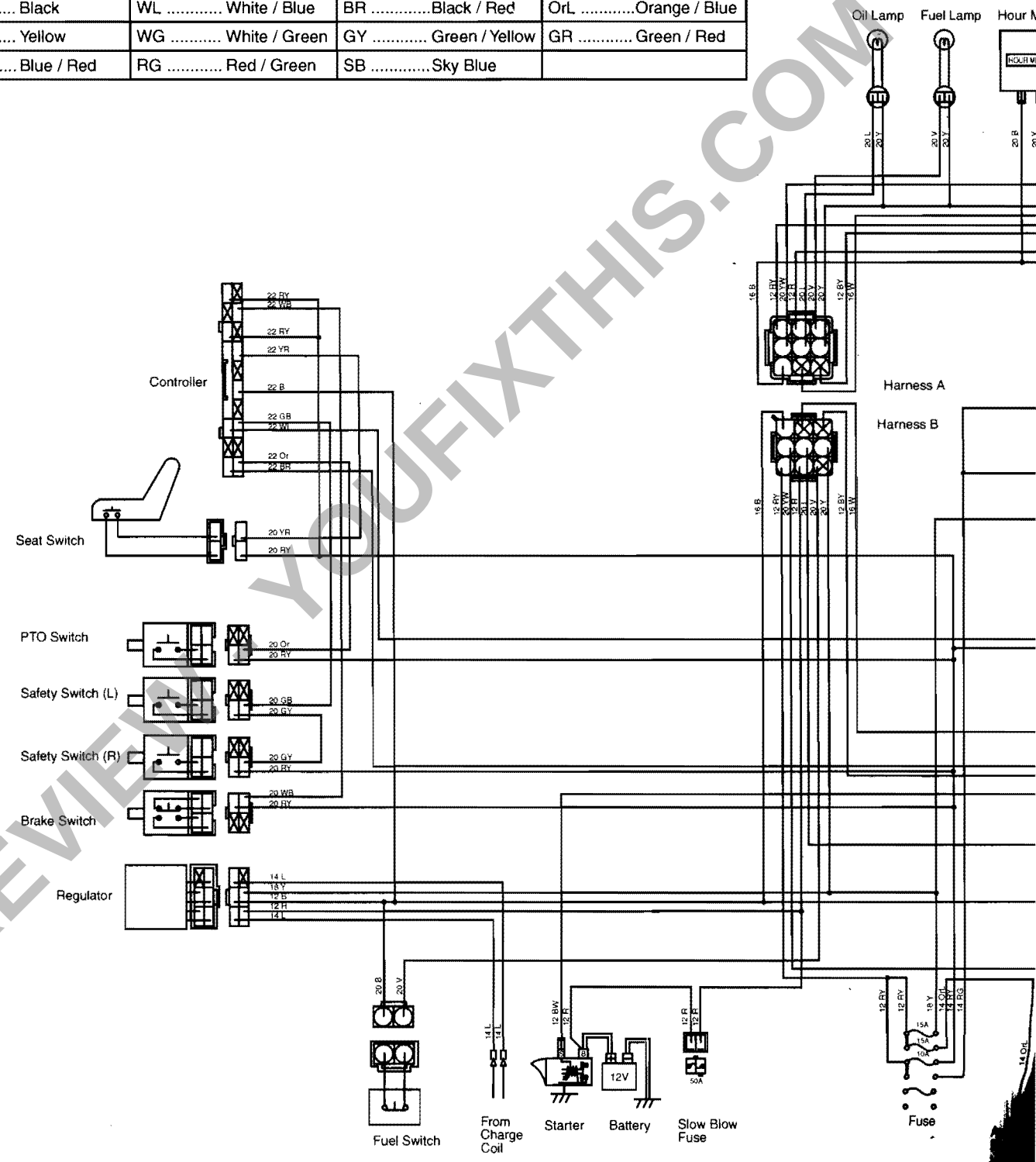
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1. WIRING DIAGRAM

Color of Wiring

W ..... White	V ..... Violet	RY .....Red / Yellow	YR .....Yellow / Red
R ..... Red	Or .....Orange	BY .....Black / Yellow	YW .....Yellow / White
L .....Blue	WB .....White / Black	BW .....Black / White	GB ..... Green / Black
B ..... Black	WL ..... White / Blue	BR .....Black / Red	OrL .....Orange / Blue
Y ..... Yellow	WG ..... White / Green	GY ..... Green / Yellow	GR ..... Green / Red
LR ..... Blue / Red	RG ..... Red / Green	SB .....Sky Blue	



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