GW750
SHOP MANUAL

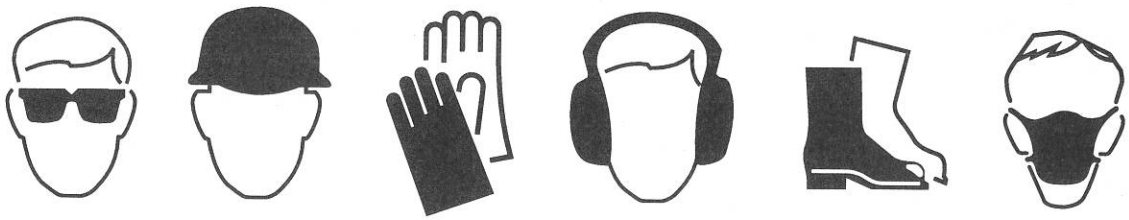
SAKAI®

1-3. Qualifications of Operators and Maintenance Personnel

- Work on the machine must be performed by qualified personnel only. Individual responsibilities of personnel regarding operation, maintenance, repair of the machine must be clearly stated.
- Define the operator's responsibilities; the operator should have authority to refuse instructions that are contrary to safety.
- Do not allow persons being trained to operate or perform maintenance on the machine without constant supervision by an experienced person.
- Work on the electrical system of the machine must be done only by an experienced person or under the guidance of a skilled electrician and according to electrical engineering rules and regulations.
- Work on the frame, brakes, hydraulic and steering systems must be performed by skilled personnel with special knowledge and training for such work.

1-4. Safety Practices and Policies

- Keep the manuals in the container provided on the machine. Manuals must always be available at the site where the machine is being used.
- The operator or user of the machine must be aware of all applicable or legal and mandatory regulations relevant to accident prevention and environmental protection. These regulations may also deal with handling of hazardous substances, the required proper personal safety and protective equipment and traffic or jobsite regulations.
- Machine operating instructions should also be supplemented with detailed instructions pertaining to the specific jobsite or work location.
- Always be sure the persons working on the machine have read the operating instructions and all safety precautions before beginning work. Reading safety instructions after work has already begun is too late.
- Wear close fitting garments and always tie back and secure long hair, also avoid wearing jewelry such as rings. Injury can result from loose clothing, hair or jewelry being caught up in the machinery or rotating parts.
- Use protective equipment as required by the circumstances or by law.

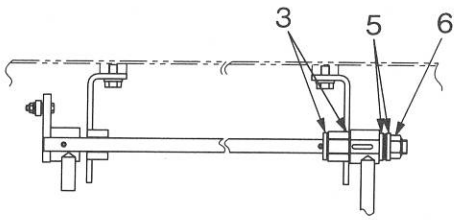


- Observe all safety instructions and warnings attached to the machine
- Make sure all safety instructions and warnings on the machine are complete and perfectly legible.
- Stop the machine immediately in the event of any malfunction. Report any malfunction immediately to the supervisor or other person of authority.
- Never perform service or maintenance on the machine unless the drum(s) or tires are adequately blocked, articulation lock bar and pin is in the locked position and the parking brake is applied.
- Never make any modifications to the machine which might affect safety without the manufacturer's approval.
- Always perform the recommended routine inspections and adjustments according to the prescribed intervals

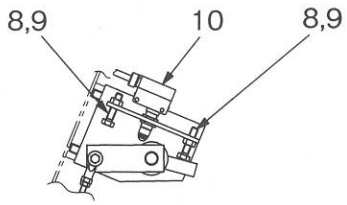
MIN.TURNING RADIUS(outer)			Approx. 5.4 m (213 in.)
GRADABILITY			Approx. 38 % (21 °)
ENGINE	Model		ISUZU"DD-4BG1T"Diesel Engine with turbo charger
	Type		Water-cooled,4-cylinder in-line, vertical mounted, Overhead valve, direct injection type
	Bore x Stroke		105mm x 125mm (4.134 in. x 4.921 in.)
	Displacement		4.329 liters (264 cu.in.)
	Performance	Rated speed	2,300 min^{-1} (2,300 rpm)
		Rated output	78.8 kW (106 HP)
		Max. torque	392 N•m (289 lb.•ft)
			At 1,800 rpm
	Governor		Mechanical all-speed type
	Lubrication system		Pressure lubrication by gear pump
	Oil filer		Full-flow: paper
	Air cleaner		Dry type
	Cooling system		Centrifugal forced feeding system(pressure type)
	Cooling fan		Blower type
	Electrical system	Alternator	24 V 50 A
		Starter	24 V 4.5 kW
		Battery	12 V 100 Ah x 2 pcs. (24 V)
POWER LINE	Pump Drive Gear Box		Spur gear type
	Transmission	Type	0 – 5 km/h (0 – 3.1 mph)
		Speed	0 – 9 km/h (0 – 5.6 mph)
	Propulsion Pump Control		Switching the direction of flow delivered from the variable pump
	Final drive		Planetary gear
VIBRATING SYSTEM	Transmission		Hydrostatic transmission
	Vibrator		Eccentric shaft type
BRAKE SYSTEM	Service brake		Hydrostatic and mechanical, multi-wet disc type
	Parking brake		Mechanical, multi-wet disc type
STEERING SYSTEM			Hydraulic type (Articulated type)
WHEELS	Use	Front tires	Vibrate & Drive
		Number of tires	3
		Rear tires	Vibrate & Drive
		Number of tires	4
	Tire size	Front	14/70-20-12PR(OR),smooth tread
		Rear	14/70-20-12PR(OR),smooth tread
	Suspension system	Front	Rubber damper type
		Rear	Rubber damper type
OTHERS	Rops		Steel frame
	Instruments & lights		1 set

2. CONTROLS

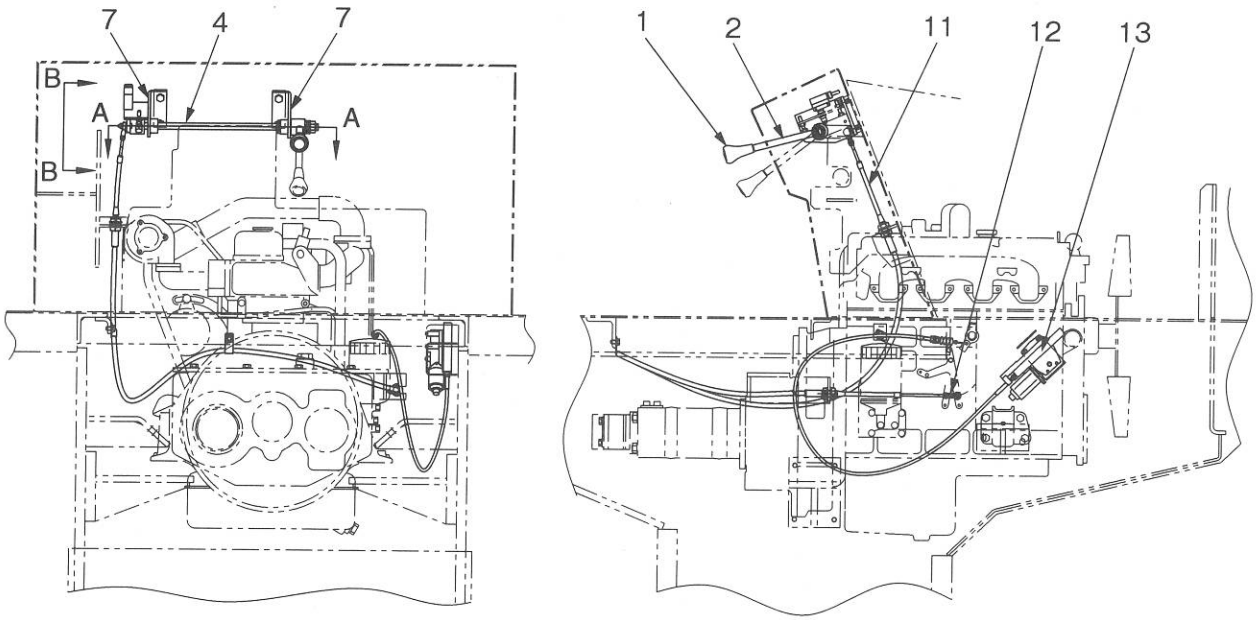
2-1. Throttle Control



SECTION A-A



VIEW B-B

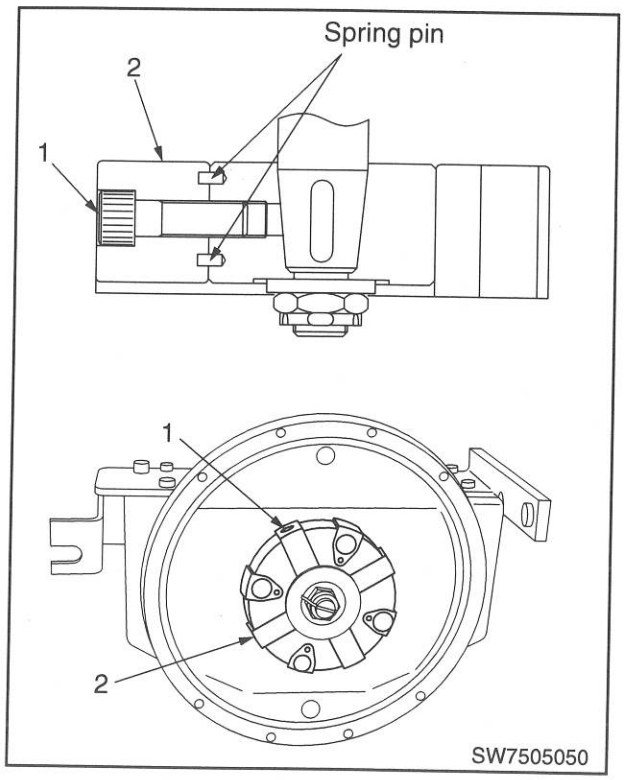


GW7503002

1. Knob
2. Lever
3. Washer
4. Shaft
5. Washer
6. Nut (M16x2.0)
7. Bracket
8. Bolt (M8x1.25)
9. Rock nut
10. Throttle switch
11. Control cable
12. Rod end
13. Motor stopper assembly

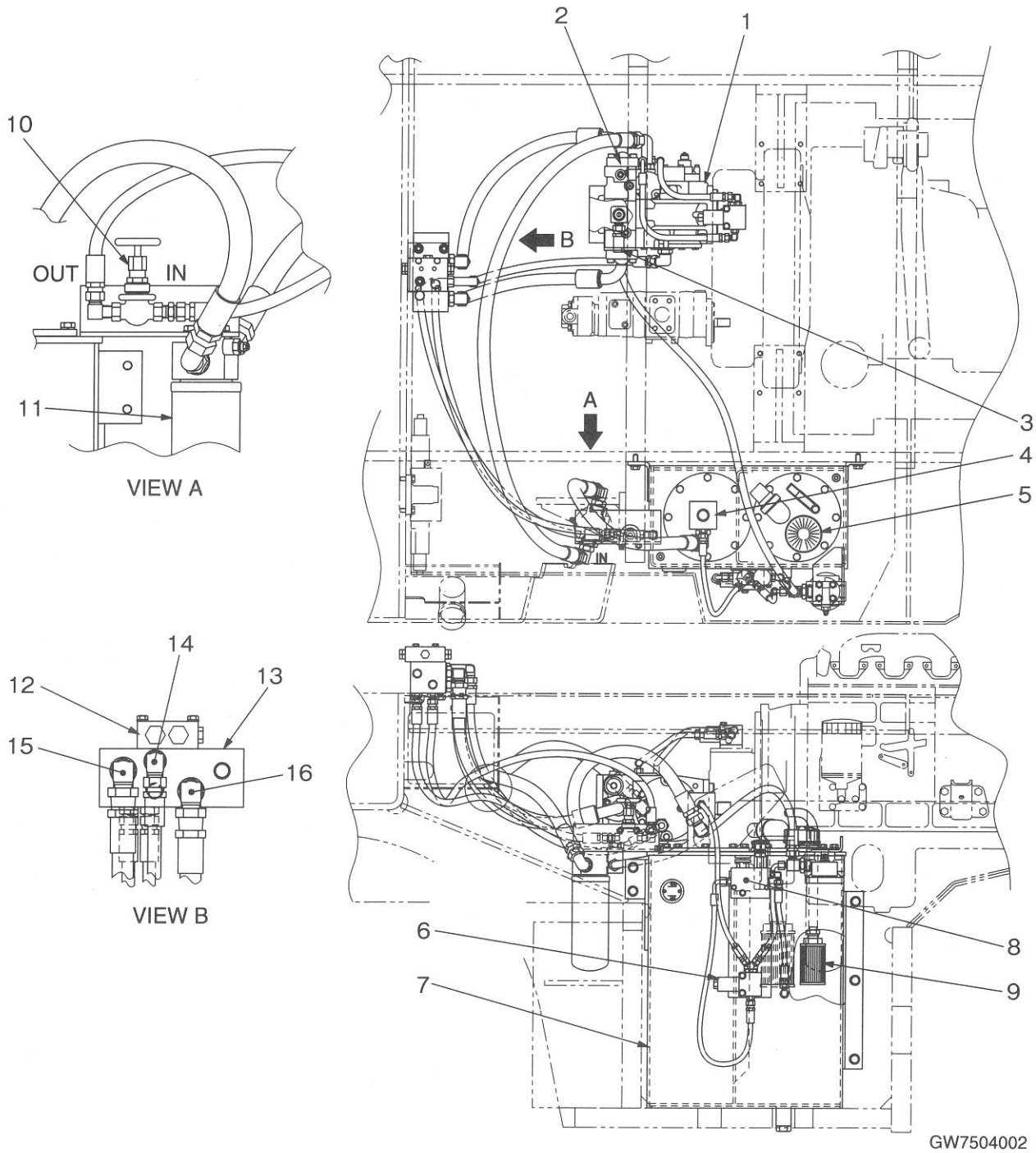
(4) Position coupling (2) on the hub and tighten the four bolts (1).

★ **When tightening bolts (1), ensure that the spring pins fit securely into the holes of the coupling and hub.**



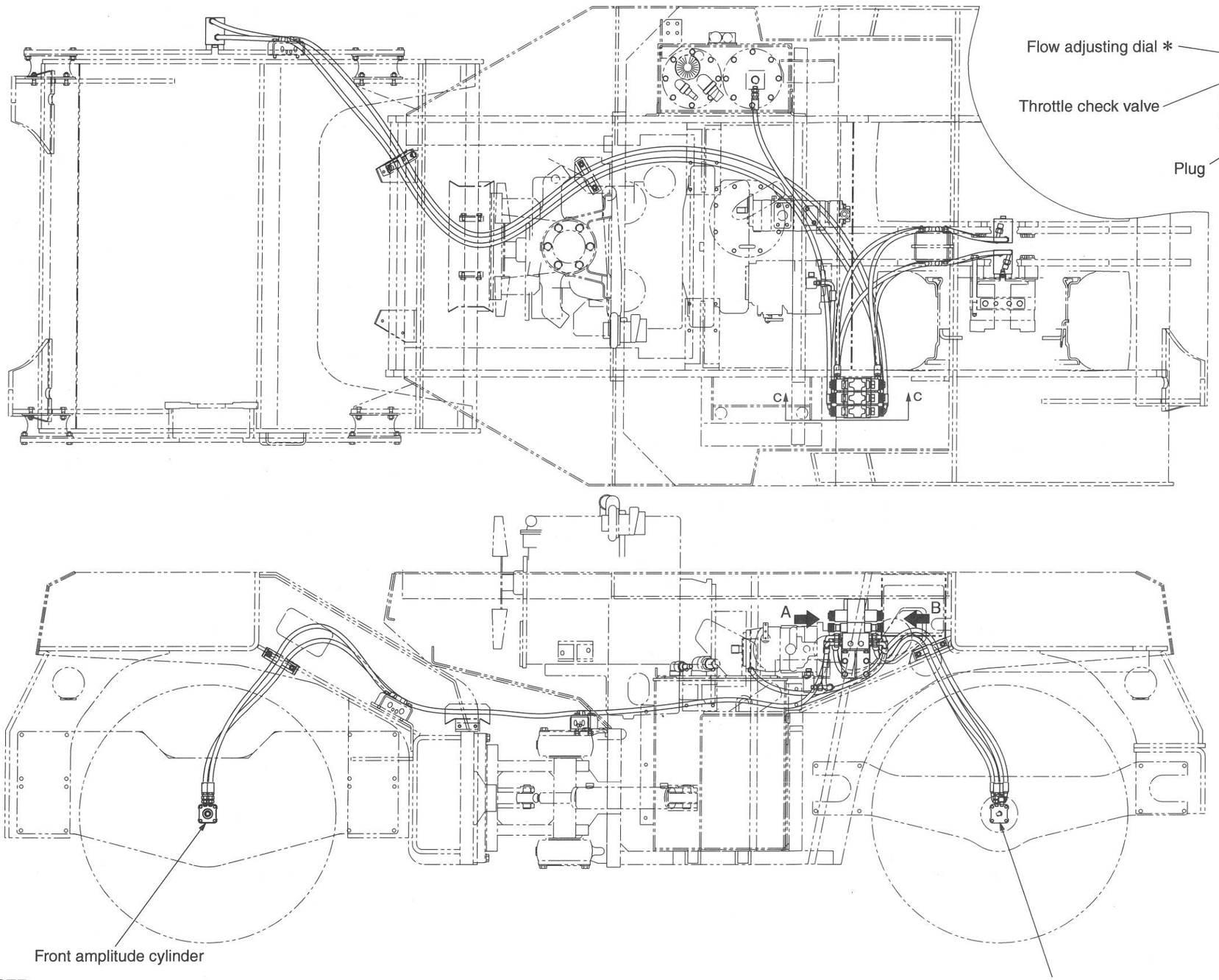
2. PROPULSION SYSTEM

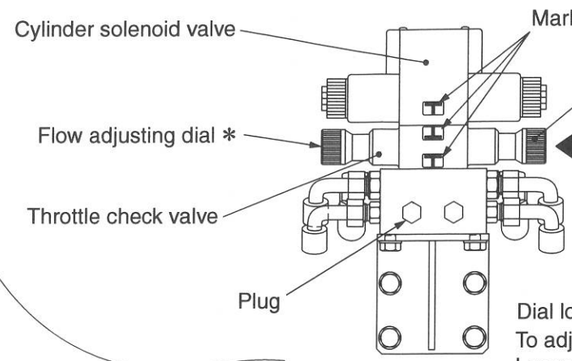
2-1. Hose diagram (1)

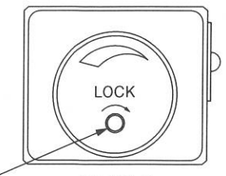


1. Propulsion pump
2. B port (propulsion pump)
3. A port (propulsion pump)
4. Return block
5. Filler cap
6. Brake solenoid valve
7. Hydraulic tank
8. Brake valve
   (parking brake release hand pump + manual selector valve)
9. Suction filter
10. Unload valve
11. Return filter
12. Flushing valve
13. Block
14. Port T (block)
15. Port A (block)
16. Port B (block)

3-2. Hose diagram (2) Vib. amplitude cylinder

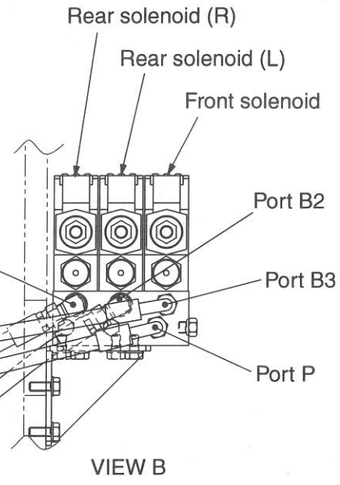


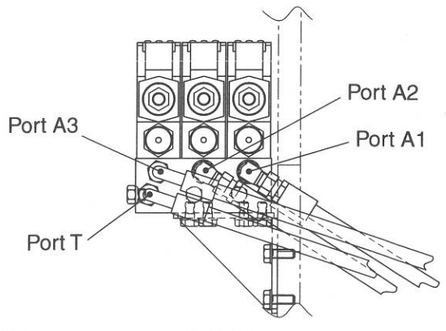




Dial lock screw

To adjust flow:
Loosen dial lock screw. Turn dial clockwise or counterclockwise to decrease or increase flow respectively. Tighten lock screw when adjustment is complete.





NOTE:
- Fit the cylinder solenoid valve with marks T on the plug side as View C–C.
- Adjust restrictor with mark * so that it takes about 1.5 seconds for amplitude to change after operating the amplitude selector switch.
- Because it does not matter however fast the amplitude may be changed to neutral, do not attempt to restrict flow by means of flow adjusting dial with mark **.

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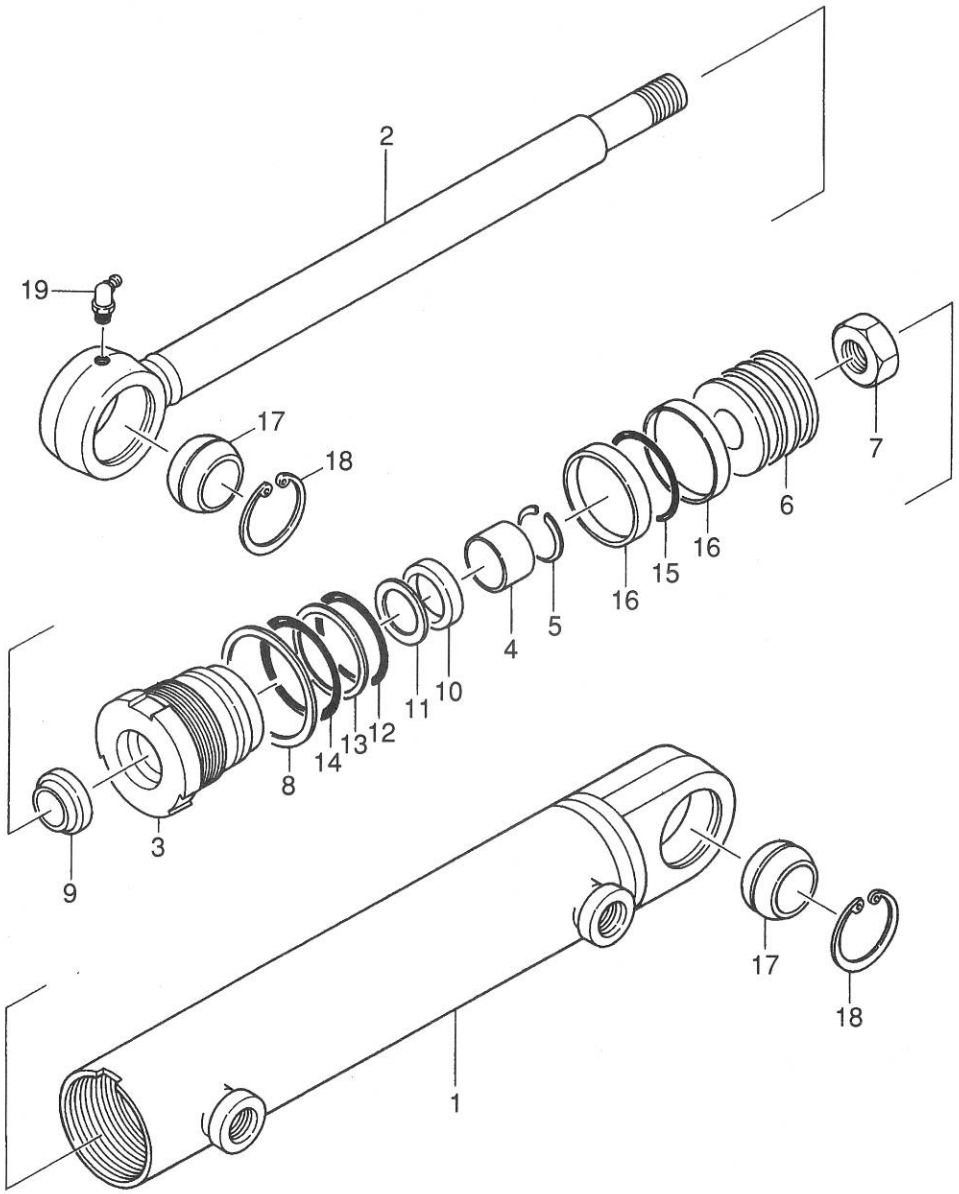
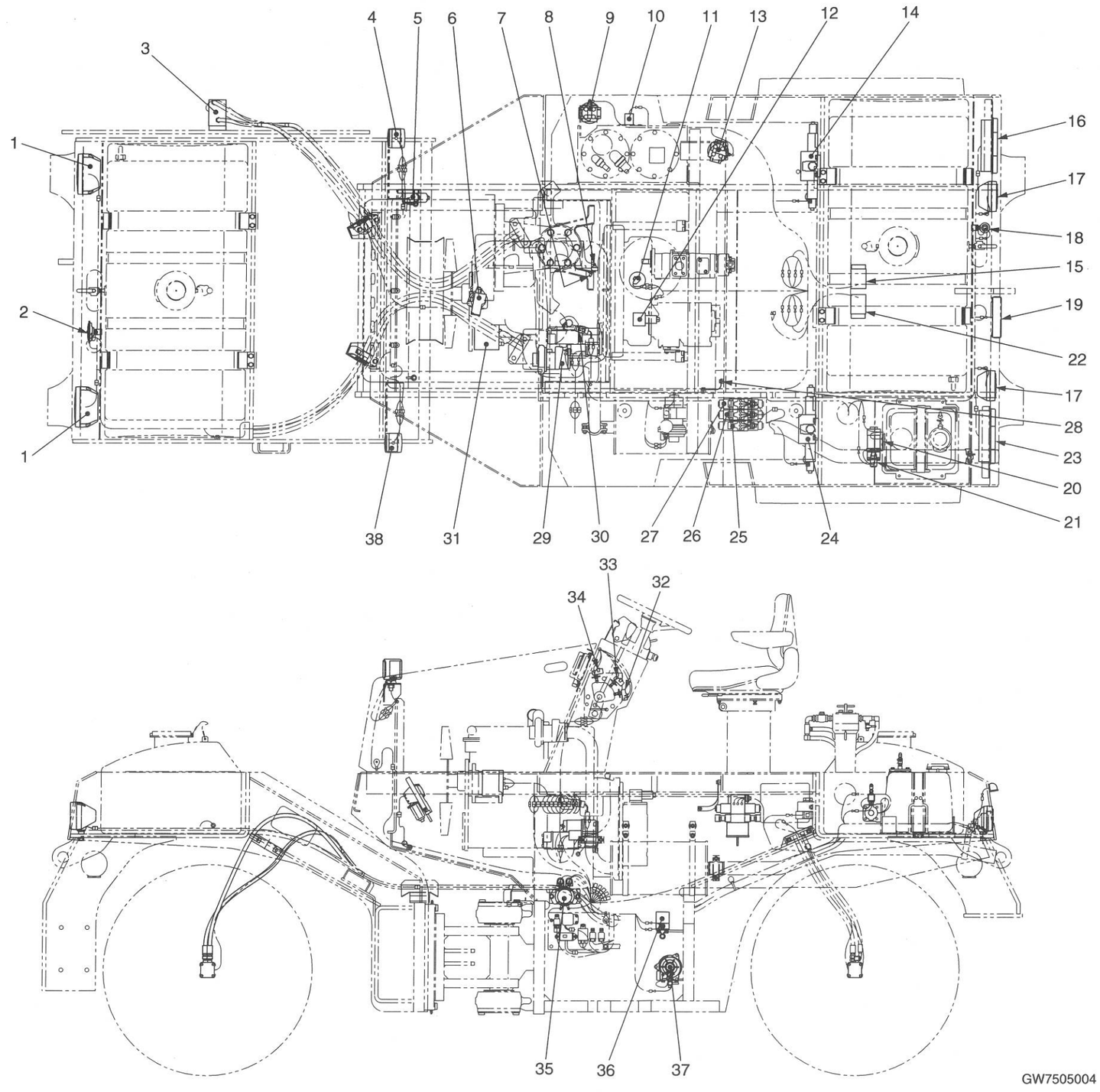
4-3-2. Steering cylinder



SW7502055

1. Cylinder
2. Piston rod
3. End cap
4. Bush
5. Lock ring
6. Piston
7. Nut
8. Washer
9. Dust seal
10. U-ring
11. Back-up ring
12. O-ring
13. Back-up ring
14. O-ring
15. Seal
16. Piston ring
17. Spherical bearing
18. Lock ring
19. Grease fitting

2-3. Location of electrical components (2)

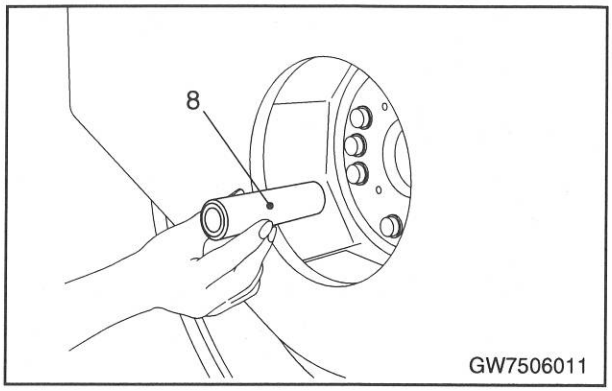


GW7505004

1. Headlamp
2. Horn
3. Front cylinder
4. Front combination lamp (R)
5. Engine stopper
6. Thermo unit
7. Glow plug
8. Engine oil pressure switch
9. Hydraulic oil filter switch
10. Brake solenoid
11. Fuel unit
12. Servo solenoid
13. Hydraulic oil filter switch
14. Rear vibrator solenoid
15. Rear cylinder (R)
16. Rear combination lamp (R)
17. Work lamp
18. Back up sensor
19. License plate lamp
20. Liquid spray pump
21. Liquid spray valve
22. Rear cylinder (L)
23. Rear combination lamp (L)
24. Front vibrator solenoid
25. Front cylinder solenoid
26. Rear cylinder solenoid (L)
27. Rear cylinder solenoid (R)
28. Deck ground connection
29. Starter safety relay
30. Tachometer sensor
31. Alternator
32. F-R lever switch
33. Vibration auto switch
34. Back up switch
35. Battery
36. Sprinkler tank valve
37. Sprinkler pump
38. Front combination lamp (L)

4. Sleeve

(1) Remove sleeve (8).

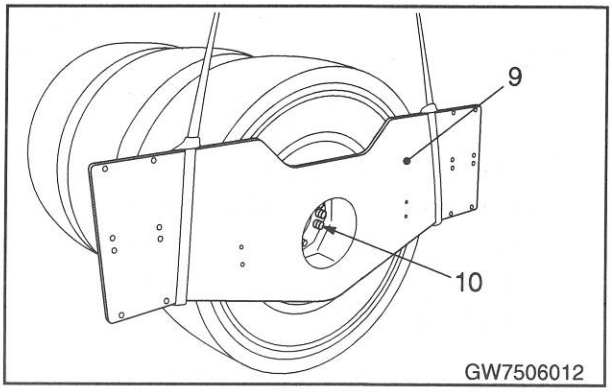


5. Plate on the vibrator motor side

(1) Temporarily lift plate (9) using a lifting device.

(2) Remove ten bolts (10) and remove the plate and place on a pallet. [*6]

Plate (9): 100 kg (220.5 lb.)

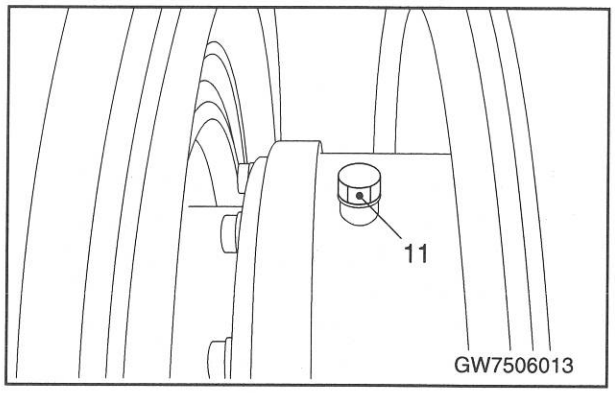


6. Draining the vibrator case

⚠ CAUTION

When removing the drain plug, be careful as the oil may be hot.

(1) Remove drain plug (11) from the vibrator case and drain the oil.



2-2. Removal and Installation of Rear Wheel Assembly

2-2-1. Removal of rear wheel assembly

⚠ CAUTION

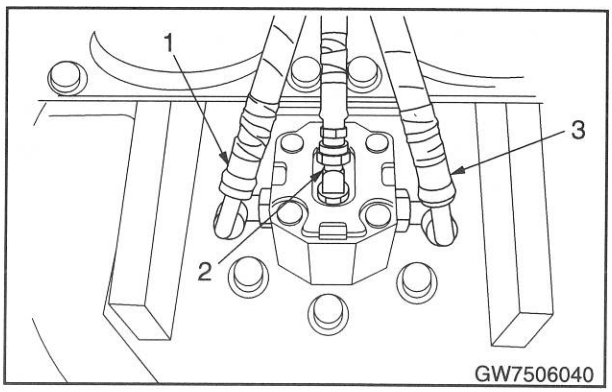
After your machine has operated for some time, hydraulic fluid will be hot and there may be residual pressure in the hoses. Disconnecting the hoses in this condition can burn you. Perform this work after the machine has cooled off.

1. Vibrator motor hoses

(1) Disconnect hoses (1), (2) and (3) from the rear vibrator motor (Left). Also disconnect the three hoses from the rear vibrator motor (Right).

★ Cap and plug the openings of the hoses and motor.

(2) Remove hose clamps (5) fitted on the inside of both right-hand and left-hand side of rear plates (4).
Disconnect three hoses from the frame.



2. Hoses and wiring of amplitude selector cylinder

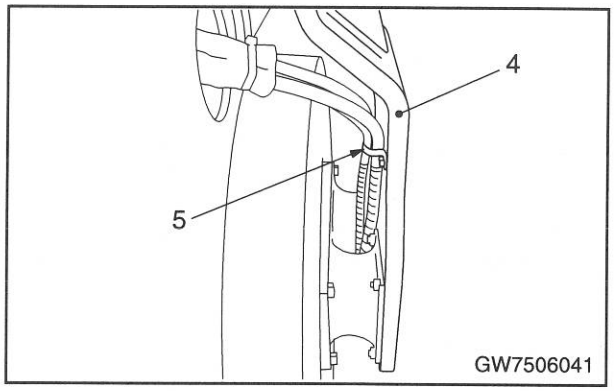
(1) At the cylinder solenoid valve, disconnect two hoses which connect to the right side wheel assembly and two hoses which connect to left side wheel assembly.

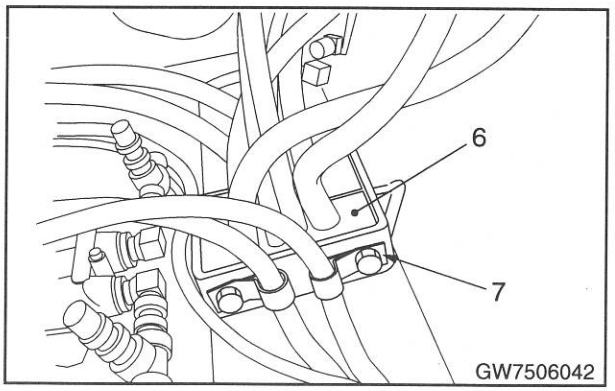
★ Cap and plug the openings of the hoses and solenoid valve.

(2) Remove bolts and nuts at hose clamps (6) and (7).
Remove 4 hose clamps on both sides, and disconnect the hoses from the frame. (The hose clamp assembly is comprised of four hose clamps.)

★ Hose clamps (6) and (7) are also used for the propulsion motor hoses.

(3) Disconnect the wires of the cylinder switches from the connectors.





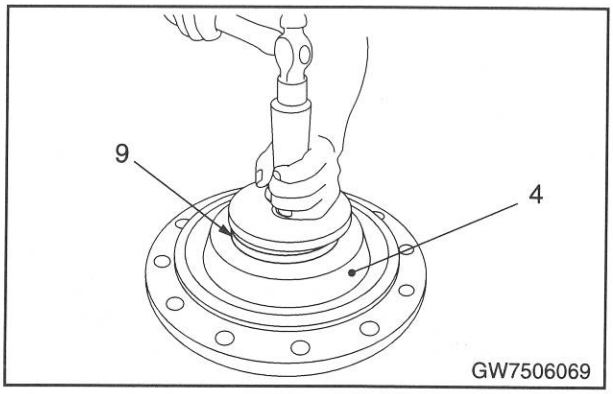
2-4-2. Reassembly of rear axle shaft assembly

★ Thoroughly clean the parts, and repair parts if burrs or other damage is noticeable.

1. Axle shaft

(1) Assemble bearing (9) into axle shaft (4).

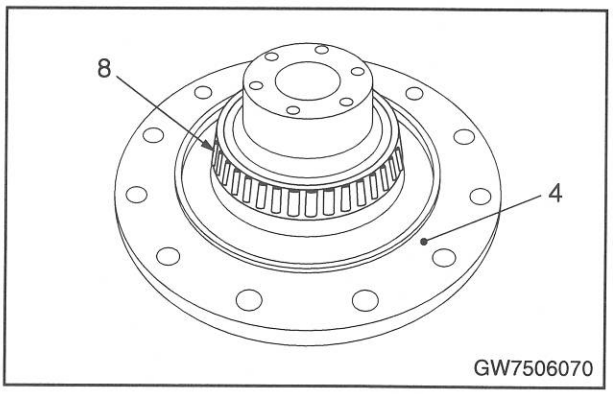
★ Apply a sufficient coat of lithium base grease over the bearing, and also pack it with the grease.



⚠ CAUTION

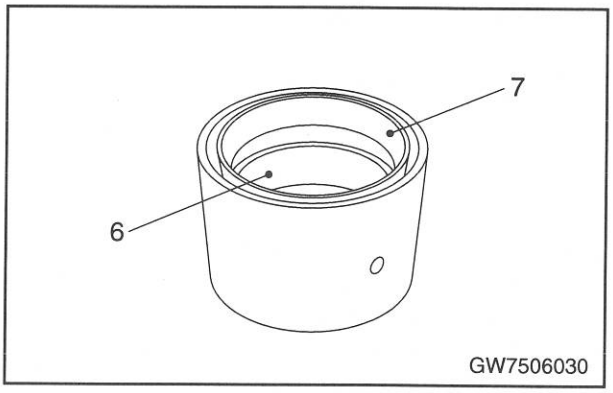
Do not heat the inner race to higher than 100 °C (212 °F). Temperature exceeding 120 °C (248 °F)can impair the hardness of the inner race.

(2) Expand inner race (8) by heating with a heater, and drive the inner race until it bottoms on the stepped portion of axle shaft (4). Keep the inner race in that state for one to two minutes. Then drive the inner race further until it is fully seated.



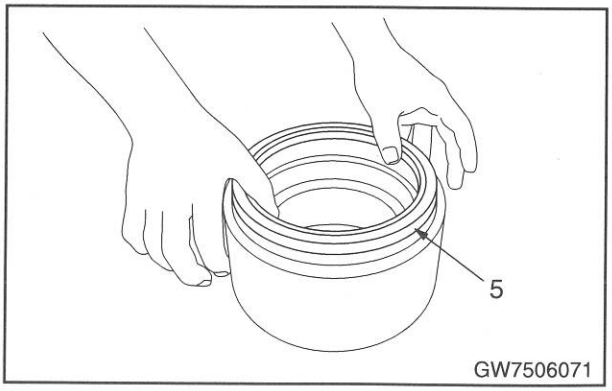
2. Housing

(1) Drive bearing outer races (6) and (7) until they are fully seated against the stepped portion of the housing.



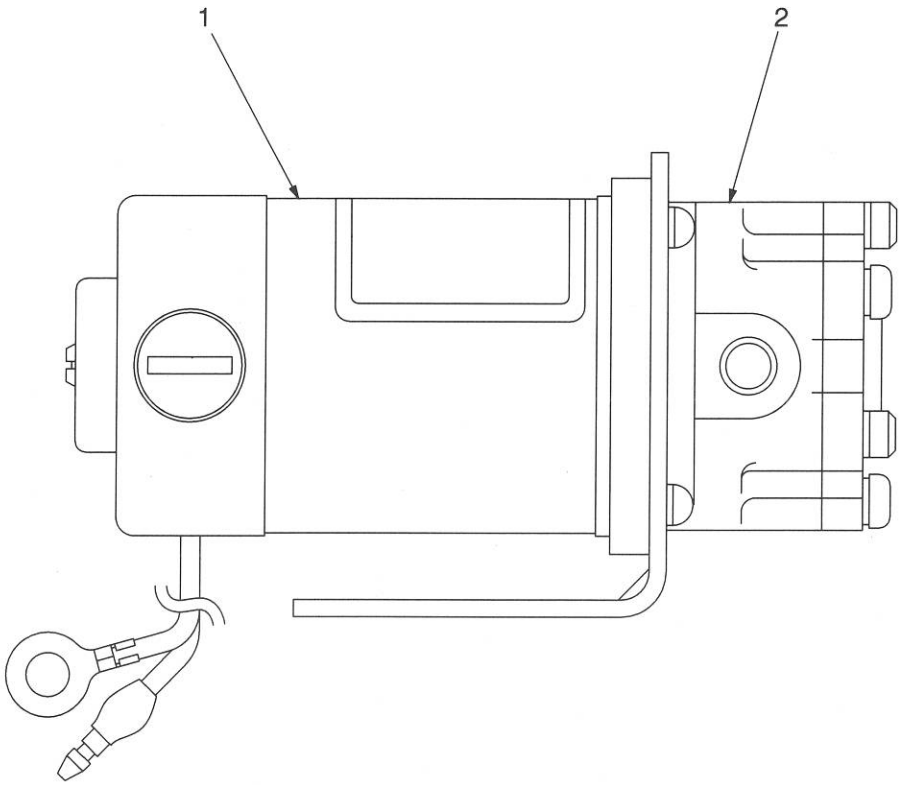
(2) Fit oil seal (5) in the housing.

★ Pack the oil seal lip with lithium base grease.



WATER SYSTEM

2-1-1. Liquid spray pump/motor assembly



GW7508004

1. Motor Sub ass'y
2. Pump Sub ass'y

Specification

- Flow Volume : 1.3 l/min (0.34 gal/min)
- Operating Pressure : 0.55MPa (80 psi)

1-3. Measurement and adjustment of propulsion charge circuit pressure

1. Measurement

⚠ CAUTION

Position the machine on level ground. Stop the engine and block the wheels.

★ Carefully perform disassembly and reassembly to prevent ingress of foreign matter.

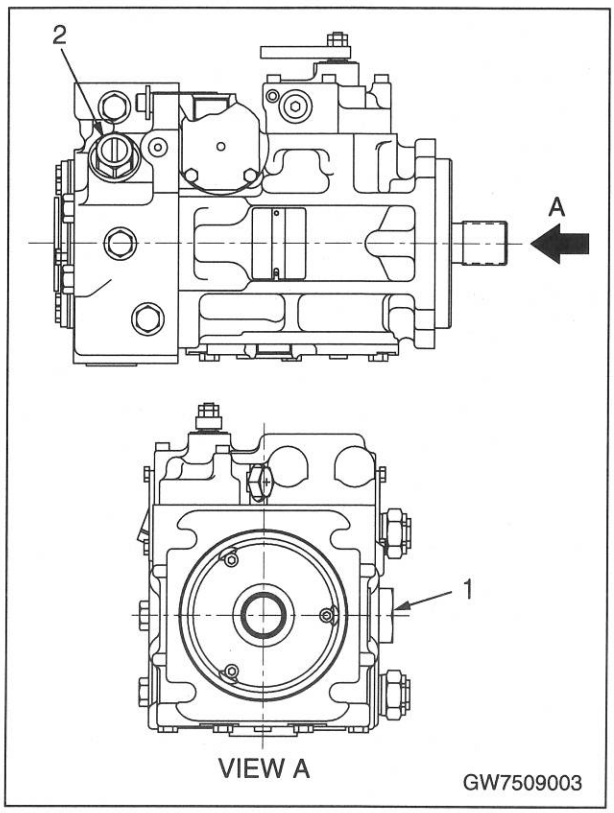
★ Hydraulic oil temperature: 50±5°C (122±41°F)

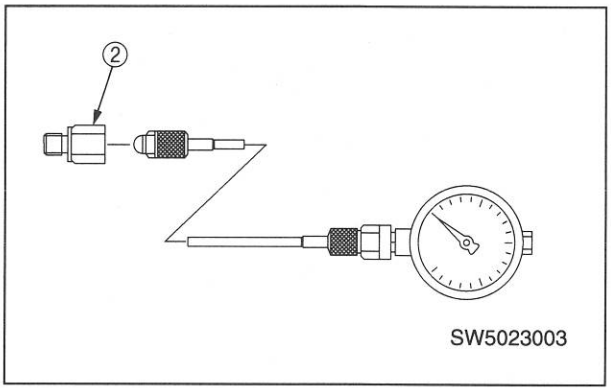
★ Because oil is supplied from the steering/ charge pump, make sure, prior to measurement, that the steering system works correctly.

★ Ensure that the pump swash plate is in the exact neutral position with the F-R lever placed in the neutral position.

1) Remove the plug from charge pressure gauge point (1) of the propulsion pump. Attach a pressure gauge with adapter ② .
   - Charge pressure gauge port: 9/16-18UNF-2B
   - Pressure gauge: 0 to 4.9 MPa (0 to 710.7 psi)
2) Start the engine and set the throttle lever to the high idle position.
3) Make sure that the F-R lever is in the neutral position. Take the gauge reading.

★ Standard value: 2.4±0.2 MPa (348±29 psi)





2. Inspection

If the measured value is not within the specified limit, remove the charge relief valve (2) from the pump, and check it for presence of foreign matter or signs of scores etc. If foreign material is present, disassemble and wash clean. If scores or other damage is noticeable, replace the charge relief valve assembly.

2-2. Electrical troubleshooting

2-2-1. Engine

Check the following items before troubleshooting.
* Forward/reverse lever is in "neutral" position.
* No fuse blew.

1. Engine Will Not Start (Starter Motor Does Not Run)
Reference Fig. : 2-2-1

Check point	Check/Cause	Action
1. Battery Capacity	- Measure battery voltage or specific gravity. Standard voltage: 24V or more Standard specific gravity: 1.26 or more - If the measured value is below the standard one, the battery is weak.	Charge or replace the battery.
2. Ignition Switch	- Check continuity between ○ and ○ according to ignition switch connection table. It is normal that continuity between all connections ○ is present according to switch position. - If continuity is abnormal, the ignition switch is faulty.	Replace the ignition switch.
3. Starter Motor	(1) When starting ignition switch, measure voltage between starter motor pin B and chassis ground. Standard voltage: 24V or more (2) When starting ignition switch, measure voltage between starter motor pin C and chassis ground. Standard voltage: 24V or more - If the starter motor does not run even though above items (1) and (2) are OK, the motor is faulty.	Replace the starter motor.
4. Safety Relay	(1) When starting ignition switch, measure voltage between safety relay pin S and chassis ground. Standard voltage: 24V or more (2) When starting ignition switch, measure voltage between safety relay pin B and chassis ground. Standard voltage: 24V or more (3) When starting ignition switch, measure voltage between safety relay pin C and chassis ground. Standard voltage: 24V or more - If above items (1) and (2) are OK, and item (3) is NG, the safety relay is faulty.	Replace the safety relay.
5. Battery Relay	(1) When turning ignition switch OFF, measure voltage between battery relay primary terminal and chassis ground. Standard voltage: 24V or more (2) When turning ignition switch ON, measure voltage between battery relay WG wire terminal and chassis ground. Standard voltage: 24V or more - If above items (1) and (2) are OK and the battery relay switching click does not sound when the ignition switch is turned ON, the battery relay is faulty.	Replace the battery relay.
6. F-R Lever Switch (neutral start switch)	- Check continuity between F-R lever switch COM terminal and NC terminal with forward/reverse lever in neutral and with ignition switch OFF. - Continuity present indicates normal condition. If there is no continuity, the F-R lever switch is faulty.	Replace the F-R lever switch.
7. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

2-2-3. Vibration

Check the following items before troubleshooting.
* Engine speed is higher than 1800 rpm (vibration does not work when engine speed is below 1800 rpm).
* No fuse blew.

1. No Vibration Occurs

* Vibration switch at control panel is turned ON.

Reference Fig. : 2-2-3

Check point	Check/Cause	Action
1. Vibration Solenoid	- Disconnect harness and measure resistance of coil. Standard resistance: 39Ω - If measured resistance is abnormal, the vibration solenoid is faulty.	Replace the vibration solenoid.
2. Throttle Switch	- When engine throttle lever is in full-high position, measure voltage between throttle switch COM terminal and chassis ground. It is normal that no electricity flows. - If electricity flows, the throttle switch is faulty.	Throttle switch is faulty.
3. Vibration Motor Relay	(1) Measure voltage between the vibration motor relay pin 3 inlet RL wire and chassis ground. Standard voltage: 24V or more (2) Measure voltage between the vibration motor relay pin 5 inlet BrW wire and chassis ground. It is normal that no electricity flows. (3) Check that vibration motor relay ground is good. - If above items (1), (2) and (3) are OK and the electricity does not flow through vibration relay pin 2, the vibration motor relay is faulty.	Replace the vibration motor relay.
4. Vibration Switch	- Turn vibration switch ON (to any position other than OFF) and measure current between vibration switch pin 2 and chassis ground. It is normal that no electricity flows. - If electricity flows, the vibration switch is faulty.	Replace the vibration switch.
5. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

2. Amplitude Does Not Change, Vibration Occurs Amplitude 1 only, but Does Not Increase when Vibration switch is moved to "2 or 3 or 4" position.

Reference Fig. : 2-2-3

Check point	Check/Cause	Action
1. Cylinder Solenoid	- Disconnect harness and measure resistance of coil. Standard resistance: 19.5Ω - If measured resistance is abnormal, the cylinder solenoid is faulty.	Replace the cylinder solenoid.

3. Liquid Spray does not work (Push Button)
Reference Fig. : 2-2-4

Check point	Check/Cause	Action
4. Water Spray Relay	(1) When pushing solution spray switch ON with ignition switch ON, measure voltage between solution spray relay pin 1 inlet YR wire and chassis ground. Standard voltage: 24V or more (2) When pushing solution spray switch ON with ignition switch ON, measure voltage between solution spray relay pin 5 inlet Y wire and chassis ground. Standard voltage: 24V or more (3) Check that solution spray relay ground is good. - If above items (1), (2) and (3) are OK and electricity does not flow through solution spray relay pin 3, the solution spray relay is faulty.	Replace the solution spray relay.
5. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

4. Water Spray Tank Selector Cannot Switch (Between SLOPE And LEVEL)
Reference Fig. : 2-2-4

Check point	Check/Cause	Action
1. Water Spray Tank Valve	(1) When turning selector switch to LEVEL (flat road) with ignition switch ON, measure voltage between water spray tank valve inlet LW wire and GND LB wire. Standard voltage: 24V or more (2) When turning selector switch to SLOPE (uphill road) with ignition switch ON, measure voltage between water spray tank valve inlet LB wire and GND LW wire. Standard voltage: 24V or more - If the water spray tank valve does not operate even though above items (1) and (2) are OK, the water spray tank valve is faulty.	Adjust or replace the water spray tank valve.
2. Water Spray Selector Switch	- When turning selector switch to LEVEL (flat road) or SLOPE (uphill road) with ignition switch ON, measure voltage between selector switch pin 1 inlet Y wire and selector switch pin 4 GND B wire. Standard voltage: 24V or more - If measurement is abnormal, the water spray selector Switch is faulty.	Replace the water spray selector switch.
3. Harness Connecting Between Terminals	- No continuity indicates that harness is open or poorly connected. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

8. Tachometer Reading Is Abnormal

* The other lamps light correctly.

Reference Fig. : 2-2-5

Check point	Check/Cause	Action
1. Tachometer Sensor	- Start the engine and fix 1,000rpm. - Set the digital pulse meter between 2 terminals of tachometer sensor.Then to measure the pulse in one minute. Standard value is 2000. - If the value is abnormal,the tachometer sensor is defective.	Replace the tachometer sensor.
2. Tachometer	- When turning ignition switch ON, measure voltage between tachometer plus (+) terminal WR wire and chassis ground. Standard voltage: 24V or more - If measurement is normal, the tachometer is faulty.	Replace the combination meter.
3. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

9. Hour Meter does not work

* The other lamps light correctly.

Reference Fig. : 2-2-5

Check point	Check/Cause	Action
1. Hour Meter	- When turning ignition switch ON, measure voltage between hour meter plus (+) terminal YG wire and chassis ground. Standard voltage: 24V or more - If measurement is normal, the hour meter is faulty.	Replace the combination meter.
2. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.

10. Temperature Gauge Is Abnormal

* The other lamps light correctly.

Reference Fig. : 2-2-5

Check point	Check/Cause	Action
1. Thermo-unit	- Disconnect harness and measure resistance of thermo-unit. Standard resistance: 153.9Ω (when unit temperature is 50°C) 24.9Ω (when unit temperature is 103°C) - If measured resistance is abnormal, the thermo-unit is faulty.	Replace the thermo-unit
2. Temperature Gauge	- When turning ignition switch ON, measure voltage between temperature gauge plus (+) terminal WR wire and chassis ground. Standard voltage: 24V or more - If measurement is normal and thermo-unit is normal, the temperature gauge is faulty.	Replace the combination meter.
3. Harness Connecting Between Terminals	- Check harness between terminals for continuity. - No continuity indicates that harness is open or poorly connected.	Repair or replace the harness.