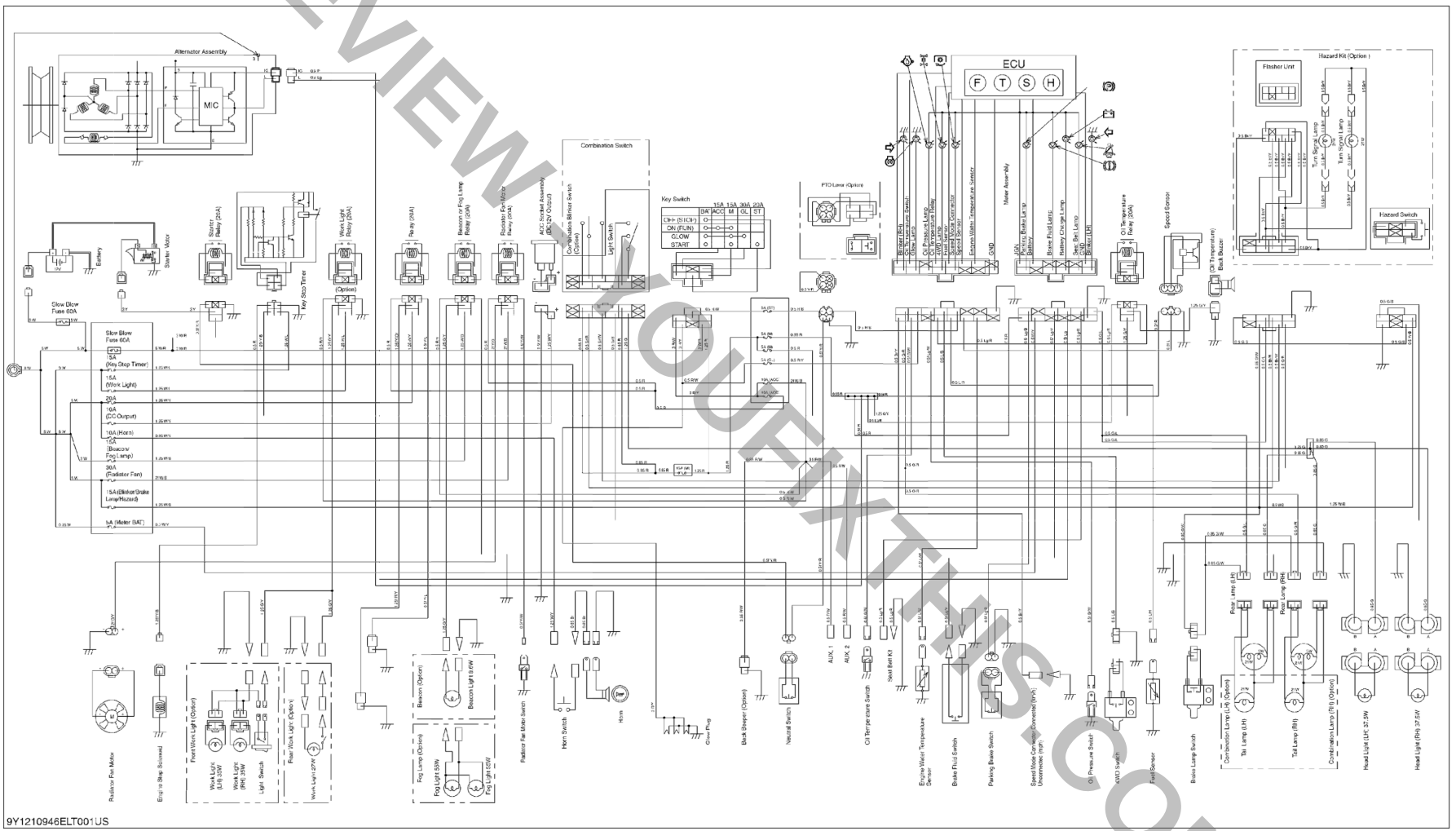
1. WIRING DIAGRAM

[1] RTV-X900

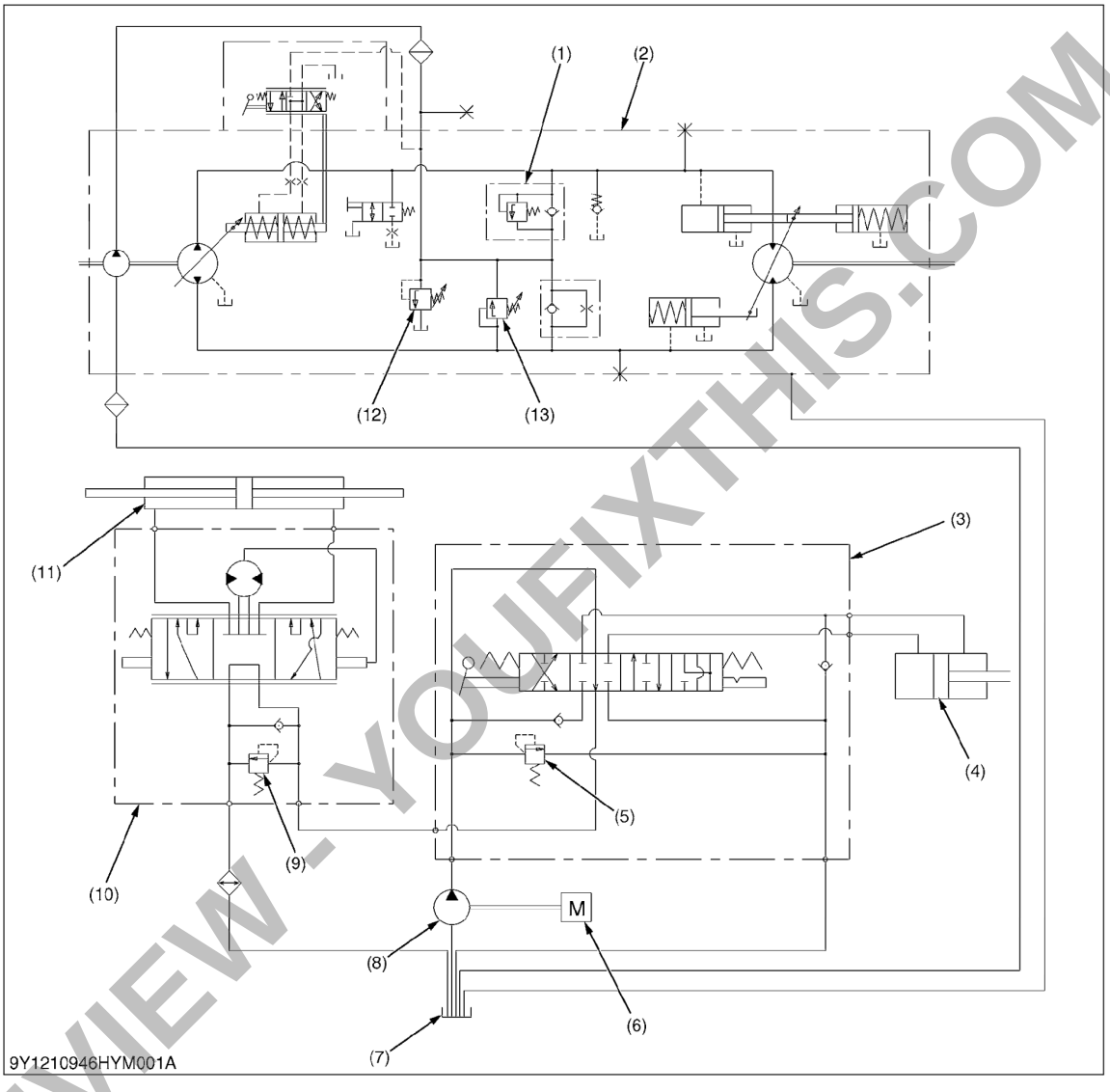


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2. HYDRAULIC CIRCUIT

[1] RTV-X900



(1) Check and High Pressure Relief Valve
(2) HST Assembly
(3) Control Valve
(4) Hydraulic Lift Cylinder
(5) Control Valve Relief Valve
(6) Engine
(7) Oil Tank
(8) Hydraulic Pump
(9) Power Steering Unit Relief Vale
(10) Power Steering Unit
(11) Power Steering Cylinder
(12) Charge Relief Vale
(13) High Pressure Relief Valve

Specifications

(1)	23.5 to 26.5 MPa (240 to 270 kgf/cm^2, 3410 to 3840 psi)	(9)	8.00 to 9.00 MPa (81.6 to 91.7 kgf/cm^2, 1160 to 1300 psi) at 3200 min^{-1} (rpm)
(5)	12.5 to 13.5 MPa (128 to 137 kgf/cm^2, 1820 to 1950 psi) at 3200 min^{-1} (rpm)	(12)	0.43 to 0.85 MPa (4.4 to 8.6 kgf/cm^2, 63 to 120 psi)
(8)	9.0 L/min. (2.4 U.S.gals/min, 2.0 Imp.gals/min.) at 3200 min^{-1} (rpm)	(13)	15.0 to 17.0 MPa (153 to 173 kgf/cm^2, 2180 to 2460 psi)

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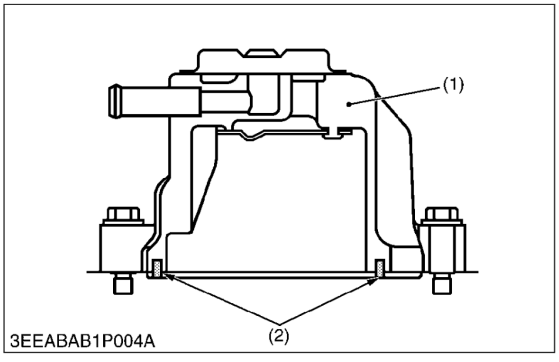
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1. ENGINE BODY

[1] RTV-X900 (D902)

(1) Half-floating Head Cover

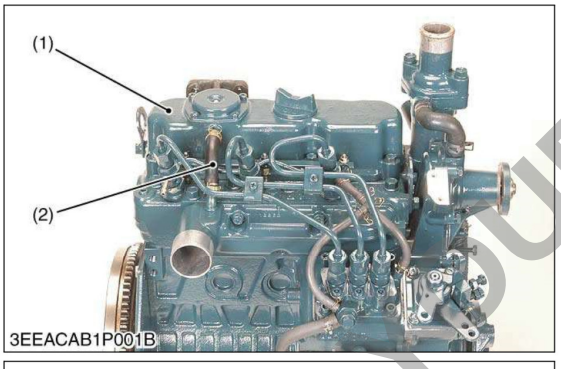


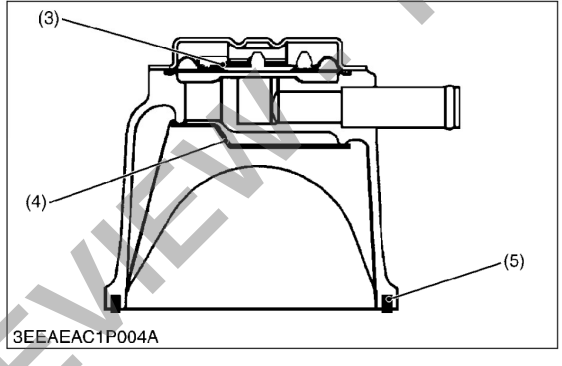
The rubber packing is fitted in to keep the cylinder head cover 0.5 mm (0.02 in.) or so off the cylinder head. This arrangement helps reduce noise coming from the cylinder head.

(1) Cylinder Head Cover (2) Rubber Packing

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(2) Closed Breather





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 (4), the blow-by gas is fed back to the intake manifold through breather valve (3) to be used for re-combustion.

(1) Cylinder Head Cover (4) Oil Shield
(2) Breather Hose (5) Rubber Packing
(3) Breather Valve

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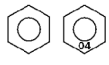
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5. TIGHTENING TORQUES

[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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1. TROUBLESHOOTING

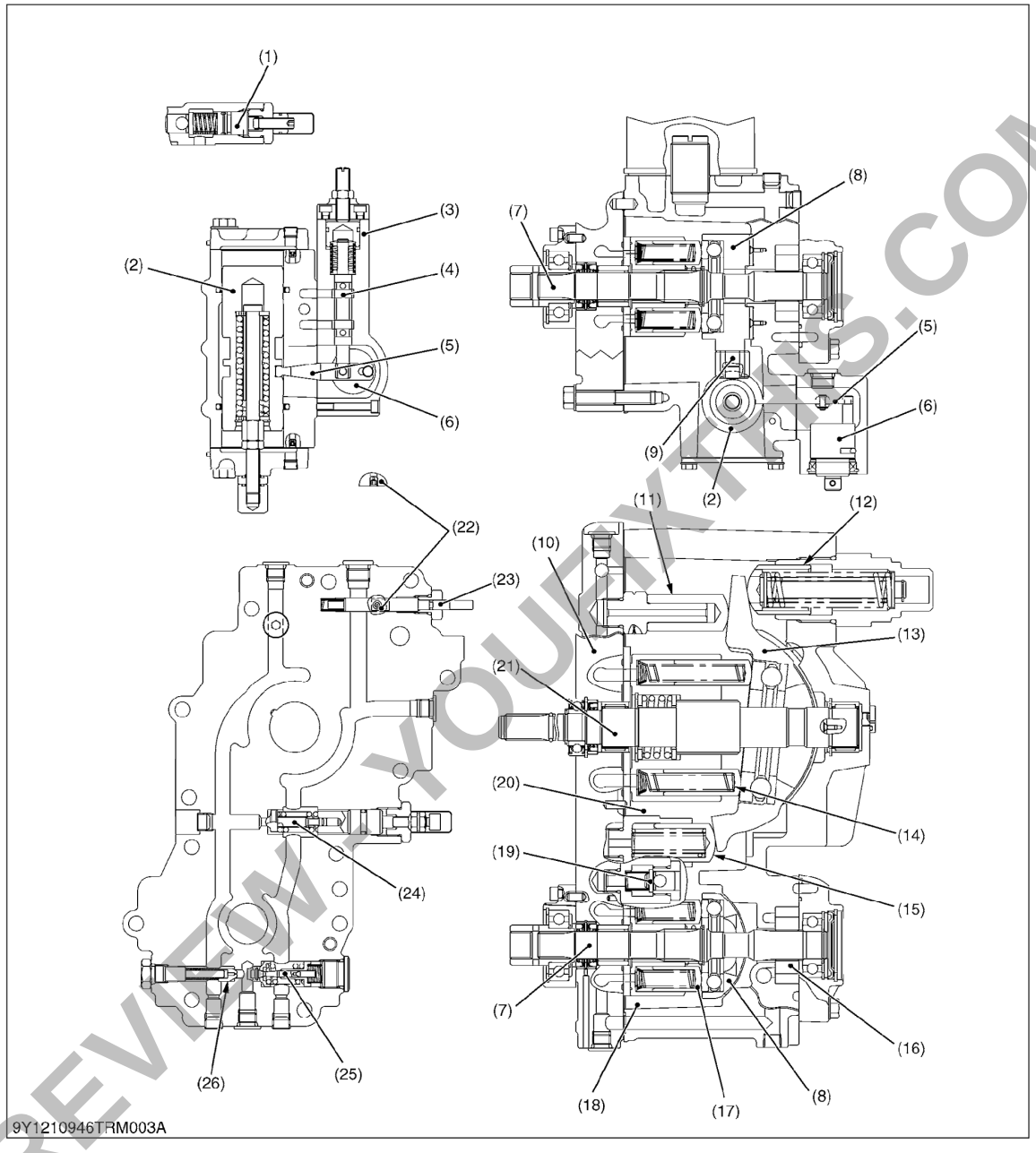
[1] RTV-X900

Symptom	Probable Cause and Checking Procedure	Solution	Reference Page
Engine Does Not Start	1. No fuel	Fill fuel	G-8
	2. Air in the fuel system	Bleed	G-57
	3. Water in the fuel system	Change fuel and repair or replace fuel system	G-40
	4. Fuel pipe clogged	Clean	G-40
	5. Fuel filter clogged	Change	G-40
	6. Excessively high viscosity of fuel or engine oil at low temperature	Use specified fuel or engine oil	G-8, G-10, G-11
	7. Fuel with low cetane number	Use specified fuel	G-8, G-10, G-11
	8. Fuel leak due to loose injection pipe retaining nut	Tighten retaining nut	1-S45
	9. Incorrect injection timing	Adjust	1-S27
	10. Fuel camshaft worn	Replace	1-S23
	11. Injection nozzle clogged	Repair or replace	1-S24
	12. Injection pump malfunctioning	Replace	1-S50
	13. Seizure of crankshaft, camshaft, piston, cylinder or bearing	Replace	1-S54, 1-S56, 1-S58
	14. Compression leak from cylinder	Replace head gasket, tighten cylinder head screw, glow plug and nozzle holder	1-S20, 1-S47
	15. Improper valve timing	Correct or replace timing gear	1-S54
	16. Piston ring and cylinder worn	Replace	1-S57, 1-S87
	17. Excessive valve clearance	Adjust	1-S21
	18. Engine stop solenoid malfunctioning	Replace	8-S13
Starter Does Not Engage	1. Battery discharged	Charge	8-S8
	2. Starter malfunctioning	Repair or replace	8-S11
	3. Key switch malfunctioning	Repair or replace	8-S9
	4. Safety switch malfunctioning	Adjust or replace	8-S12
	5. Wiring disconnected	Connect	8-M1, 8-M4

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[A] RTV-X900



(1) Charge Relief Valve
(2) Servo Piston
(3) Regulator Valve Assembly
(4) Regulator Spool
(5) Feedback Lever
(6) Regulator Shaft
(7) Input Shaft (Pump Shaft)
(8) Variable Swashplate (Pump)
(9) Guide
(10) Port Block Cover
(11) Control Piston 1
(12) Control Piston 2
(13) Variable Swashplate (Motor)
(14) Piston (Motor)
(15) Control Piston 3
(16) Charge Pump
(17) Piston (Pump)
(18) Cylinder Block (Pump)
(19) Anti-cavitation Valve
(20) Cylinder Block (Motor)
(21) Output Shaft (Motor Shaft)
(22) Orifice
(23) Unload Spool
(24) High Pressure Relief Valve (Dynamic Brake)
(25) Check and High Pressure Relief Valve (Travelling Side)
(26) Check Valve

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3. SPECIFICATIONS

Model			RTV-X900			RTV-X1120D				
			General Purpose	Worksite / Orange	Worksite / Camo	General Purpose	Worksite / Orange	Worksite / Camo	Deluxe / Orange	Deluxe / Camo
Engine	Make		D902			D1105				
	Type		3 cylinders, 4-cycle, diesel, OHV							
	Displacement		0.898 L (54.8 cu. in.)			1.123 L (68.53 cu. in.)				
	Horsepower		16.1 kw (21.6 HP)			18.5 kw (24.8 HP)				
	Rated revolution		3200 min^{-1} (rpm)			3000 min^{-1} (rpm)				
	Low idling revolution		1300 to 1400 min^{-1} (rpm)			1350 to 1450 min^{-1} (rpm)				
Fuel Capacity			30 L (7.9 U.S.gals)							
Transmission			Continuously variable hydro transmission (VHT)							
Wheels, Drive system			4, Rear 2WD or 4WD							
Differential lock			Standard; foot operated with mechanical holder							
Gear selection			Hi-Low range forward, neutral, reverse							
Brakes	Front / Rear		Wet disk brake							
	Parking brake		Rear wheel, hand lever							
Steering			Hydrostatic power							
Suspension	Front		Independent, Dual A-Arm type							
	Rear									
Dimensions	Length		3055 mm (120.3 in.)	3110 mm (122.5 in.)		3055 mm (120.3 in.)	3110 mm (122.5 in.)			
	Width		1605 mm (63.2 in.)							
	Height, overall		2020 mm (79.5 in.)							
	Front tread centers		1240 mm (48.8 in.) HDWS, ATV, 1290 mm (50.8 in.) Turf							
	Rear tread centers									
	Wheelbase		2045 mm (80.5 in.)							
	Ground clearance	front axle	266 mm (10.5 in.)							
		rear axle	263 mm (10.4 in.)							
	Turning diameter		8.0 m (26.2 ft)							
Max. Rolling weight (Towing capacity)			Rear: 590 kg (1300 lbs), Front: 295 kg (650 lbs)							
Payload capacity			755 kg (1664 lbs)	725 kg (1598 lbs)		690 kg (1521 lbs)	680 kg (1499 lbs)		685 kg (1510 lbs)	
Weight			865 kg (1907 lbs)	895 kg (1973 lbs)		930 kg (2050 lbs)	940 kg (2072 lbs)		935 kg (2061 lbs)	
Gross Vehicle Weight Rating (GVWR)			1620 kg (3571 lbs)							
Cargo bed	Width		1465 mm (57.7 in.)							
	Length		1030 mm (40.5 in.)							
	Depth		285 mm (11.2 in.)							
	Volume		0.43 m^3 (15.2 cu.ft.)							
	Bed height (unloaded)		887 mm (34.9 in.)							
	Cargo bed capacity		500 kg (1102 lbs)							
Sound level, operator ear			85 db (A)			84 db (A)				
Tire	Front		25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY 25 × 12-12 Turf, 4PLY		25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY	25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY		25 × 10-12 ATV, 6PLY	25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY	25 × 10-12 ATV, 6PLY
	Rear		25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY 25 × 12-12 Turf, 4PLY		25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 6PLY	25 × 10-12 ATV, 6PLY 25 × 10-12 HDWS, 6PLY		25 × 10-12 ATV, 6PLY	25 × 10-12 ATV, 6PLY, 25 × 10-12 HDWS, 7PLY	25 × 10-12 ATV, 6PLY
Tilt steering wheel			–	Standard		–	Standard			
Seat belt			2 point type			3 point type				
Front deluxe guard			–	Standard	Standard	–	Standard	Standard	–	–
Front deluxe guard with light guard			–	–	–	–	–	–	Standard	Standard
Body color			Orange	Orange	Camo	Orange	Orange	Camo	Orange	Camo

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6. MAINTENANCE CHECK LIST

WARNING

To avoid serious injury and vehicle damage:

- **Be sure you have sufficient knowledge, experience, the proper replacement parts and tools before you attempt any vehicle maintenance task.**

SERVICE INTERVALS

■ IMPORTANT

- **The jobs indicated by ★ must be done after the first 50 hours of operation.**
  ***1 The initial 50 hours should not be a replacement (change, check, adjustment) cycle.**
  ***2 Air cleaner should be cleaned more often in dusty conditions than in normal conditions.**
  ***3 Every 1000 hours or every 1 year whichever comes first.**
  ***4 Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.**
  ***5 Every 200 hours or 3,000 km, whichever comes first.**
  ***6 Every 2000 hours or every 2 years whichever comes first.**
  ***7 When the battery is used for less than 100 hours per year, check the battery condition by reading the indicator annually.**
- **The items listed below (@marked) are registered as emission related critical parts by KUBOTA in the U.S.EPA non road emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the below instruction. Please see Warranty Statement in detail.**

No.	Item		Service Interval													After since	Reference page		
			50	100	150	200	250	300	350	400	450	500	550	600	650	700				
1	Engine start system	Check	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 hrs	G-33		
2	Greasing	Apply	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	every 50 hrs	G-34		
3	Engine oil	Change	★			☆				☆				☆		☆	every 200 hrs	G-42	*1	
4	Muffler [Spark arrester]	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-36		
5	Wheel fastener torque	Check	★	☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-36	*1	
6	Battery condition	Check		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-37	*7	
7	Alternator belt	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-39		
8	VHT neutral spring	Check		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-39		
9	VHT pressure release	Check		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-39		
10	Toe-in	Adjust		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-40		
11	Fuel filter element	Check		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-40		@
		Replace								☆							every 400 hrs	G-48		
12	Fuel line	Check															every 1 year	G-40	*4	@
		Replace															every 4 years	G-56		
13	Air cleaner element	Clean		☆		☆		☆		☆		☆		☆		☆	every 100 hrs	G-41	*2	@
		Replace															every 1000 hrs or 1year	G-49	*3	
14	Engine oil filter	Replace	★			☆				☆				☆			every 200 hrs	G-43	*1	
15	Transmission oil filter (VHT) (Yellow color)	Replace	★			☆				☆				☆			every 200 hrs	G-43	*1	

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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.**

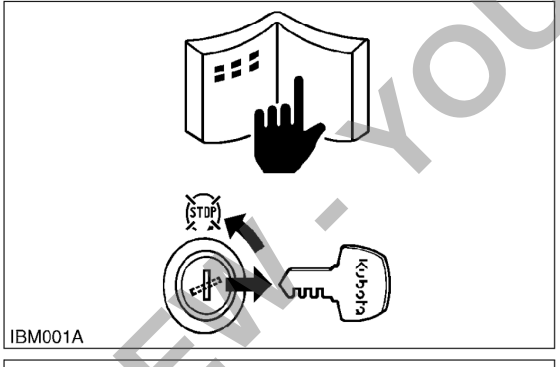
⚠ WARNING
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

⚠ 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.

WSM000001INI0015US0

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GENERAL

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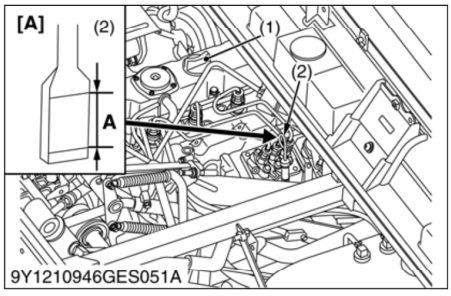
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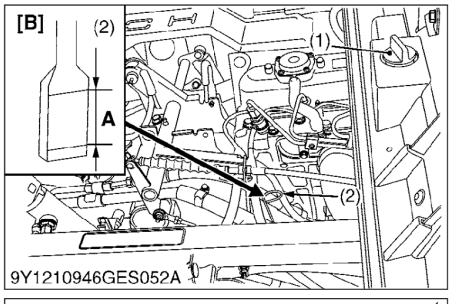
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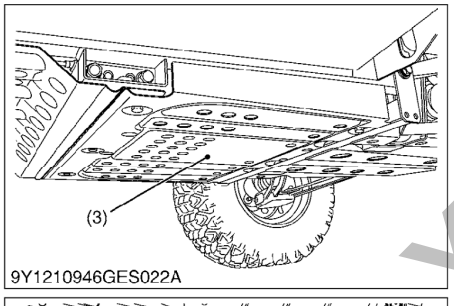
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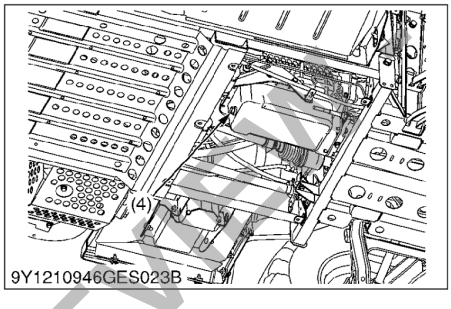
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[5] CHECK POINTS OF EVERY 200 HOURS









Changing Engine Oil

WARNING

To avoid serious injury:

- **Be sure to stop the engine before changing the oil.**
- **Allow engine to cool down sufficiently, oil can be hot and can burn.**

1. Park the vehicle on a level surface.
2. Raise the cargo bed and mount the safety support.
3. Stop the engine.
4. Remove the rear skid plate.
5. To drain the used oil, remove the drain plug at the bottom of the engine and completely drain the oil into an oil pan.
   All the used oil can be drained out easily when the engine is still warm.
6. After draining, reinstall the drain plug.
7. Fill with the new oil up to the upper line on the dipstick. (Refer to "4. LUBRICANTS, FUEL AND COOLANT" on page G-8.)

[RTV-X900]

Engine oil	Capacity	[Filter exchanged] 3.1 L 3.3 U.S.qts 2.7 Imp.qts
		[Filter non-exchanged] 2.7 L 2.9 U.S.qts 2.4 Imp.qts

[RTV-X1120D]

Engine oil	Capacity	[Filter exchanged] 4.1 L 4.3 U.S.qts 3.6 Imp.qts
		[Filter non-exchanged] 3.8 L 4.0 U.S.qts 3.3 Imp.qts

(1) Oil Inlet
(2) Dipstick
(3) Rear Skid Plate
(4) Drain Plug

A: Oil level is acceptable within this range.
[A] RTV-X900
[B] RTV-X1120D

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[2] RTV-X1120D (D1105)

(1) Engine Body

ENGINE BODY

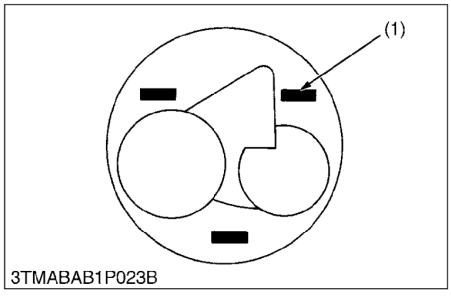
Item		Factory Specification	Allowable Limit
Compression Pressure		3.73 to 4.11 MPa 38.0 to 42.0 kgf/cm^2 541 to 597 psi	2.26 MPa 23.0 kgf/cm^2 327 psi
• Difference among Cylinders		–	10 % or less
Valve Clearance (Cold)		0.145 to 0.185 mm 0.00571 to 0.00728 in.	–
Top Clearance		0.55 to 0.75 mm 0.022 to 0.029 in.	–
Cylinder Head Surface	Flatness	–	0.05 mm 0.002 in.
Valve Recessing	Intake and Exhaust	−0.050 to 0.25 mm −0.0020 to 0.0098 in.	0.40 mm 0.016 in.
Valve Stem to Valve Guide	Clearance	0.035 to 0.065 mm 0.0014 to 0.0025 in.	0.10 mm 0.0039 in.
• Valve Stem	O.D.	6.960 to 6.975 mm 0.2741 to 0.2746 in.	–
• Valve Guide	I.D.	7.010 to 7.025 mm 0.2760 to 0.2765 in.	–
Valve Seat	Angle (Intake)	1.0 rad 60°	–
	Angle (Exhaust)	0.79 rad 45°	–
	Width	2.12 mm 0.0835 in.	–
Valve Face	Angle (Intake)	1.0 rad 60°	–
	Angle (Exhaust)	0.79 rad 45°	–
Valve Spring	Tilt	–	1.0 mm 0.039 in.
	Free Length	37.0 to 37.5 mm 1.46 to 1.47 in.	36.5 mm 1.44 in.
	Setting Load	117.4 N / 31.0 mm 11.97 kgf / 31.0 mm 26.39 lbf / 1.22 in.	100.0 N / 31.0 mm 10.20 kgf / 31.0 mm 22.48 lbf / 1.22 in.

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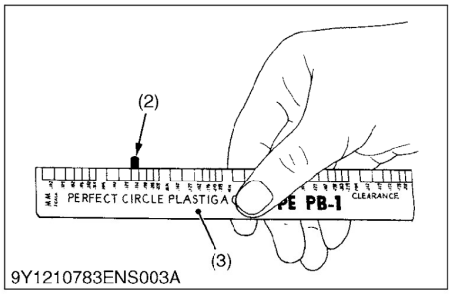
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[5] SERVICING RTV-X900 (D902)

(1) Cylinder Head and Valves



3TMABAB1P023B



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Top Clearance

1. Remove the cylinder head.
2. With the piston at TDC, use grease to affix three or four plastigauges of a diameter 1.5 mm (0.059 in.) × 5.0 to 7.0 mm (0.20 to 0.27 in.) long to the crown of the piston; keep the gauges away from the intake valve and combustion chamber fittings.
3. Take the piston to an intermediate position, install the cylinder head and tighten the head bolts to the specified torque.
4. Turn the crankshaft so the piston goes through TDC.
5. Remove the cylinder head and measure the thickness of the plastigauges.
6. If they are out of spec, check the oil clearance of the crank pin journal and piston pins.

Top clearance	Factory specification	0.50 to 0.70 mm 0.020 to 0.027 in.

Tightening torque	Cylinder head screw	38 to 42 N·m 3.8 to 4.3 kgf·m 28 to 31 lbf·ft

(1) Plastigauge
(2) Crushed Plastigauge
(3) Scale

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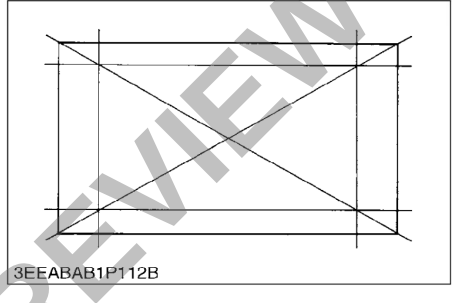

3XVAAAB1P045A

Cylinder Head Surface Flatness

1. Clean the cylinder head surface.
2. Place a straightedge on the cylinder head's four sides and two diagonal as shown in the figure.
3. Measure the clearance with a thickness gauge.
4. If the measurement exceeds the allowable limit, correct it with a surface grinder.

■ **IMPORTANT**

- **Do not place the straightedge on the combustion chamber.**
- **Be sure to check the valve recessing after correcting.**


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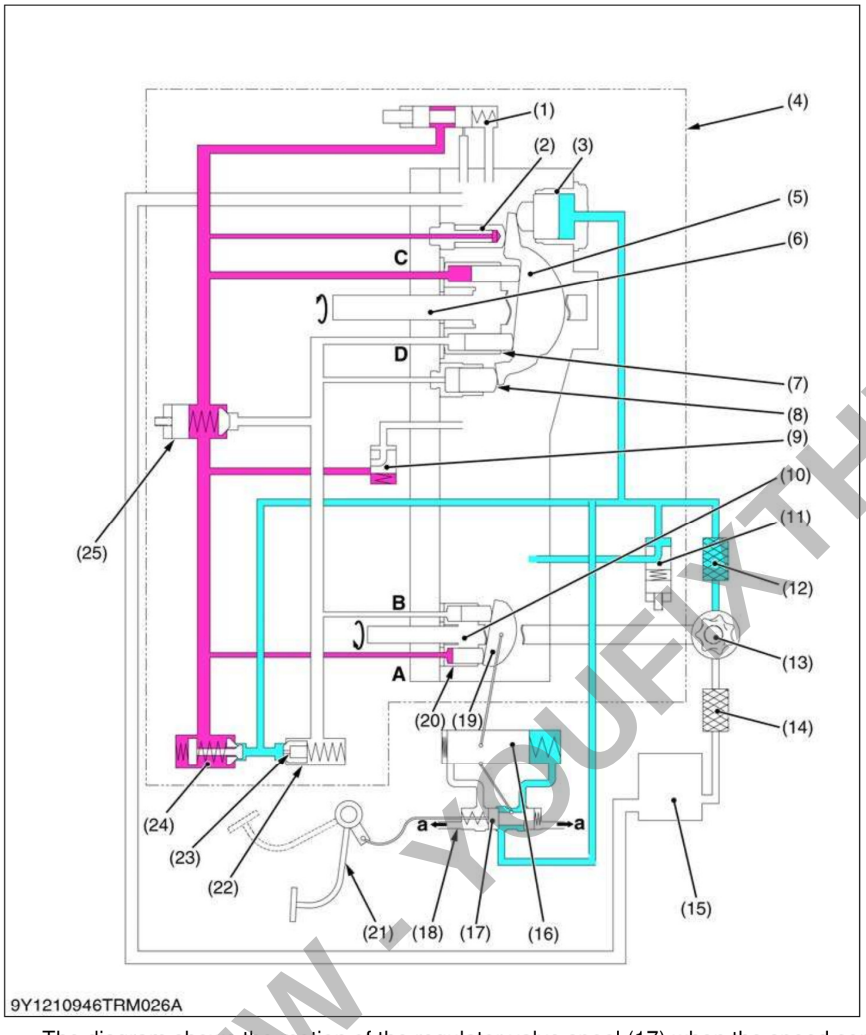
Cylinder head surface flatness	Allowable limit	0.05 mm 0.002 in.

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[C] Low Load When Speed Control Pedal Is Pressed



(1) Unload Valve
(2) Control Piston 1
(3) Control Piston 2
(4) HST Housing
(5) Variable Swashplate (Motor)
(6) Output Shaft
(7) Cylinder Block (Stationary Motor)
(8) Control Piston 3
(9) Anti-cavitation Valve
(10) Input Shaft
(11) Charge Relief Valve
(12) Oil Filter
(13) Charge Pump
(14) Oil Filter Cartridge (Suction)
(15) Oil Tank
(16) Servo Piston
(17) Regulator Valve Spool
(18) Regulator Valve
(19) Variable Swashplate (HST Pump)
(20) Cylinder Block
(21) Speed Control Pedal
(22) Check Valve
(23) Orifice
(24) Check And High Pressure Relief Valve (Forward)
(25) High Pressure Relief Valve (Dynamic Brake)
a: To HST Housing
A: A Port
B: B Port
C: C Port
D: D Port

The diagram shows the motion of the regulator valve spool (17) when the speed control pedal (21) is pressed all the way down.

The servo piston (16) tilts the variable swashplate (19) on the pump side to the maximum position.

The pump cylinder block (20) is driven by the input shaft and high pressure oil is discharged from port **A**.

High pressure oil that is discharged from port **A** of the pump flows along the circuit to port **C** on the motor side.

The oil discharged from the pump side does not have sufficient pressure to cause the variable swashplate (5) on the motor side to tilt.

Therefore, the cylinder block (7) on the motor rotates in the position shown on the diagram and transfers power to the output shaft (6).

Thereafter, low pressure oil discharged from the cylinder block (7) on the motor returns from port **C** to port **B**.

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Checking Gear

1. Visually check the tooth of gear which comes in contact.
2. If there is any doubt as to the condition of gears, replace it.

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13T Spiral Bevel Pinion Shaft, Gear and Ball Bearing

1. Remove the 25T gear by using the gear puller.
2. Check the ball bearing for abrasion, color change or other damage.
3. If there is any doubt as to the condition of a ball bearing, replace it.
4. Check both the shaft and the gear surface of the bearing contact point for abrasion, color change or other damage.
5. If there are any doubt as to the condition of shaft and gear.

■ **IMPORTANT**

- **Install the outer ball bearing so the text can be seen.**

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9Y1210946TRS074A

Gear Shaft, Gear and Needle Bearing

1. Remove the bearing.
2. Check the needle bearing for abrasion, color, change or other damage.
3. If there is any doubt as to the condition of a needle bearing, replace it.
4. Check both the shaft and the gear surface of the bearing contact point for abrasion, color change or other damage.
5. If there are any doubt as to the condition of shaft and gear.

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Back Idle Gear, Shaft and Ball Bearing

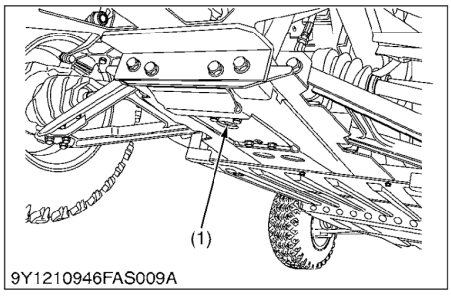
1. Check the ball bearing for abrasion, color change, or other damage.
2. If there is any doubt as to the condition of a ball bearing, replace it.
3. Check both the shaft and gear bearing surface.

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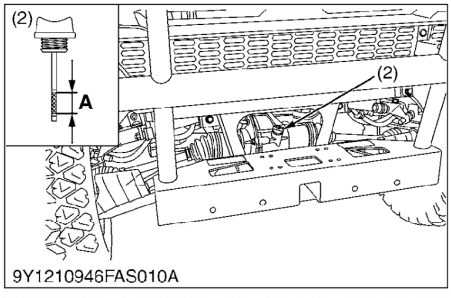
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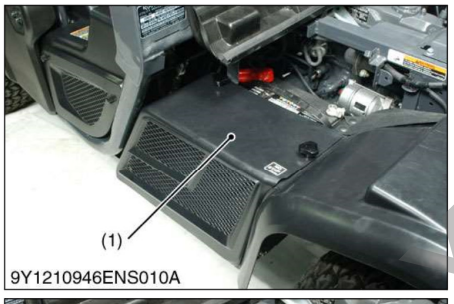
(2) Front Differential Case



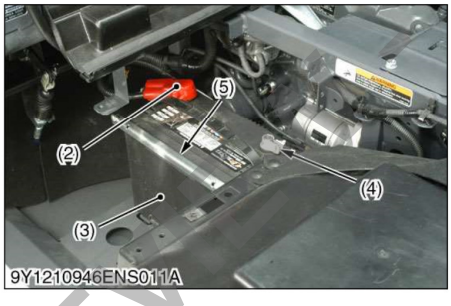
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Draining Front Axle Case Oil

1. Park the vehicle on a firm, flat and level surface.
2. Turn over the rubber sheet.
3. To drain the used oil, remove the drain and filling plugs at the front axle case and drain the oil completely into the oil pan.
4. After draining, reinstall the drain plug.

(When reassembling)

- Use KUBOTA UDT or KUBOTA SUPER UDT fluid. Refer to "4. LUBRICANTS, FUEL AND COOLANT" on page G-8.

Front axle case oil	Capacity	0.6 L 0.63 U.S.qts 0.52 Imp.qts

(1) Drain Plug
(2) Filling Plug with Dipstick

A: Oil level is acceptable within this range.

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Battery

CAUTION

- **When disconnecting the battery cables, disconnect the negative cable from the battery first. When connecting, connect the positive cable to the battery first.**

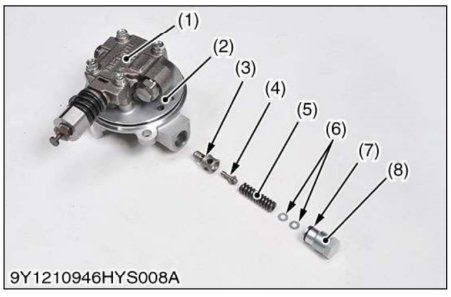
1. Remove the cover (1).
2. Disconnect the negative cable (4) from the battery.
3. Disconnect the positive cable (2) from the battery.

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

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(3) Control Valve



Relief Valve and Control Valve

1. Remove the relief valve plug (8), shims (6), spring (5), poppet (4) and seat (3).
2. Remove the control valve (1).

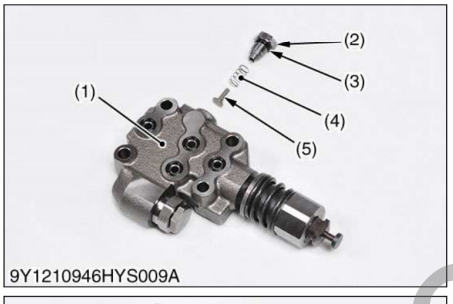
(When reassembling)

- Be careful not to damage the O-ring.

Tightening torque	Relief valve plug	29.4 to 34.3 N·m 3.00 to 3.49 kgf·m 21.7 to 25.2 lbf·ft
	Control valve mounting screw	18 to 21 N·m 1.9 to 2.1 kgf·m 14 to 15 lbf·ft

(1) Control Valve
(2) Control Valve Cover
(3) Seat
(4) Poppet
(5) Spring
(6) Shim
(7) O-ring
(8) Plug

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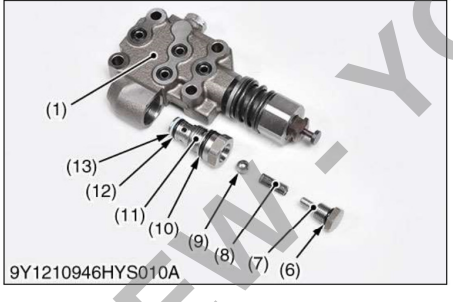
Check Valve

1. Remove the plug (2) and remove the spring (4) and poppet (5).
2. Remove the plug (7) and remove the spring (8) and ball (9).
3. Remove the check valve seat (11).

(When reassembling)

- Be careful not to damage the O-ring.

Tightening torque	Check valve plug (2), (7)	19.6 to 24.5 N·m 2.00 to 2.49 kgf·m 14.5 to 18.0 lbf·ft
	Check valve seat (11)	34 to 39 N·m 3.5 to 3.9 kgf·m 25 to 28 lbf·ft



(1) Control Valve
(2) Check Valve Plug
(3) O-ring
(4) Spring
(5) Poppet
(6) O-ring
(7) Check Valve Plug
(8) Spring
(9) Ball
(10) O-ring
(11) Check Valve Seat
(12) O-ring
(13) Back Up Ring

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