CONFIDENTIAL

SW800/850 Series
SHOP MANUAL

SAKAI®

PREFACE

To make a machine working to maximum efficiency over a long period of time without any machine troubles, correct OPERATION, PREVENTIVE MAINTENANCE, TROUBLE-SHOOTING and REPAIR are of vital importance.

This shop manual provides instructions, for the most part, on GENERAL INFORMATION, STRUCTURE/FUNCTION, CHECKING/ADJUSTMENT, and TROUBLE-SHOOTIN of the SAKAI SW800/850 Series Vibrating Rollers.

This manual is designed to serve as a guide for the operator and maintenance personnel to acquire correct information and repair procedure on these machines in order to give a correct decision on problems which the machines will confront, thus leading to quality repair. Fully understand the contents of the manual and make the best of it.

We will make utmost efforts to make this manual more useful for you through revisions.
Your opinions and advices will be particularly welcome and will be carefully considered.

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SPECIFICATIONS

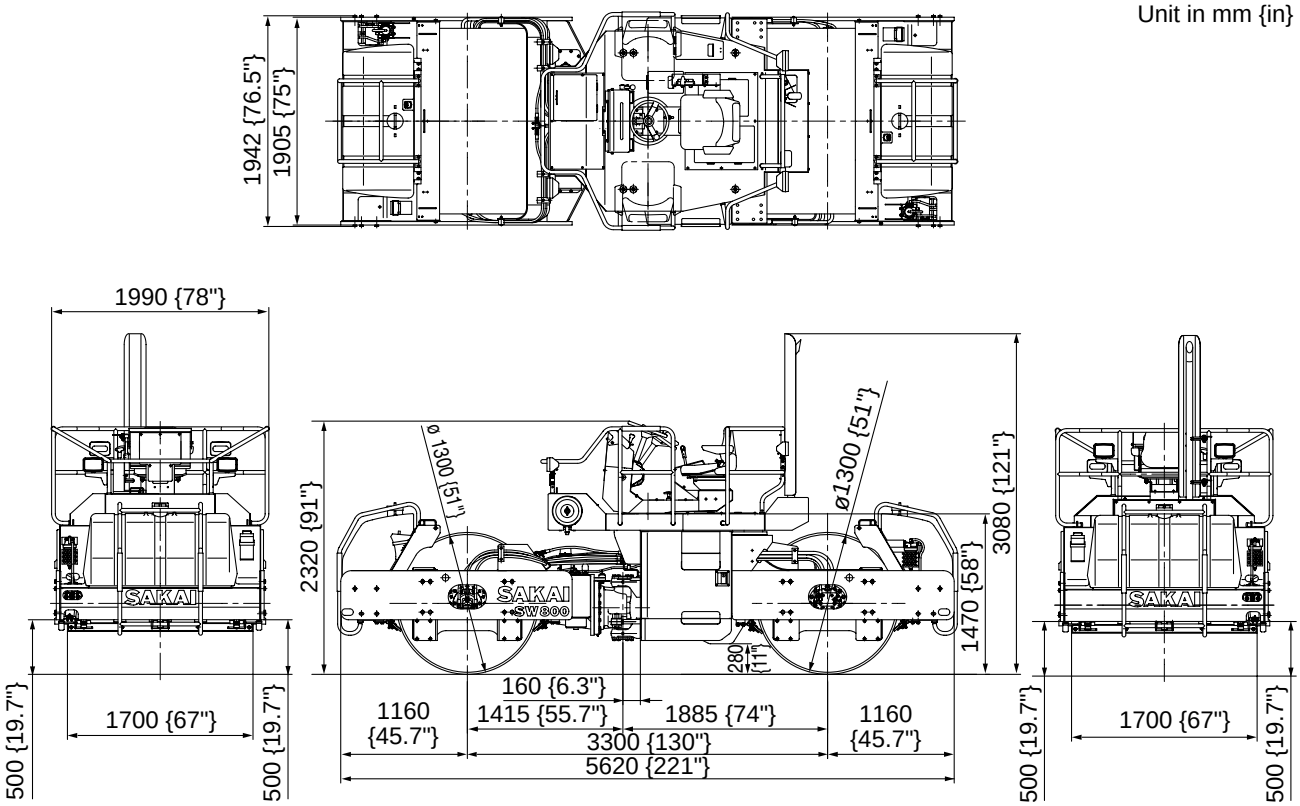
SPECIFICATIONS

1. External Views and Specifications

1. External Views and Specifications

1-1. SW800

Unit in mm {in}



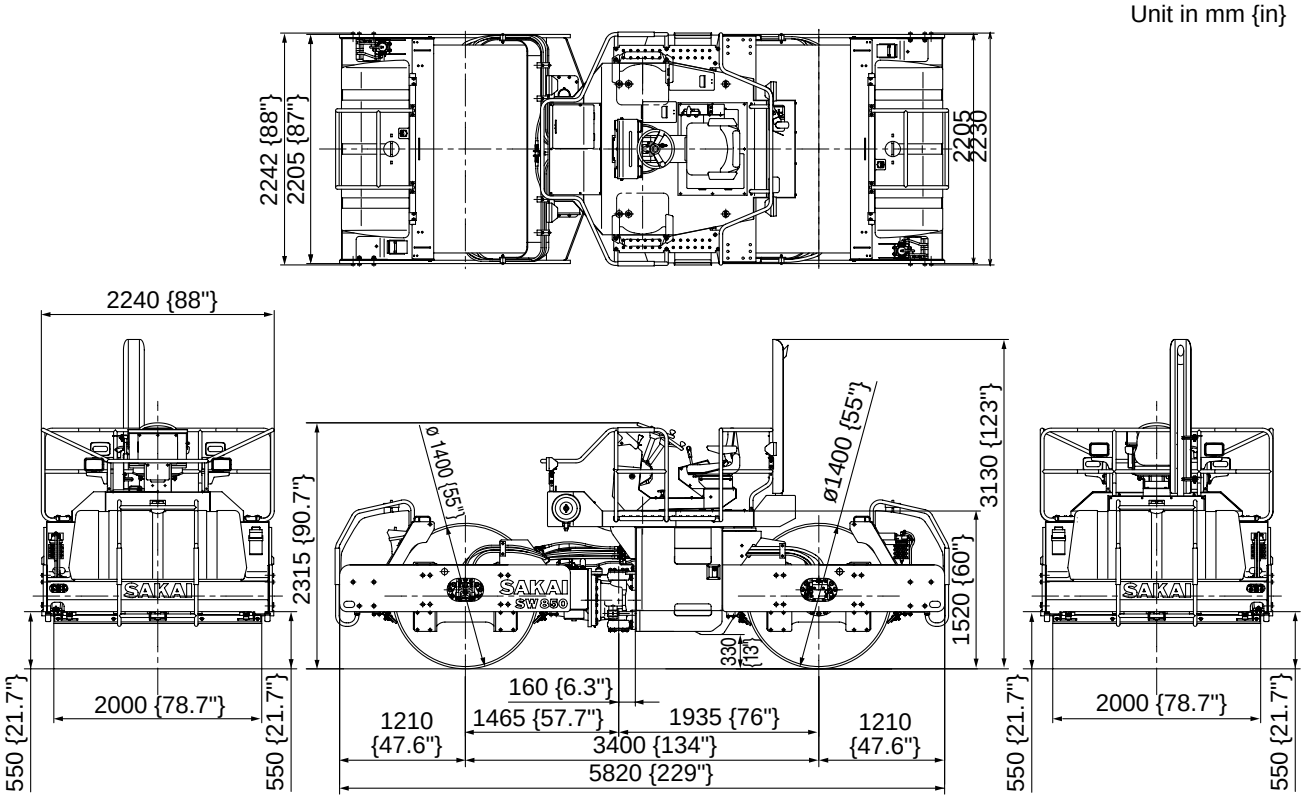
SW8001001

Model	SW800	Vibrating power:			
Weight:		Low amplitude			
Gross weight	10,200 kg {22,490 lbs}	Frequency	67 Hz {4,000 vpm}	50 Hz {3,000 vpm}	42 Hz {2,500 vpm}
Empty weight	9,200 kg {20,280 lbs}				
Dimension:		Centrifugal force	121 kN {27,120 lbs}	68 kN {15,210 lbs}	47 kN {10,580 lbs}
Overall length	5,620 mm {221"}				
Overall width	1,905 mm {75"}	High amplitude			
Overall height	3,080 mm {121"}	Frequency	50 Hz {3,000 vpm}	42 Hz {2,500 vpm}	
Wheelbase	3,300 mm {130"}				
Wheel		Centrifugal force	108 kN {24,250 lbs}	76 kN {16,980 lbs}	
Front	Roll (dia. x width) 1,300 x 1,700 mm {51" x 67"}	**Engine:**			
Rear	Roll (dia. x width) 1,300 x 1,700 mm {51" x 67"}	Model	ISUZU “A-4BG1T” Diesel Engine (with turbo charger)		
Performance:		Total displacement	4.329 liters {264 cu.in}		
Travel speed (forward/reverse)		Rated output	82 kW {111 PS}/2,300 min^{-1} {rpm} {109 HP/2,300 rpm}		
Low	0 ~ 7.5 km/h {0 ~ 4.6 mile/h}	Max. torque	333 N•m/1,600 min^{-1} {rpm} {246 ft-lb/1,600 rpm}		
High	0 ~ 12.5 km/h {0 ~ 7.7 mile/h}				
Vibrating power:		**Tank capacity:**			
Gradability	33 % {18.3°}	Fuel tank	220 liters {58 gal}		
Rolling width	1,700 mm {67"}	Hydraulic tank	80 liters {21 gal}		
Minimum turning radius	6.0 m {237"}	Sprinkler tank	500 liters x 2 {132 gal x 2}		

NOTE: Gradability is the calculated value. It may vary with ground surface conditions.

1-2. SW850

Unit in mm {in}



SW8501001

Model	**SW850**	**Vibrating power:**			
Weight:		Low amplitude			
Gross weight	12,350 kg {27,230 lbs}	Frequency	67 Hz {4,000 vpm}	50 Hz {3,000 vpm}	42 Hz {2,500 vpm}
Empty weight	11,150 kg {24,580 lbs}				
Dimension:		Centrifugal force	148 kN {33,290 lbs}	82 kN {18,520 lbs}	58 kN {13,010 lbs}
Overall length	5,820 mm {229"}				
Overall width	2,205 mm {87"}	High amplitude			
Overall height	3,130 mm {123"}	Frequency	50 Hz {3,000 vpm}	42 Hz {2,500 vpm}	
Wheelbase	3,400 mm {134"}				
Wheel		Centrifugal force	141 kN {31,750 lbs}	100 kN {22,490 lbs}	
Front	Roll (dia. x width) 1,400 x 2,000 mm {55" x 79"}	**Engine:**			
Rear	Roll (dia. x width) 1,400 x 2,000 mm {55" x 79"}	Model	ISUZU “A-6BG1T” Diesel Engine		
		Total displacement	6.494 liters {396 cu.in}		
Performance:		Rated output	90 kW {123 PS}/2,300 min^{-1} {rpm} {121 HP/2,300 rpm}		
Travel speed (forward/reverse)		Max. torque	392 N•m/1,600 min^{-1} {rpm} {289 ft-lb/1,600 rpm}		
Low	0 ~ 7 km/h {0 ~ 4.3 mile/h}				
High	0 ~ 11 km/h {0 ~ 6.8 mile/h}	**Tank capacity:**			
Vibrating power:		Fuel tank	250 liters {66 gal}		
Gradability	31 % {17.2°}	Hydraulic tank	80 liters {21 gal}		
Rolling width	2,000 mm {79"}	Sprinkler tank	600 liters x 2 {159 gal x 2}		
Minimum turning radius	6.3 m {248"}				

NOTE: Gradability is the calculated value. It may vary with ground surface conditions.

MEMO

STRUCTURE & OPERATION

STRUCTURE & OPERATION

1. Engine-related Units

2. Description and Operation of Hydraulic System

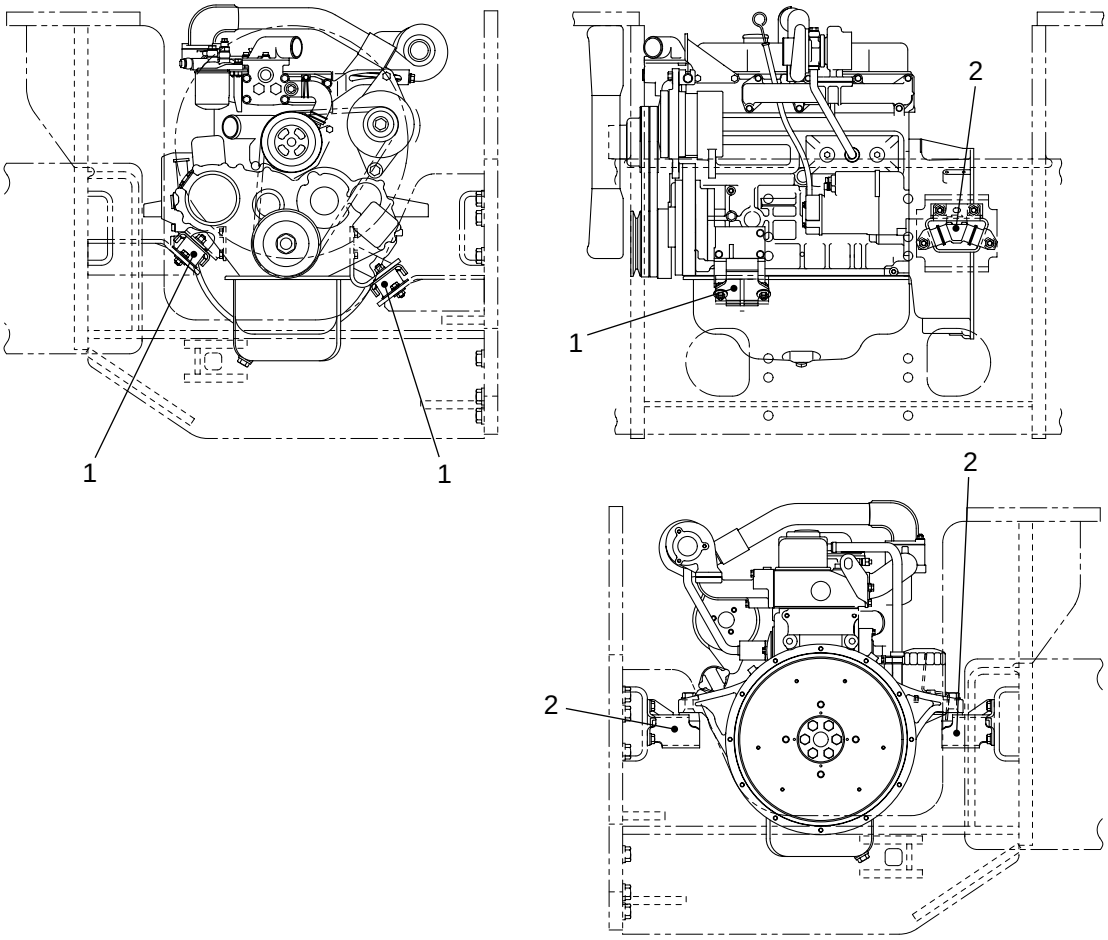
3. Brake System

4. Sprinkler

5.Electric System

1.Engine-related Units

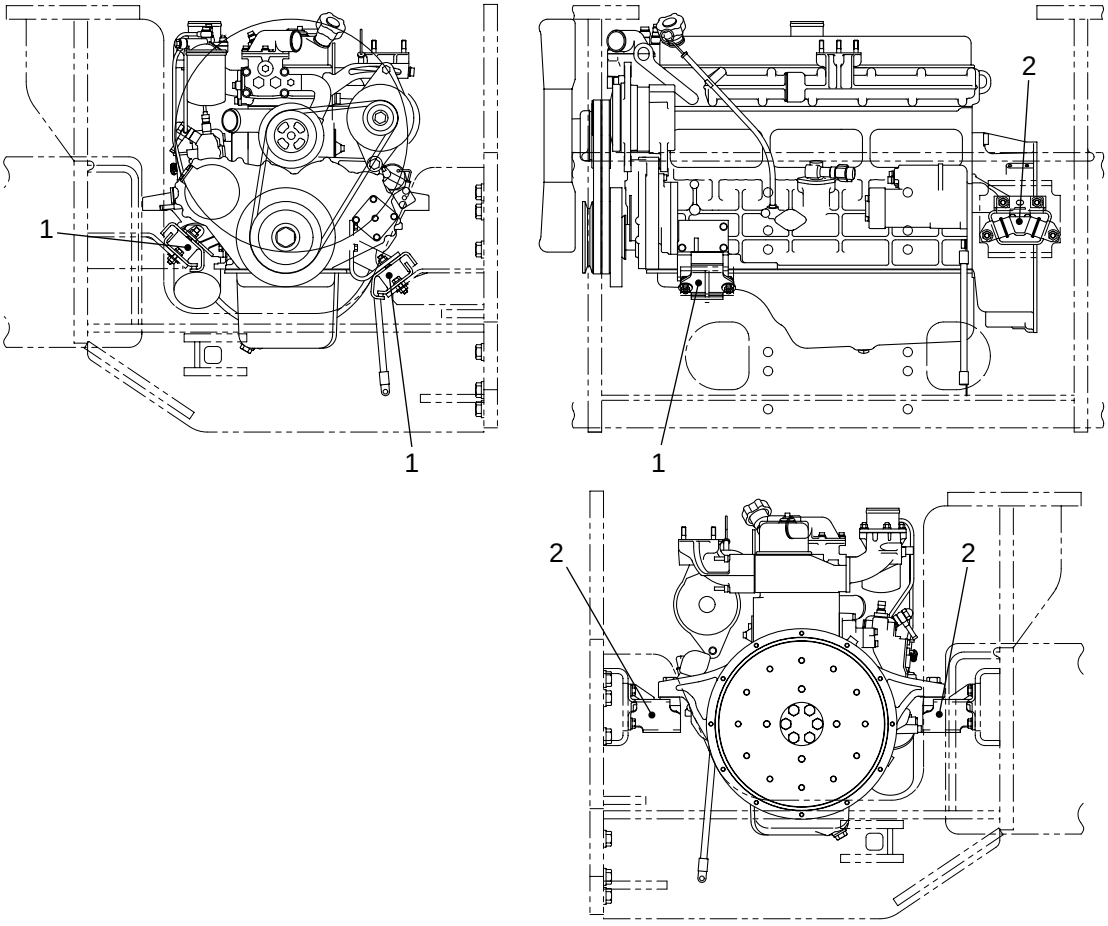
1-1. Engine mount (SW800)



SW8002001

1. Engine mount (front)
2. Engine mount (rear)

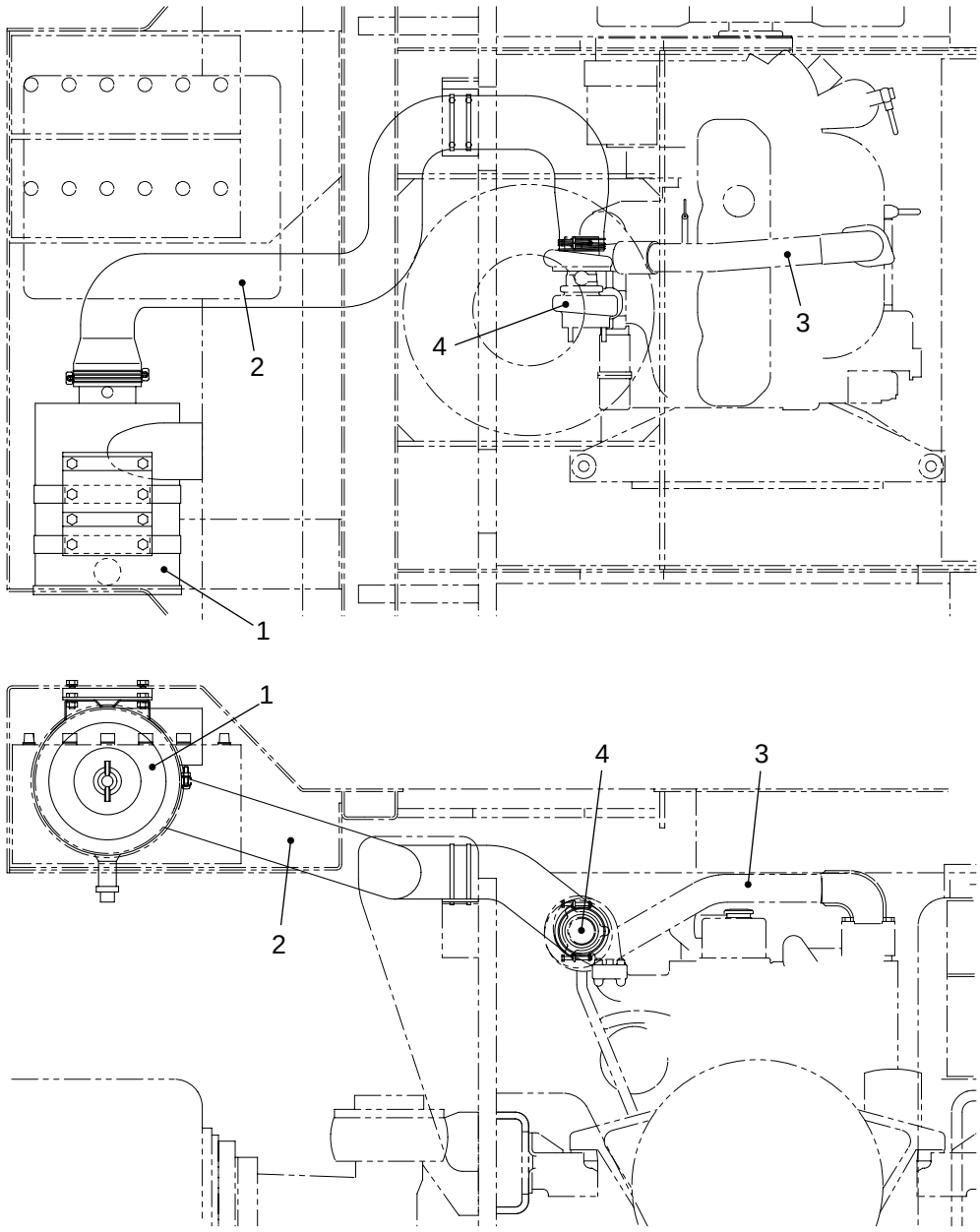
1-2. Engine mount (SW850)



SW8502001

1. Engine mount (front)
2. Engine mount (rear)

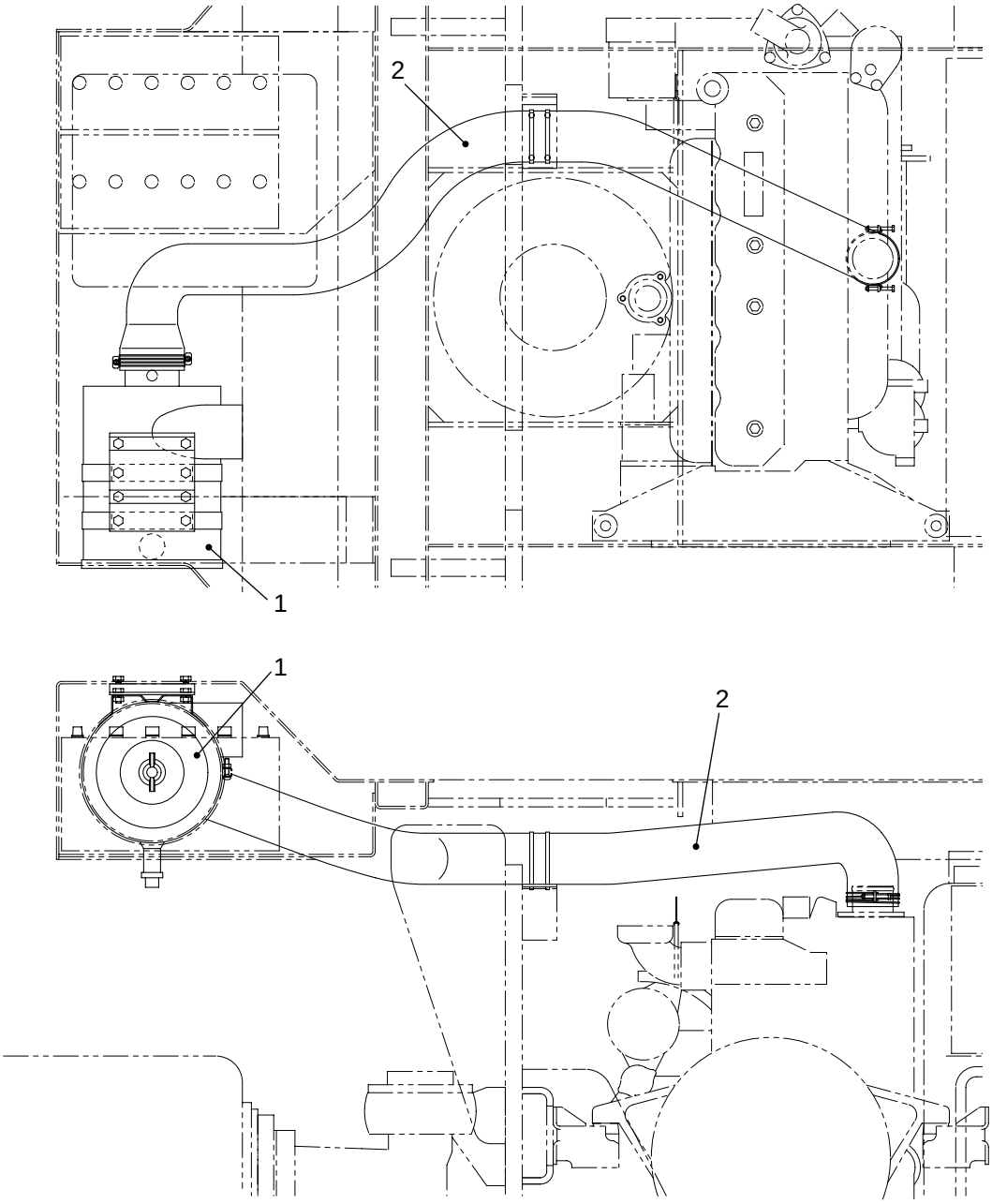
1-3. Intake system (SW800)



SW8002002

1. Air cleaner
2. Intake hose
3. Air feed pipe
4. Turbo charger

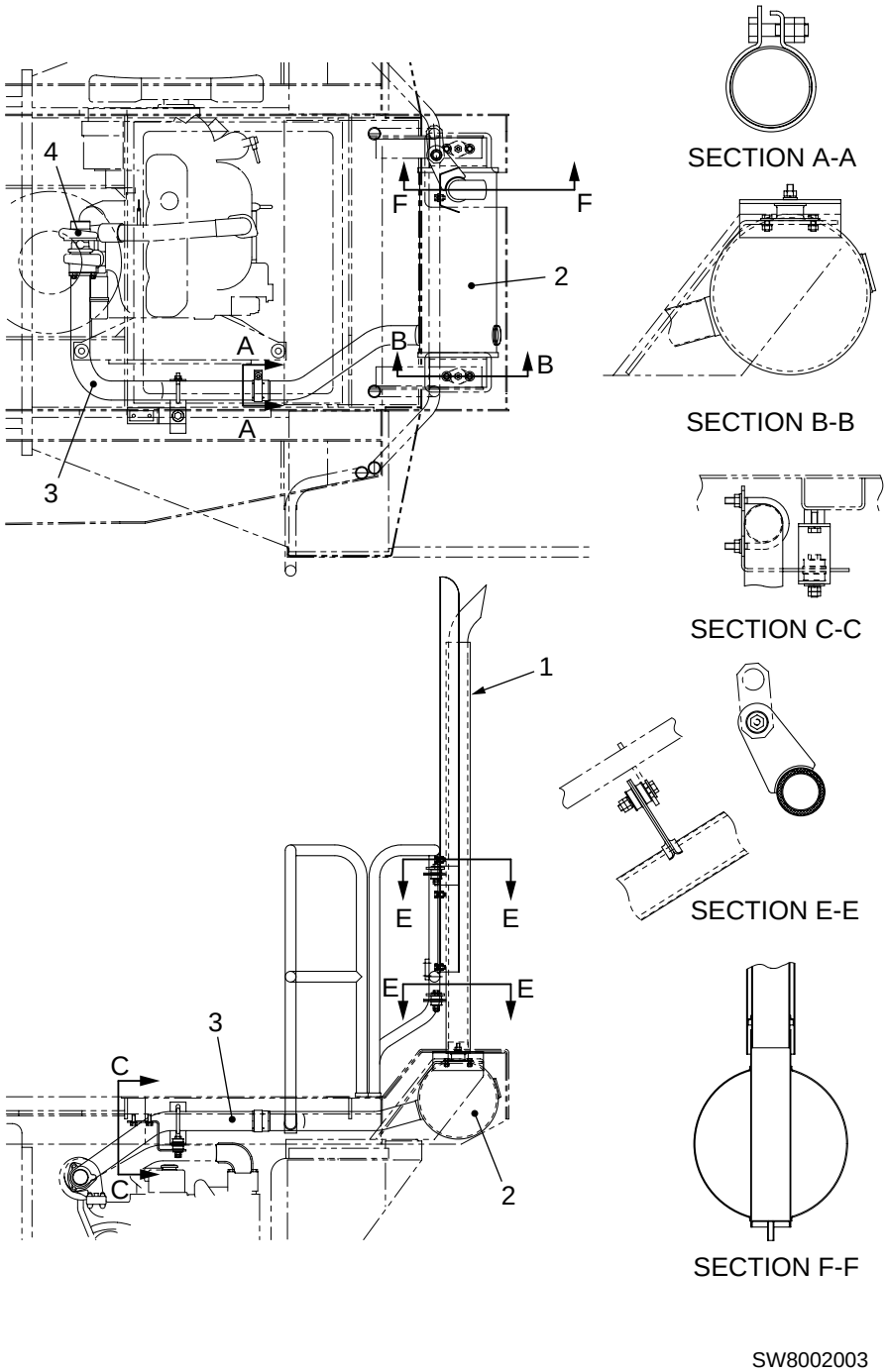
1-4. Intake system (SW850)



SW8502002

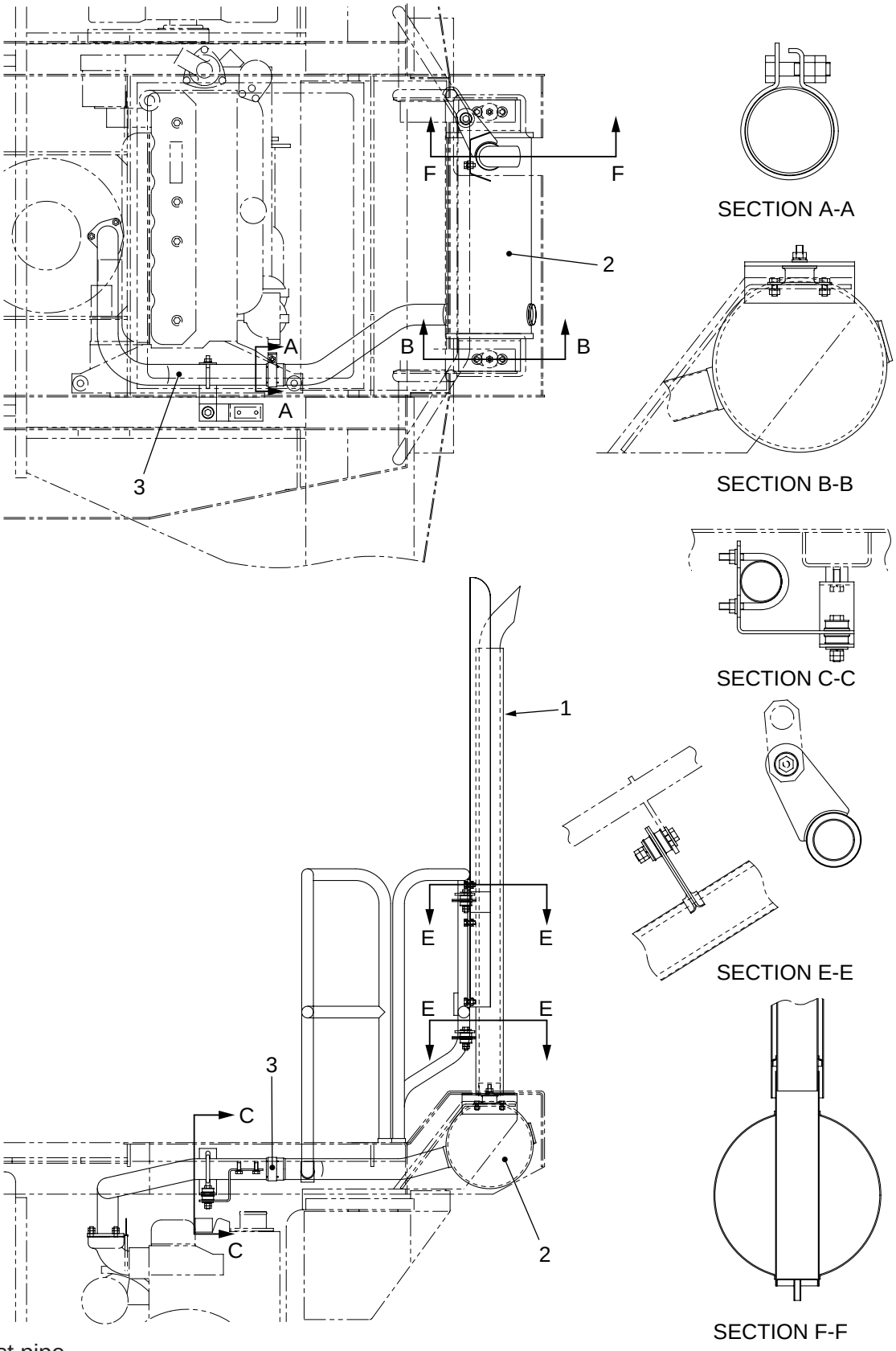
1. Air cleaner
2. Intake hose

1-5. Exhaust system (SW800)



1. Exhaust pipe
2. Muffler
3. Exhaust pipe
4. Turbo charger

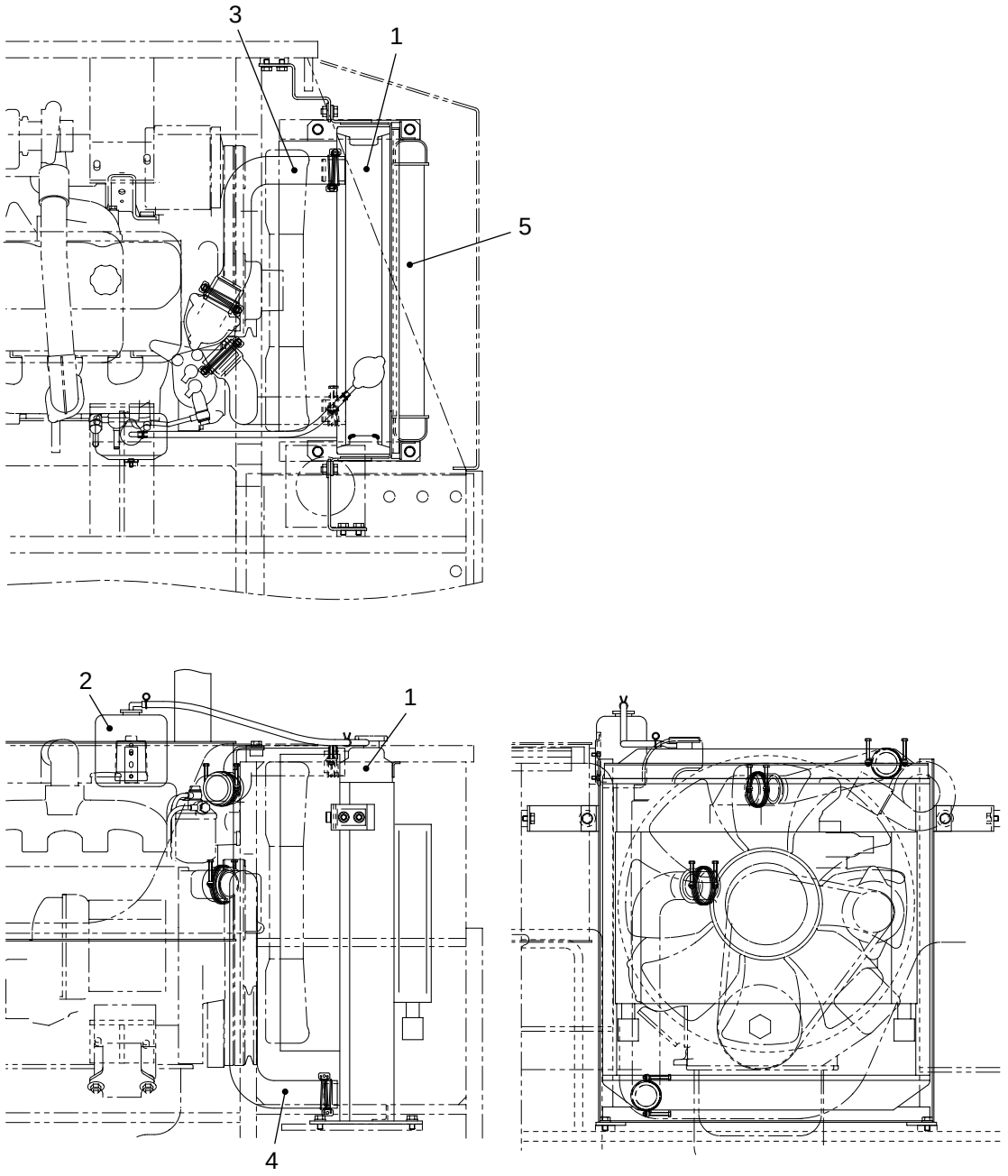
1-6. Exhaust system (SW850)



1. Exhaust pipe
2. Muffler
3. Exhaust pipe

SW8502003

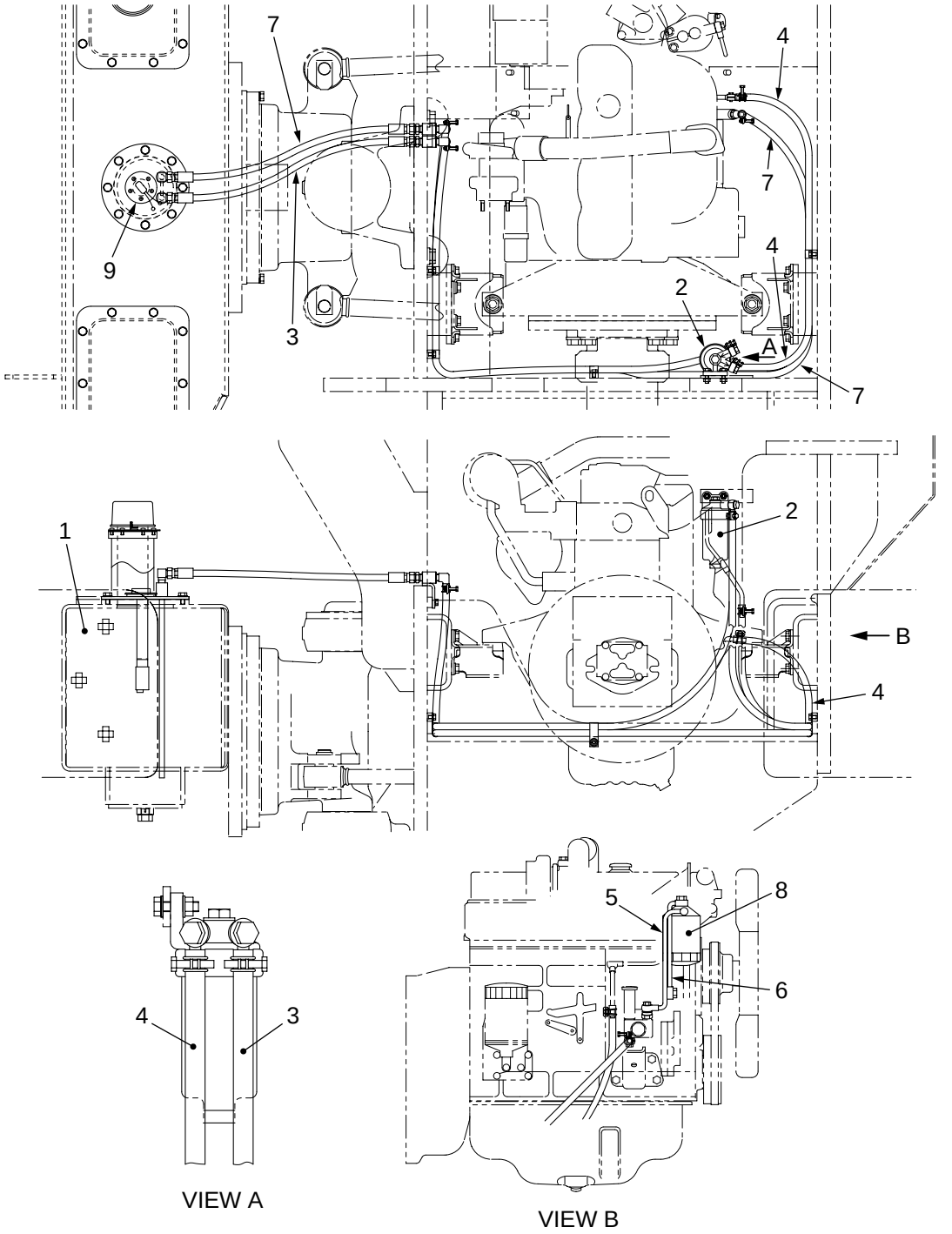
1-7. Cooling piping & radiator



SW8002004

1. Radiator
2. Sub tank
3. Radiator inlet hose
4. Radiator outlet hose
5. Oil cooler

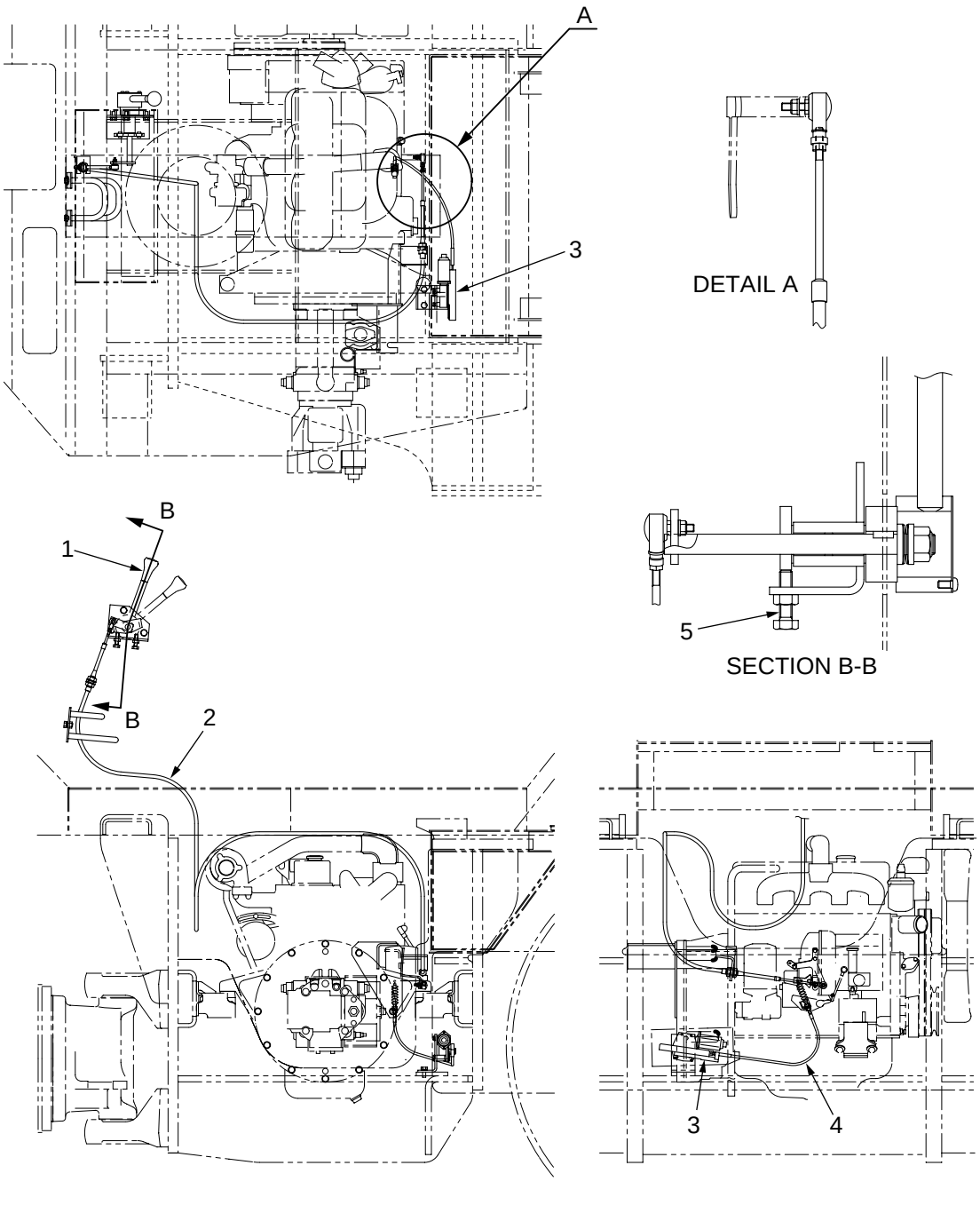
1-8. Fuel piping & fuel tank



SW8002005

1. Fuel tank
2. Sedimenter
3. Hose (fuel tank to sedimenter)
4. Hose (sedimenter to feed pump)
5. Pipe (feed pump to filter)
6. Pipe (filter to injection pump)
7. Hose (engine to fuel tank)
8. Filter
9. Fuel unit

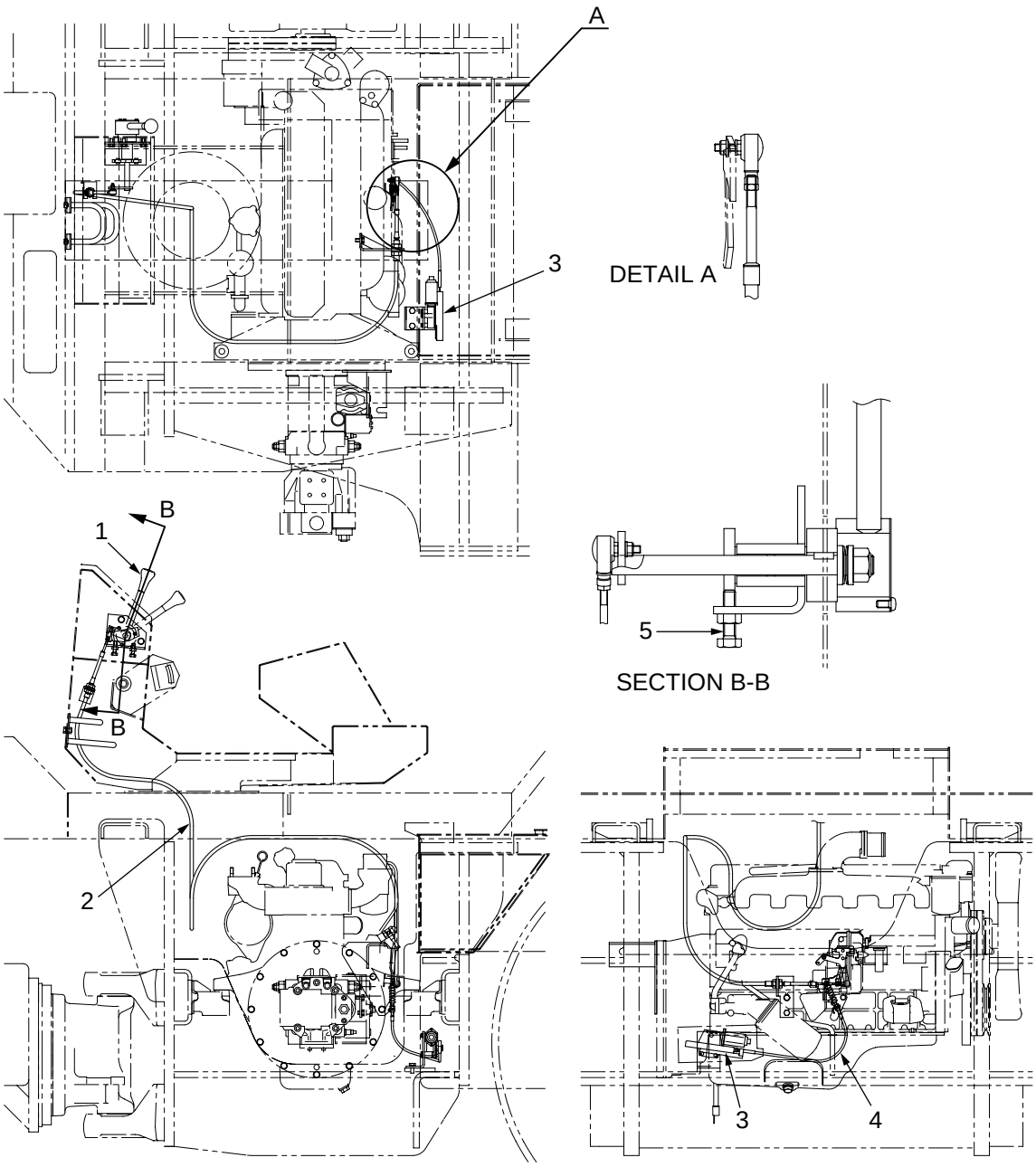
1-9. Fuel controls (SW800)



SW8002006

1. Throttle lever
2. Throttle cable
3. Engine stopper
4. Engine stopper cable
5. Throttle lever adjusting screw

1-10. Fuel controls (SW850)



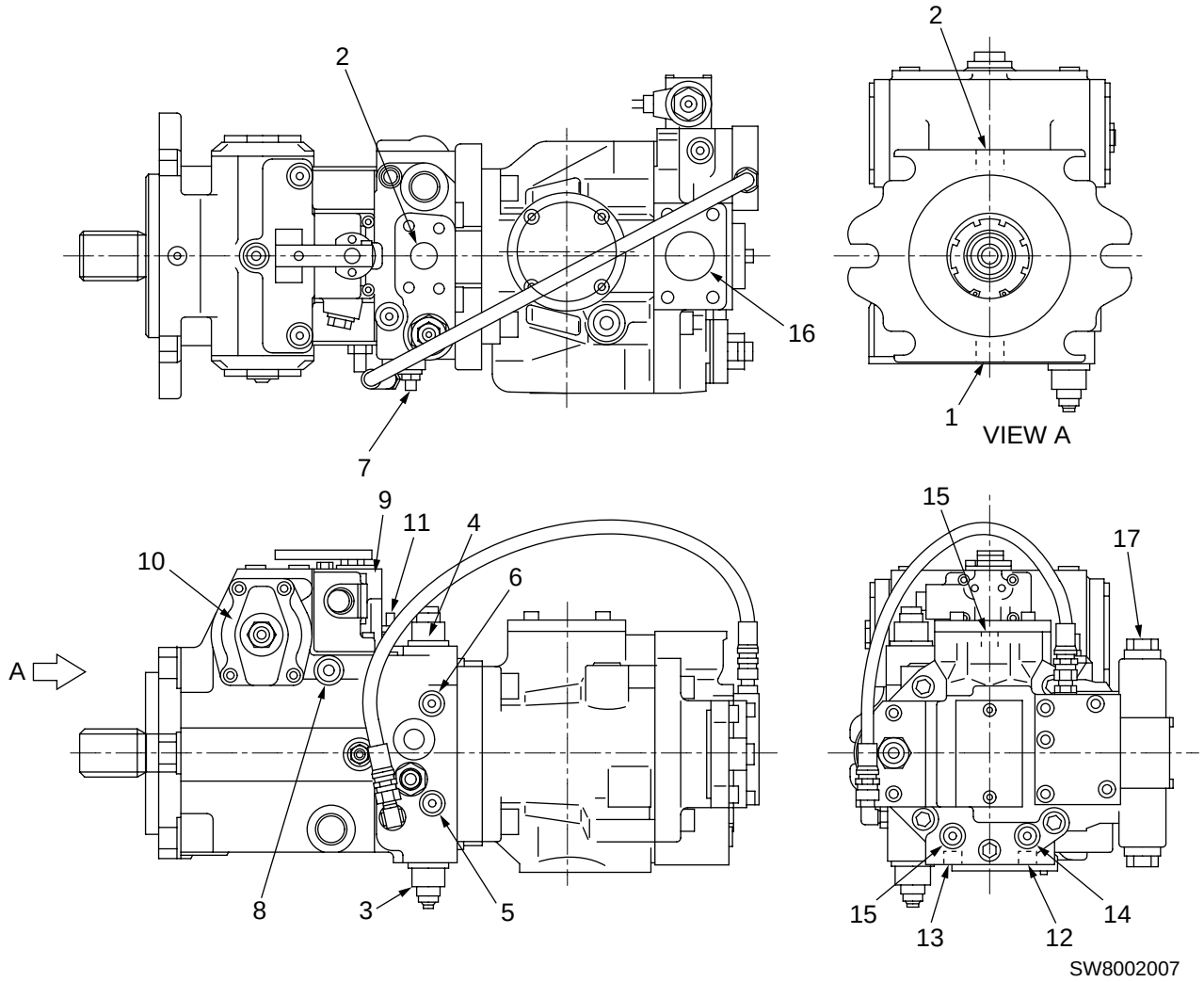
SW8502004

1. Throttle lever
2. Throttle cable
3. Engine stopper
4. Engine stopper cable
5. Throttle lever adjusting screw

2. Description and Operation of Hydraulic System

2-1. Structure of hydraulic pump and motor

2-1-1. Propulsion pump/vibrator pump ass'y



Propulsion pump:

1. Port A (reverse travel)
2. Port B (forward travel)
3. Multi-function valve (port A)
4. Multi-function valve (port B)
5. Circuit pressure gauge port (Port A)
6. Circuit pressure gauge port (port B)
7. Charge relief valve
8. Charge circuit pressure gauge port
9. Control valve
10. Servo piston
11. Cut-off valve

Vibrator pump:

12. Port A2 (front circuit)
13. Port A3 (rear circuit)
14. Circuit pressure gauge port (port A2)
15. Circuit pressure gauge port (port A3)
16. Suction port
17. Frequency (delivery) select valve

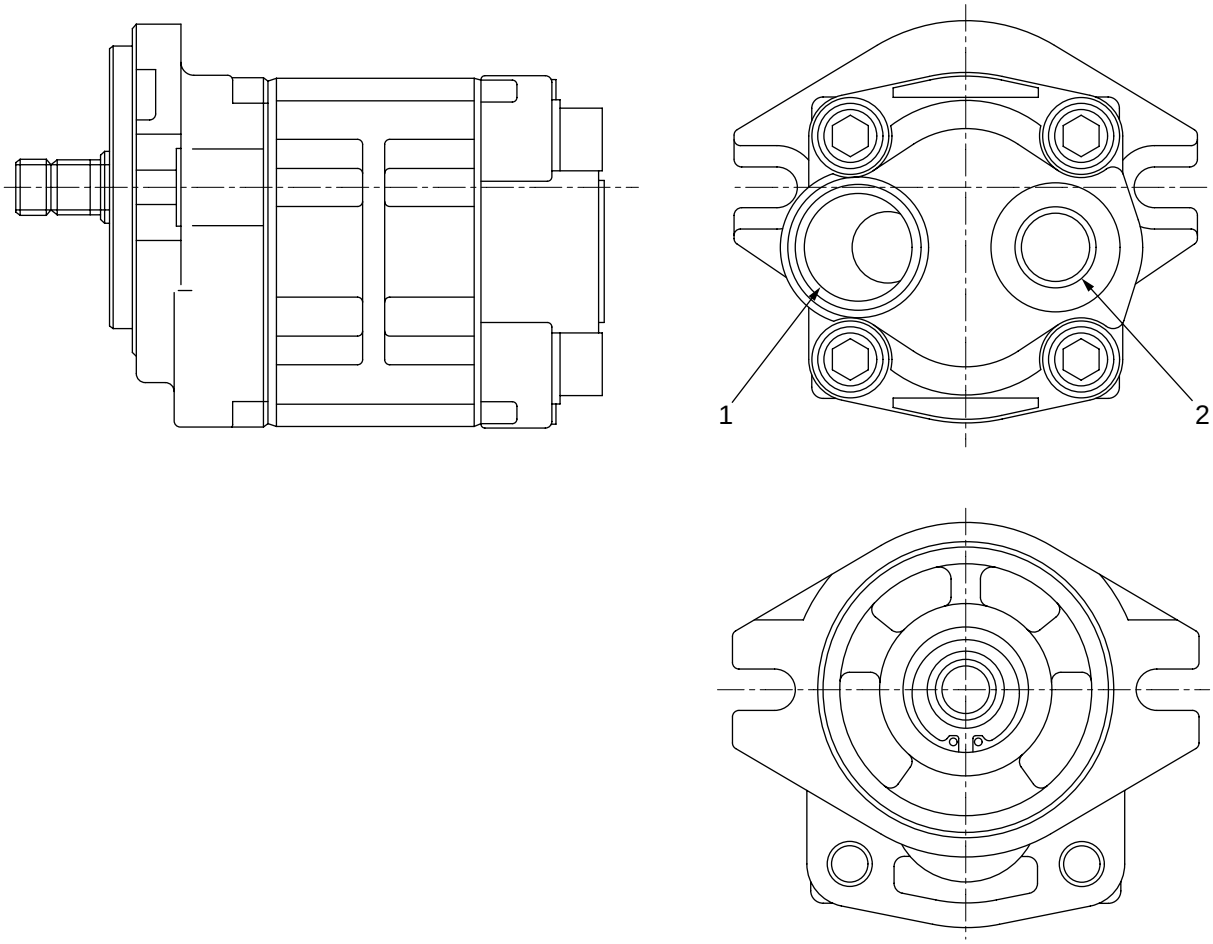
Specifications (propulsion pump)

- Model
  : A4VG90HW
- Max. displacement
  : 90cm^3/rev(cc/rev)
- Relief valve setting
  : 40.2MPa (410kgf/cm^2) {5830psi}
- Cut-off valve setting
  : 37.3MPa (385kgf/cm^2) {5470psi}
- Charge circuit setting
  : 2.5MPa (25kgf/cm^2) {355psi}

Specifications (vibrator pump)

- Model
  : AP2D36
- Max. displacement
  : 28cm^3/rev(cc/rev) x 2
- Circuit pressure setting
  : 22.5MPa (230kgf/cm^2) {3270psi}
  (Set by amplitude select valve)

2-1-2. Steering pump



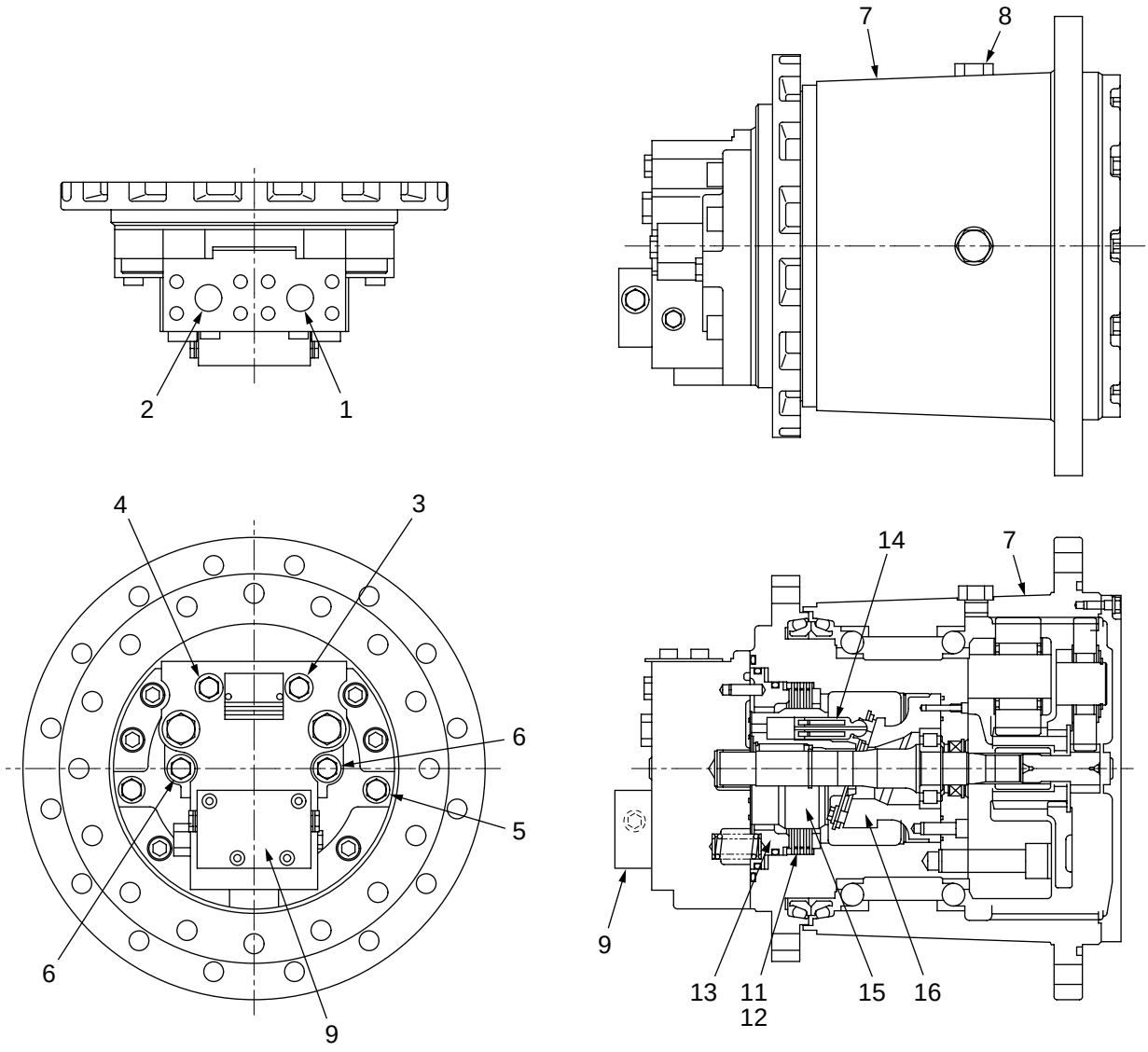
SW8002008

1. Port A
2. port B
3. Drain port

Specifications

- Model : A2FM16
- Displacement : 16cm^3/rev(cc/rev)
- Circuit pressure setting : 22.5MPa (230kgf/cm^2) {3270psi}
  (Set by amplitude select valve)

2-1-3. Propulsion motor ass'y



SW8002009

1. Port A
2. Port B
3. Circuit pressure gauge port (A)
4. Circuit pressure gauge port (B)
5. Brake release port
6. Brake release bolt hole
7. Gear reducer
8. Gear reducer fill hole plug
9. Flushing valve (rear motor only)
10. Drain circuit port

Brake:

11. Disc
12. Plate
13. Brake piston

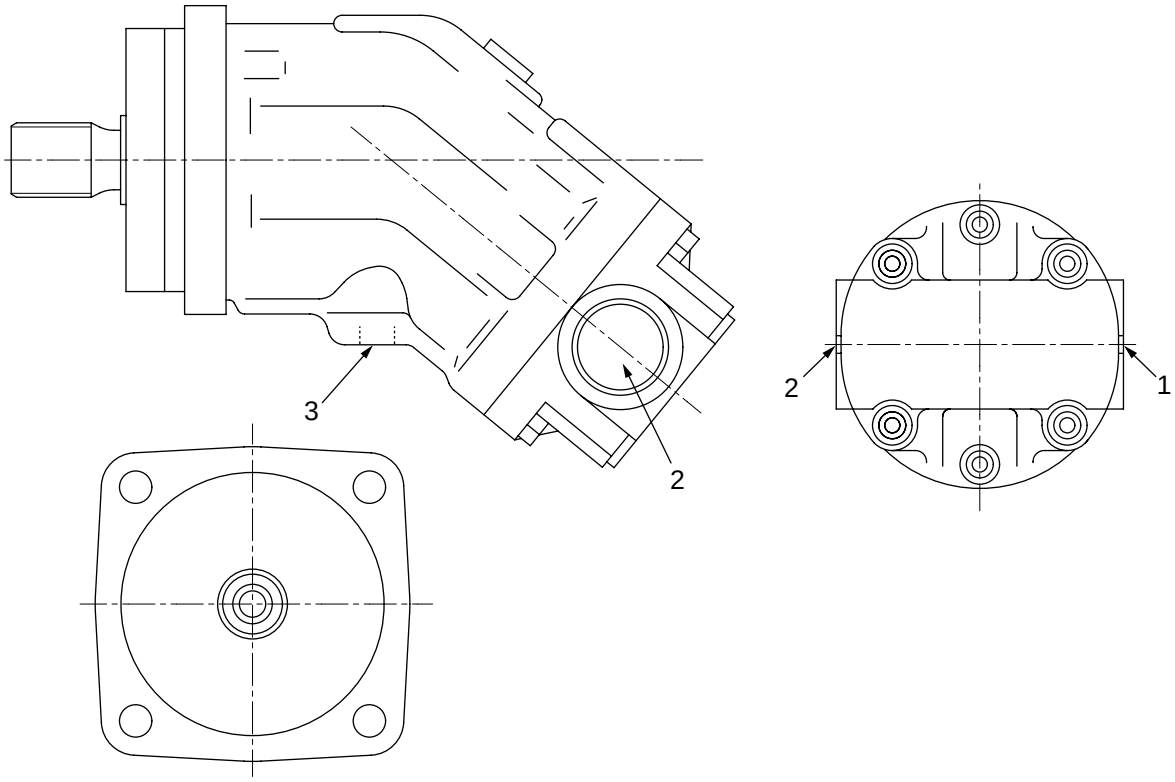
Motor:

14. Piston
15. Cylinder block
16. Swashplate

Specifications (SW800)
- Model : MF55-5111 (front)
  : MF55-506 (rear)
- Displacement : 55.1cm^3/rev(cc/rev)
- Flushing relief setting
  : 2.4MPa (24kgf/cm^2) {340psi}
- Circuit pressure setting
  : 40.2MPa (410kgf/cm^2) {5830psi}
  (To be set on propulsion pump side)

Specifications (SW850)
- Model : MF75E (front)
  : MF75D (rear)
- Displacement : 75cm^3/rev(cc/rev)
- Flushing relief setting
  : 2.4±1MPa (24±1kgf/cm^2) {340±14psi}
- Circuit pressure setting
  : 40.2MPa (410kgf/cm^2) {5830psi}
  (To be set on propulsion pump side)

2-1-4. Vibrator motor ass'y



SW8002010

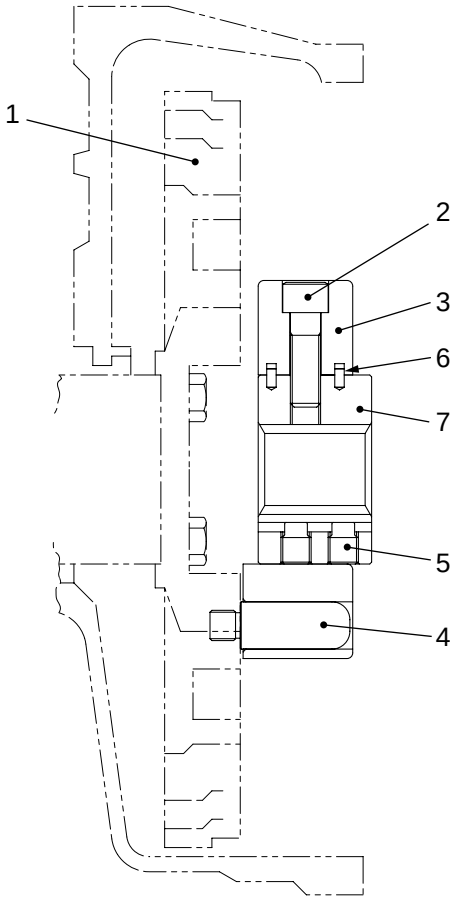
1. Suction port
2. Delivery port

Specifications

- Model : SGP123R517
- Displacement : 23.3cm^3/rev(cc/rev)
- Circuit pressure setting : 15.2MPa (155kgf/cm^2) {2200psi}
  (To be set on Orbitrol side)

2-2. Coupling and hydraulic circuit

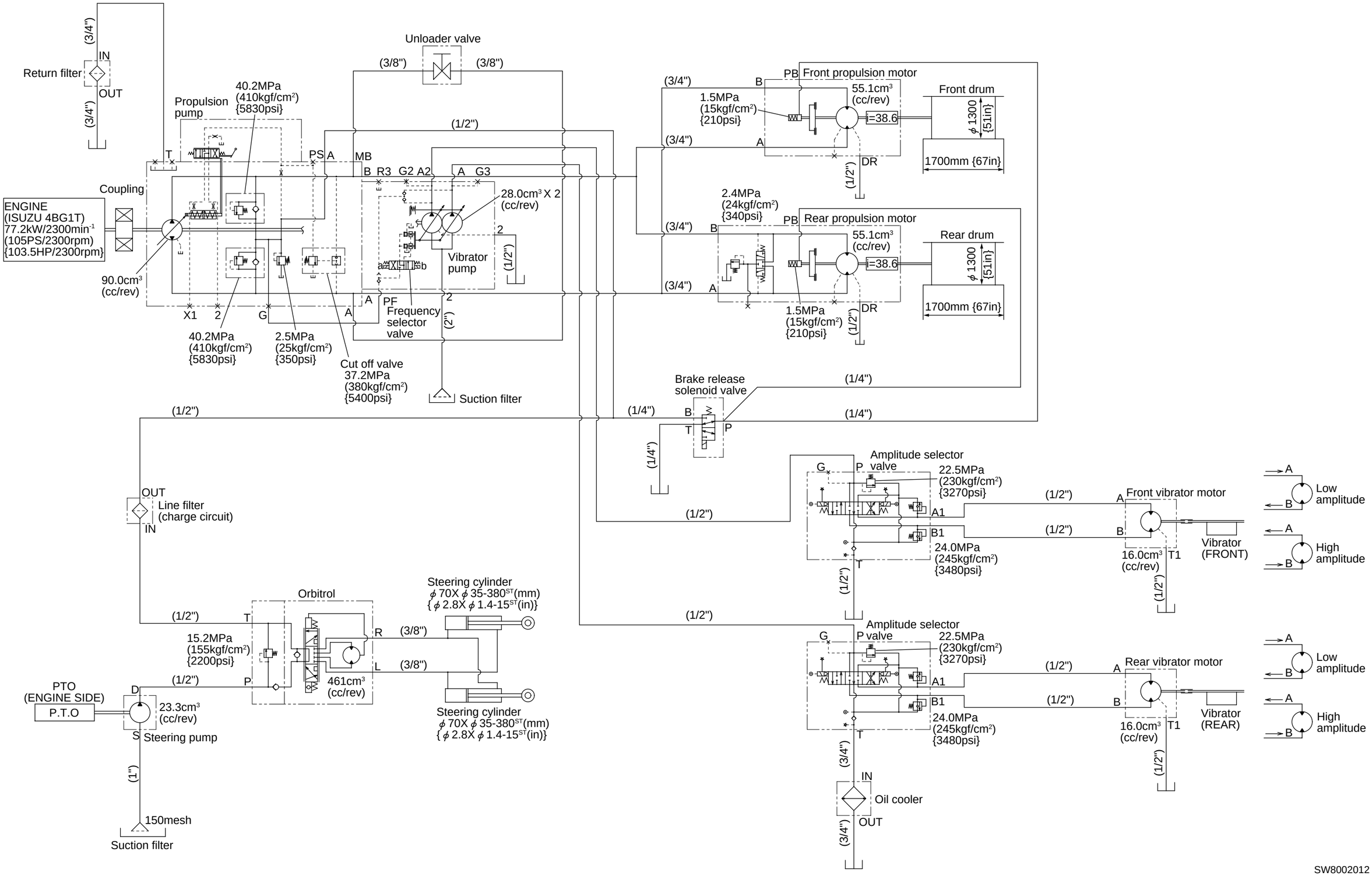
2-2-1. Coupling



SW8002011

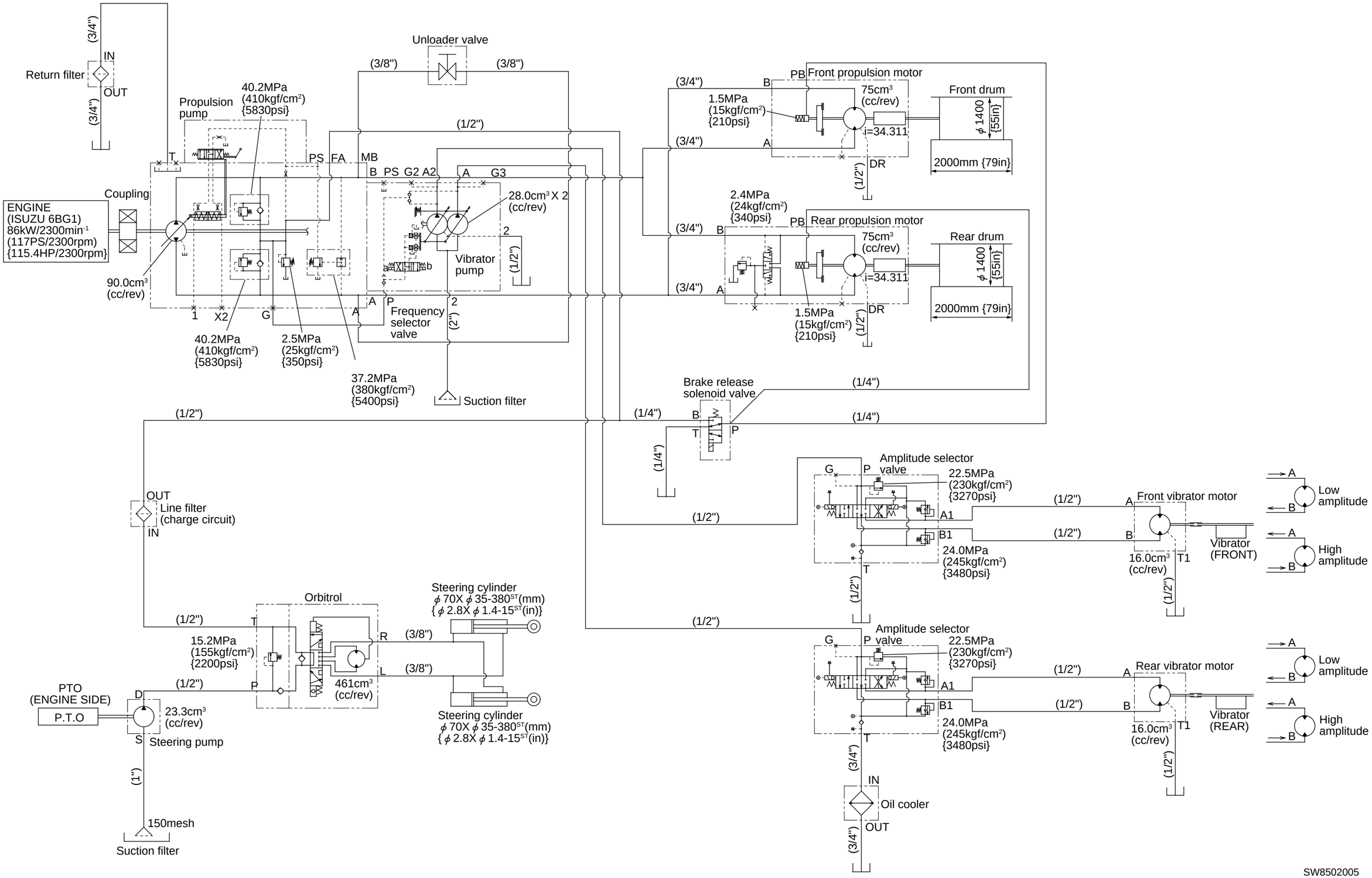
1. Flywheel
2. Bolt
3. Coupling
4. Bolt
5. Set screw
6. Spring pin
7. Boss

2-2-2. Hydraulic circuit (SW800)



SW8002012

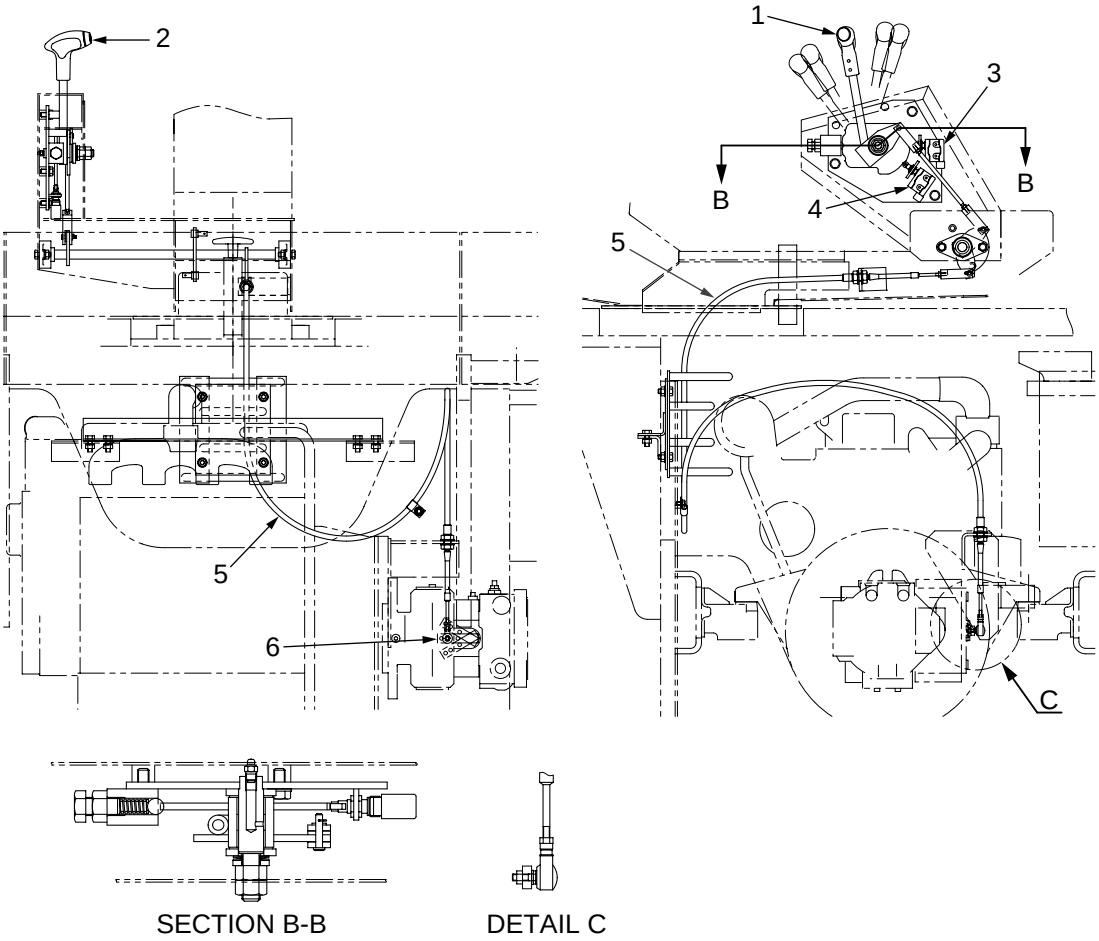
2-2-3. Hydraulic circuit (SW850)



SW8502005

2-3. Propulsion system

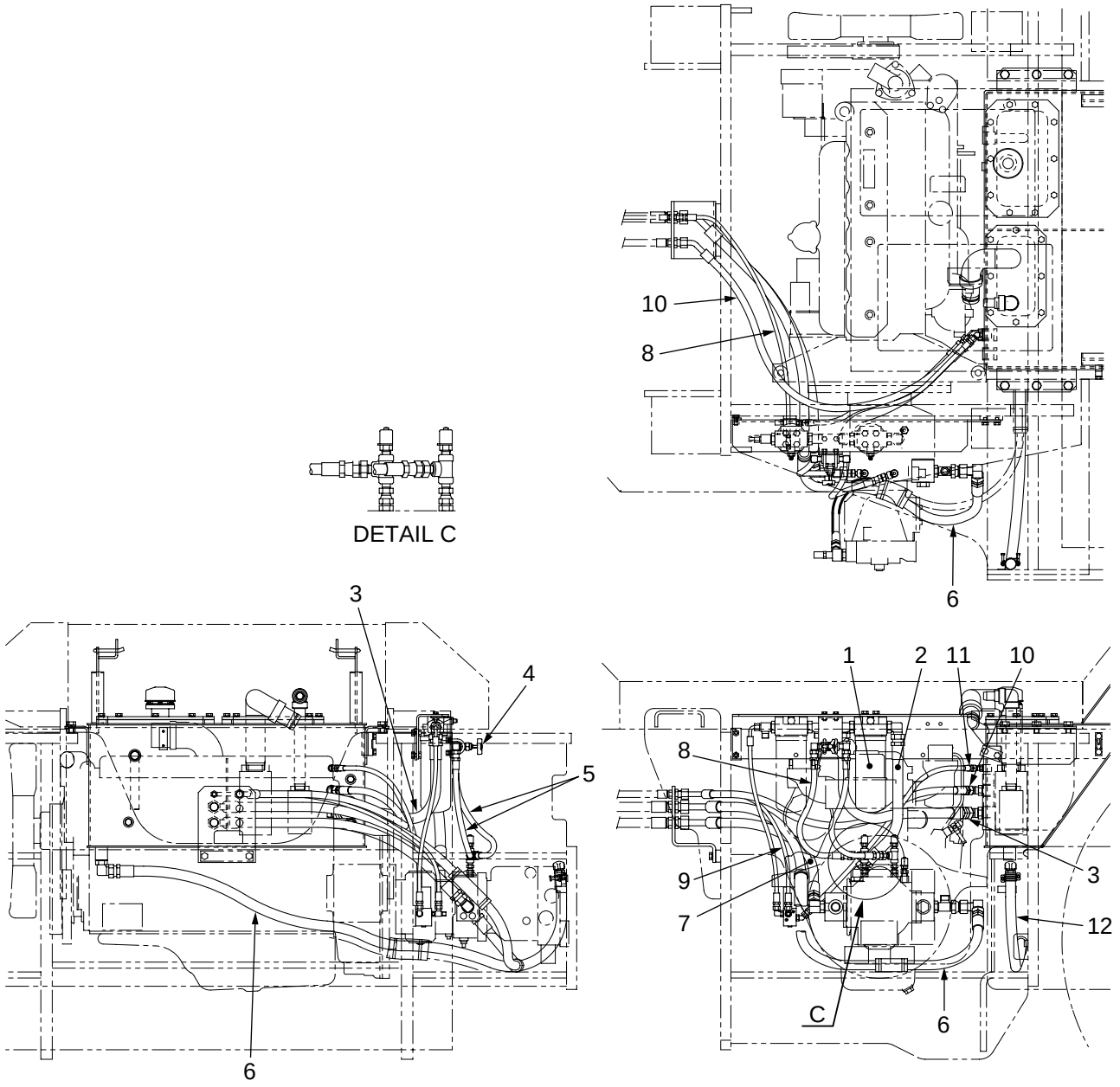
2-3-1. Propulsion controls



SW8002013

1. Forward-reverse (F-R) lever
2. Vibrator switch
3. Forward-reverse (F-R) lever switch
4. Reverse alarm switch
5. Control cable
6. Control lever (propulsion pump)

2-3-2. Hydraulic piping〔Ⅰ〕

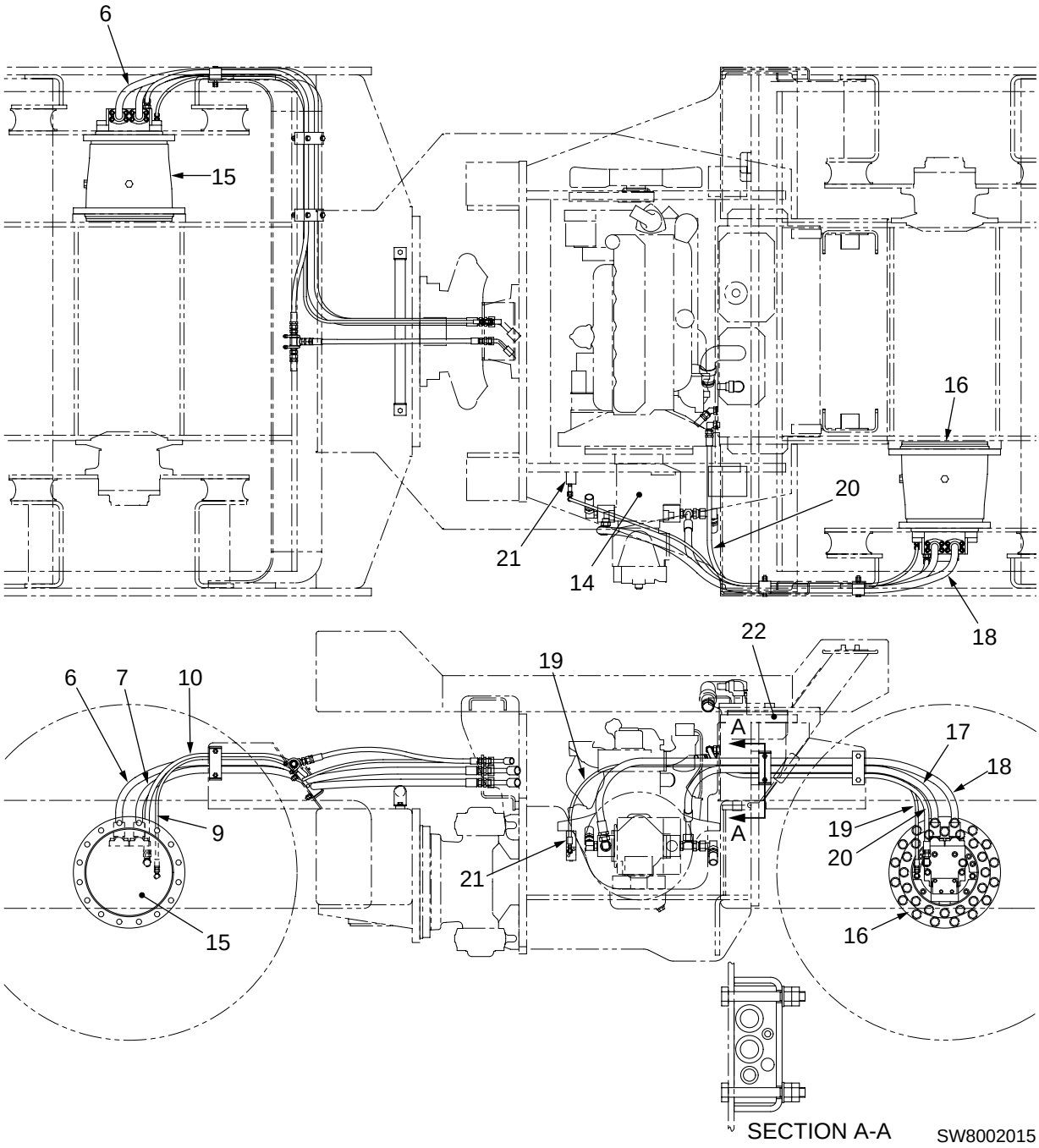


SW8002014

1. Return filter
2. Return hose (propulsion pump to filter)
3. Return hose (filter to hydraulic tank)
4. Unloader valve
5. Hose (unloader)
6. High pressure hose (forward travel of front motor)
7. High pressure hose (reverse travel of rear motor)
8. Brake release hose (filter to brake release valve)
9. Brake release hose (brake relief valve to front propulsion motor)
10. Return hose (front propulsion motor to hydraulic tank)
11. Return hose (propulsion pump to hydraulic tank)
12. Hydraulic tank drain hose

* Hose (10) meets with vibrator hose (17) and leads to tank.

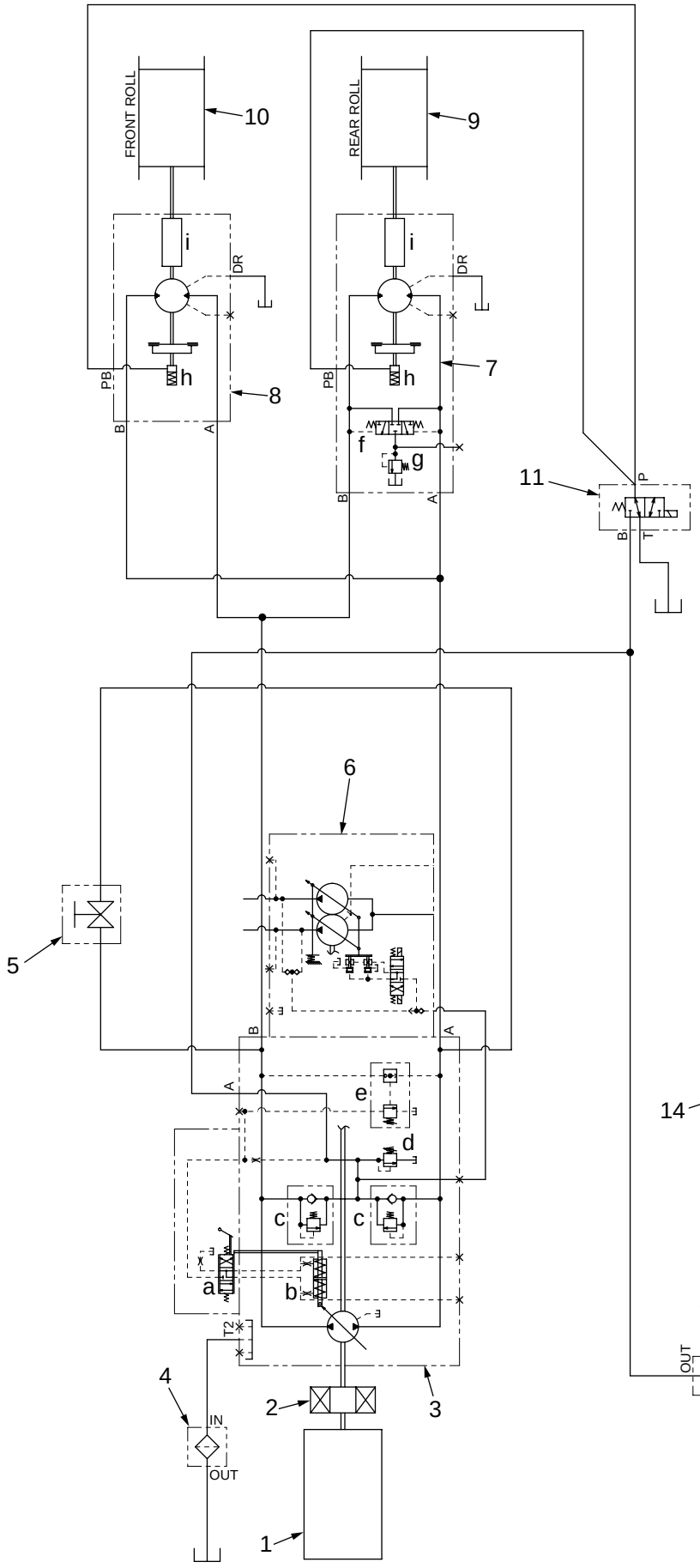
2-3-3. Hydraulic circuit〔Ⅱ〕

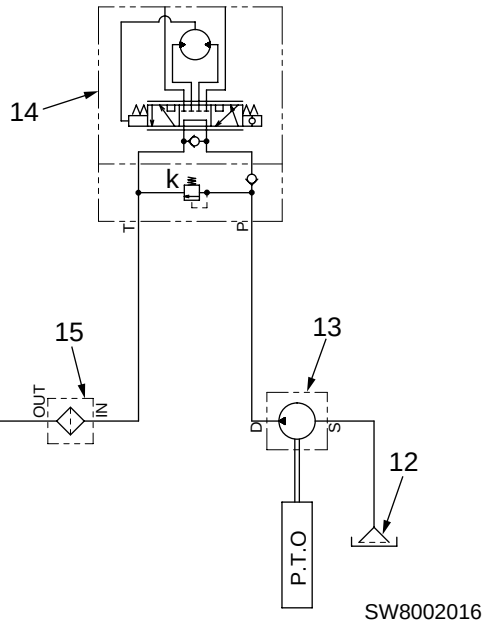


6. High pressure hose (forward travel of front propulsion motor)
7. High pressure hose (reverse travel of front propulsion motor)
9. Brake release hose (Brake release valve to front propulsion motor)
10. Return hose (front propulsion motor to hydraulic tank)
14. Propulsion pump
15. Front propulsion motor
16. Rear propulsion motor
17. High pressure hose (forward travel of front motor)
18. High pressure hose (reverse travel of rear motor)
19. Brake release hose (brake release valve to rear propulsion motor)
20. Return hose (rear propulsion motor to hydraulic tank)
21. Brake release valve
22. Hydraulic tank

* Items 6, 7, 8 and 9 are the same ones as listed in the previous page.

2-3-4. Propulsion circuit





SW8002016

1. Engine
2. Coupling
3. Propulsion pump ass'y
   a. Control valve
   b. Servo cylinder
   c. High pressure relief valve
   d. Charge relief valve
   e. Cut-off valve
4. Return filter
5. Unloader valve
6. Vibrator pump ass'y
7. Rear propulsion motor ass'y
   f. Shuttle valve
   g. Flushing valve
   h. Negative brake
   i. Gear reducer
8. Front propulsion motor
   h. Negative brake valve
   i Gear reducer
9. Front drum
10. Rear drum
11. Brake release valve
12. Suction filter
13. Steering pump ass'y
14. Orbitrol ass'y
   k. Relief valve
15. Line filter (charge circuit)

2-3-5. Description and operation of propulsion system

♦ See the hydraulic circuit on page 2-024.

Description of propulsion system

• Made up of propulsion pump (3), front propulsion motor (8), front drum (10), rear propulsion motor (7) and rear drum (9). Brake release solenoid valve (11) is mounted on the chassis.

Basic function of propulsion pump and propulsion motor

• Propulsion pump

A piston pump is used which selects forward travel, neutral and backing by varying the swashplate inclination, and thus varying the piston stroke. The travel speed is infinitely variable by the operation of the F-R (forward-reverse) lever.

• Propulsion motor

A fixed displacement piston motor (piston stroke is not variable) is used.

Operation (It is assumed that the machine travels forward.)

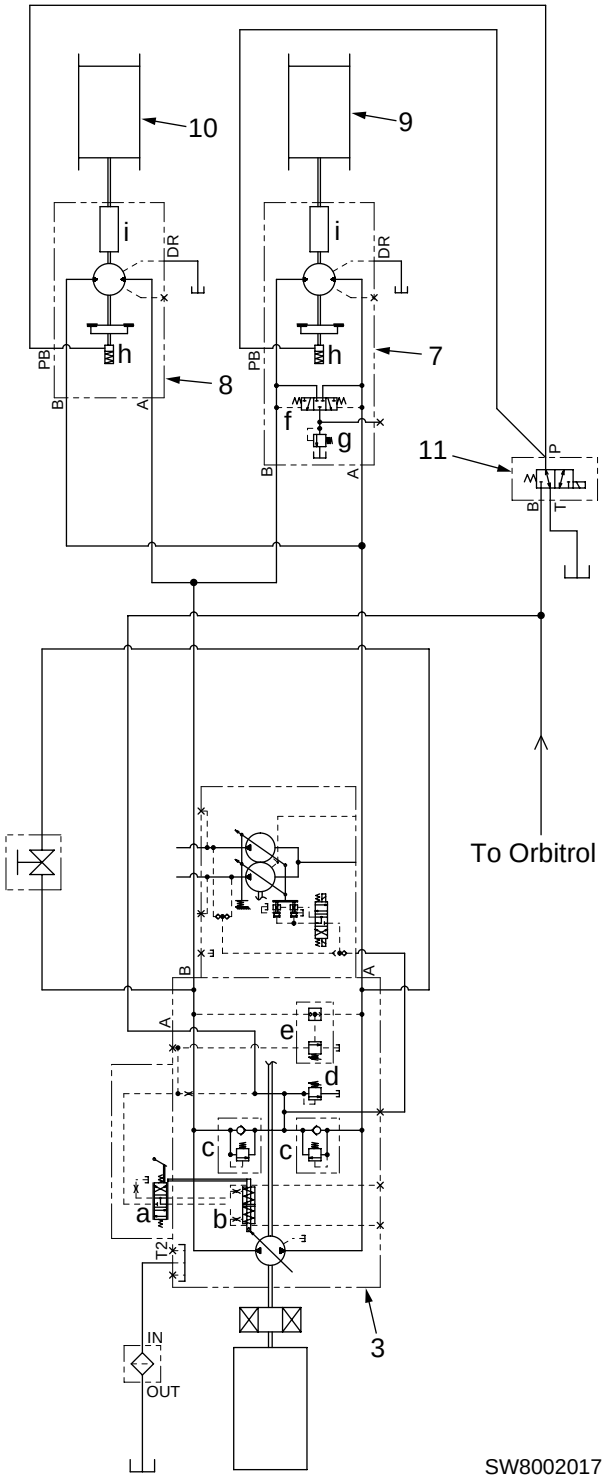
★The negative brake (spring-applied hydraulically released brake) is supposed to have been released.

♦ Assemblies such as pump ass'y and motor ass'y are indicated by numbers such as '1' and '2', while component parts of assemblies are shown by small letters such as 'a' and 'b'.

♦ The circuit of the front motor and that of the rear motor connect in parallel with each other.

- When the forward-reverse lever (F-R lever) is moved forward, control valve (a) functions to tilt the pump swashplate in the forward travel direction.
- Propulsion pump (3) discharges oil from its port B into the forward travel circuit, then the oil flow is divided into two lines; the forward travel line connecting to port A of front motor (8) and that connecting to port B of rear motor (7).
- The oil fed into the forward travel ports of the motors drives the motors, flowing out from the opposite side ports. Two flows of oil from the motors meet with each other and get into port A of pump (3). At the same time, part of oil in the rear motor is dumped into the tank through shuttle valve (f) and flushing valve (g) both of which are built in motor (7), and also through the motor casings.
- Power from the motors is delivered to drums (9) and (10) through gear reducers (i).
  - ♦ Front motor (10) is not equipped with shuttle valve (f) and low pressure relief valve (g).

NOTE: Because the propulsion circuit is a closed loop circuit, the suction and discharging fuctions are reversed with each other when the travel direction is reversed. (The direction of oil flow is reversed.)



Disengaging the negative brake:

- When energized, brake release solenoid (11) functions to deliver oil, through it, from the charge circuit to the brake release ports in the propulsion motor.
- The oil then pushes the brake piston in each negative brake (h), disengaging the brake.

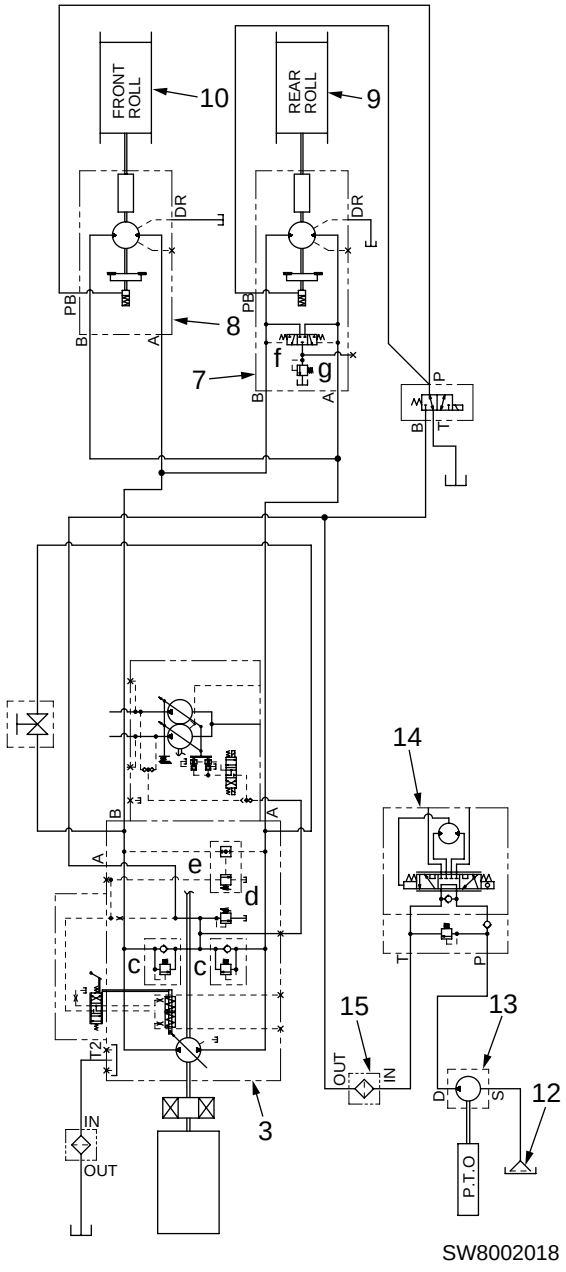
Circuit protection against high pressure:

- Cut off valve (e) is fitted in the propulsion pump. If the circuit pressure exceeds the setting of the valve, the valve functions and exerts oil pressure on the pump servo piston to reduce pump delivery.
- Decrease in delivery (travel speed reduction) lowers the circuit pressure.
- In addition to this cut off valve, the circuit includes high pressure relief valve (c) which opens to protect the circuit if the circuit pressure exceeds the permissible maximum of the cut off valve.

Charge circuit:

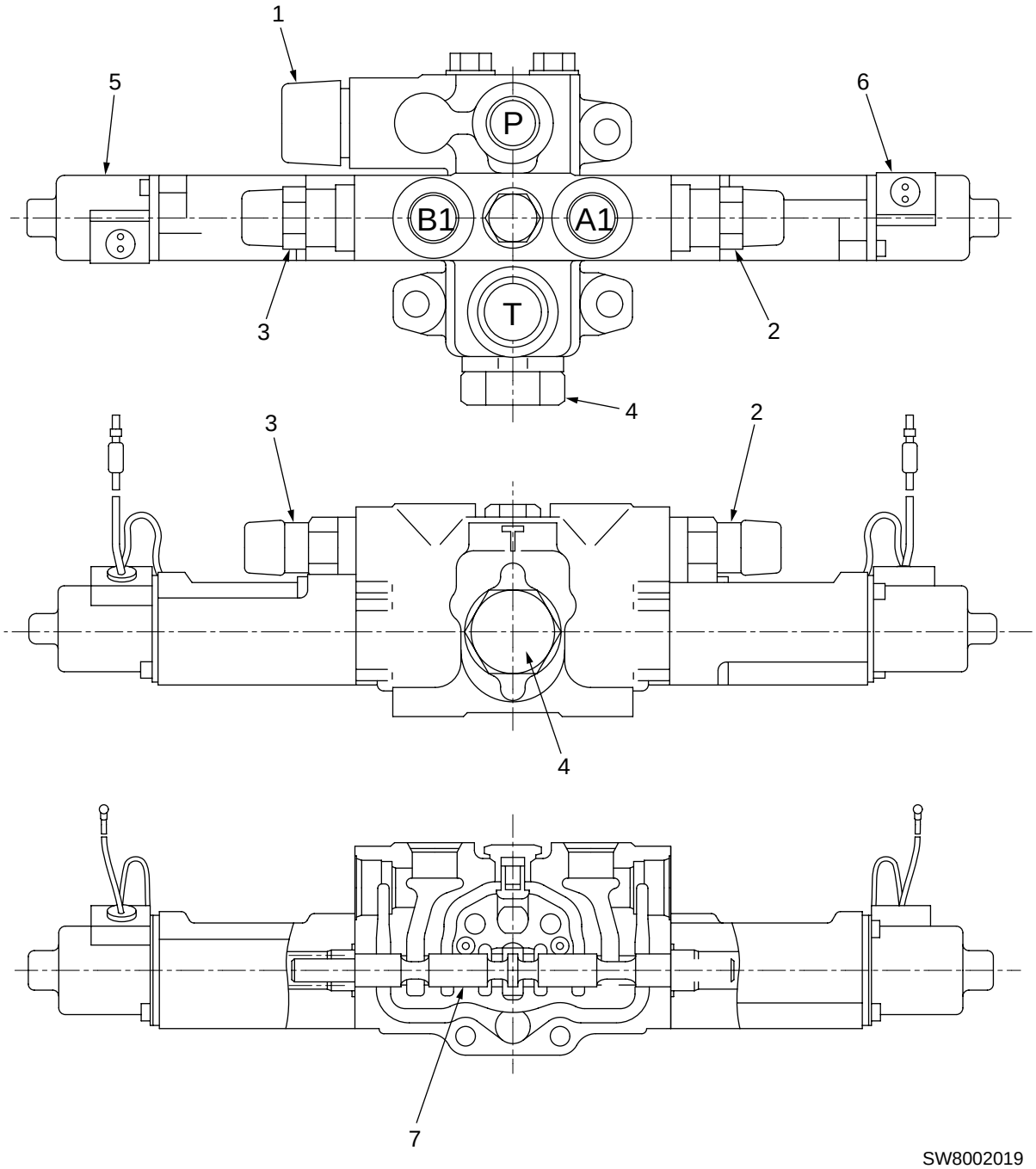
- The propulsion circuit is of a closed circuit, which needs feeding of oil into it for making up for deficiency and for other purposes.
- In the charge circuit, oil from steering pump (13) flows into Orbitrol (14), then the whole amount of oil goes to propulsion pump (3) via filter (15) irrespective of the steering wheel operation.
- The pressure adjustment is achieved by charge relief valve (d) built in the propulsion pump when the F-R lever is in the neutral position. When travelling, the pressure is adjusted by flushing valve (g) built in rear propulsion motor (7).

  Oil that flows through the charge circuit plays other roles. Those are renewing and cooling of oil and removal of foreign matter.



2-4. Vibrating system

2-4-1. Amplitude select valve (selection of motor rotating direction)



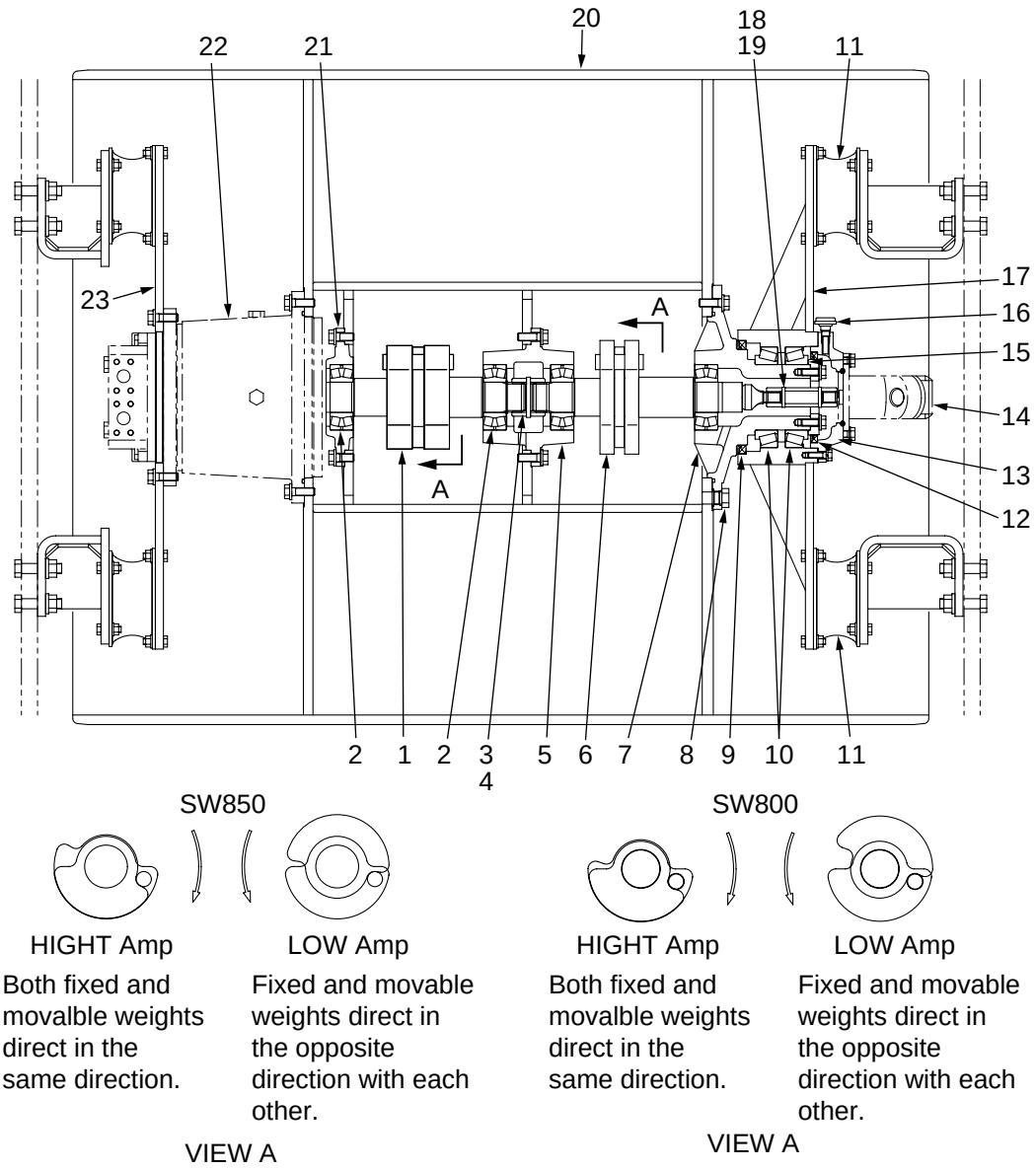
SW8002019

Port P (inlet)
Port T (outlet)
Port A1 (connected to port B in front motor and to port A in rear motor)
Port B1 (connected to port A in front motor and to port B in rear motor)

1. Main relief valve
2. Port relief valve
3. Port relief valve
4. Check valve
5. Solenoid
6. Solenoid
7. Spool

Specifications
- Model
  : 1D04T1S00432-0
- Main relief valve setting
  : 22.5MPa (230kgf/cm^2) {3270psi}
- Port relief valve setting
  : 24.0MPa (245kgf/cm^2)

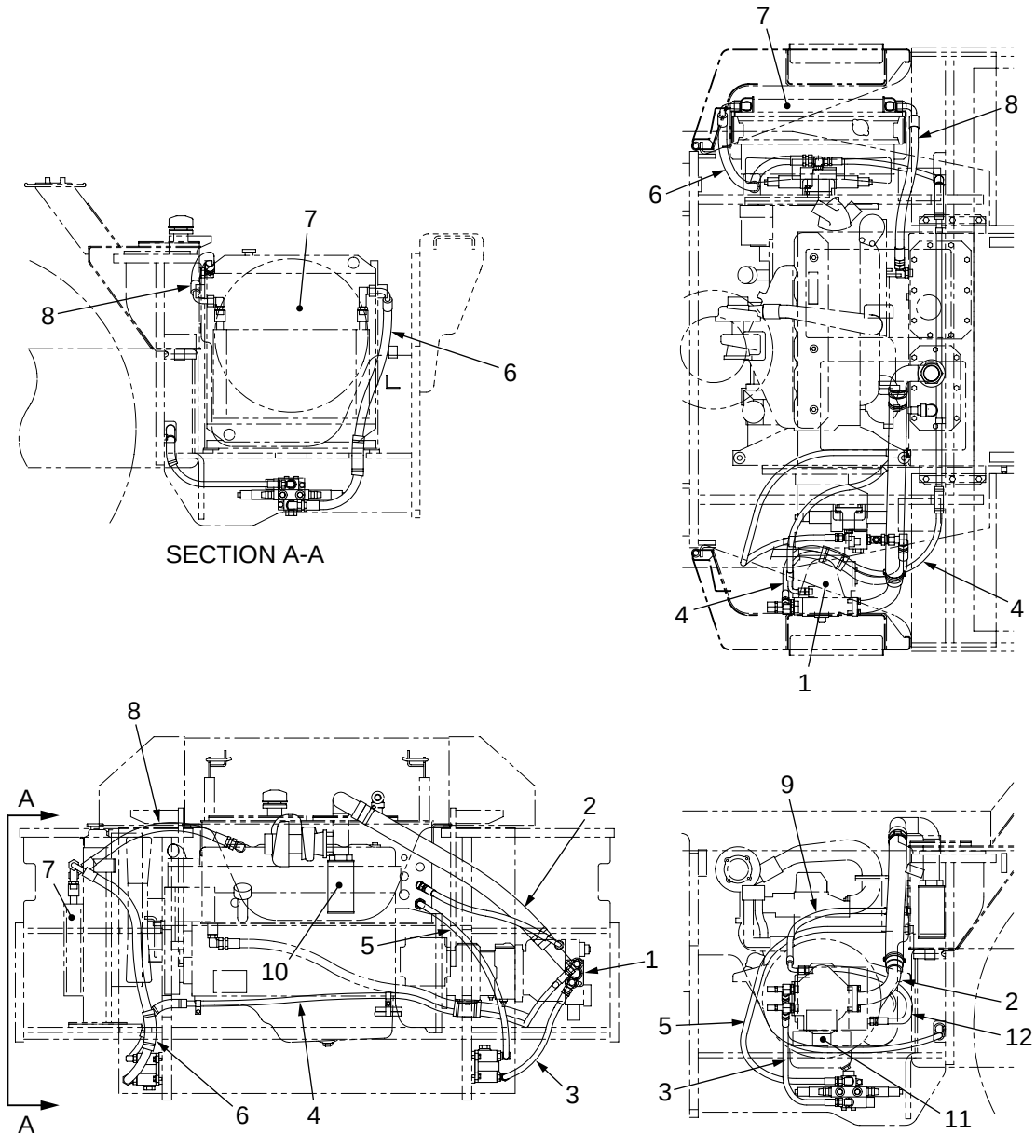
2-4-2. Drum and vibrator



1. Vibrator shaft
2. Roller bearing
3. Sleeve
4. Spring pin
5. Housing
6. Vibrator shaft
7. Axle shaft
8. Plug (fill, drain)
9. Oil seal
10. Roller bearing
11. Damper
12. Oil seal
13. Cover
14. Vibrator motor
15. Shim
16. Breather
17. Disc
18. Sleeve
19. Spring pin
20. Drum
21. Housing
22. Propulsion motor
23. Plate

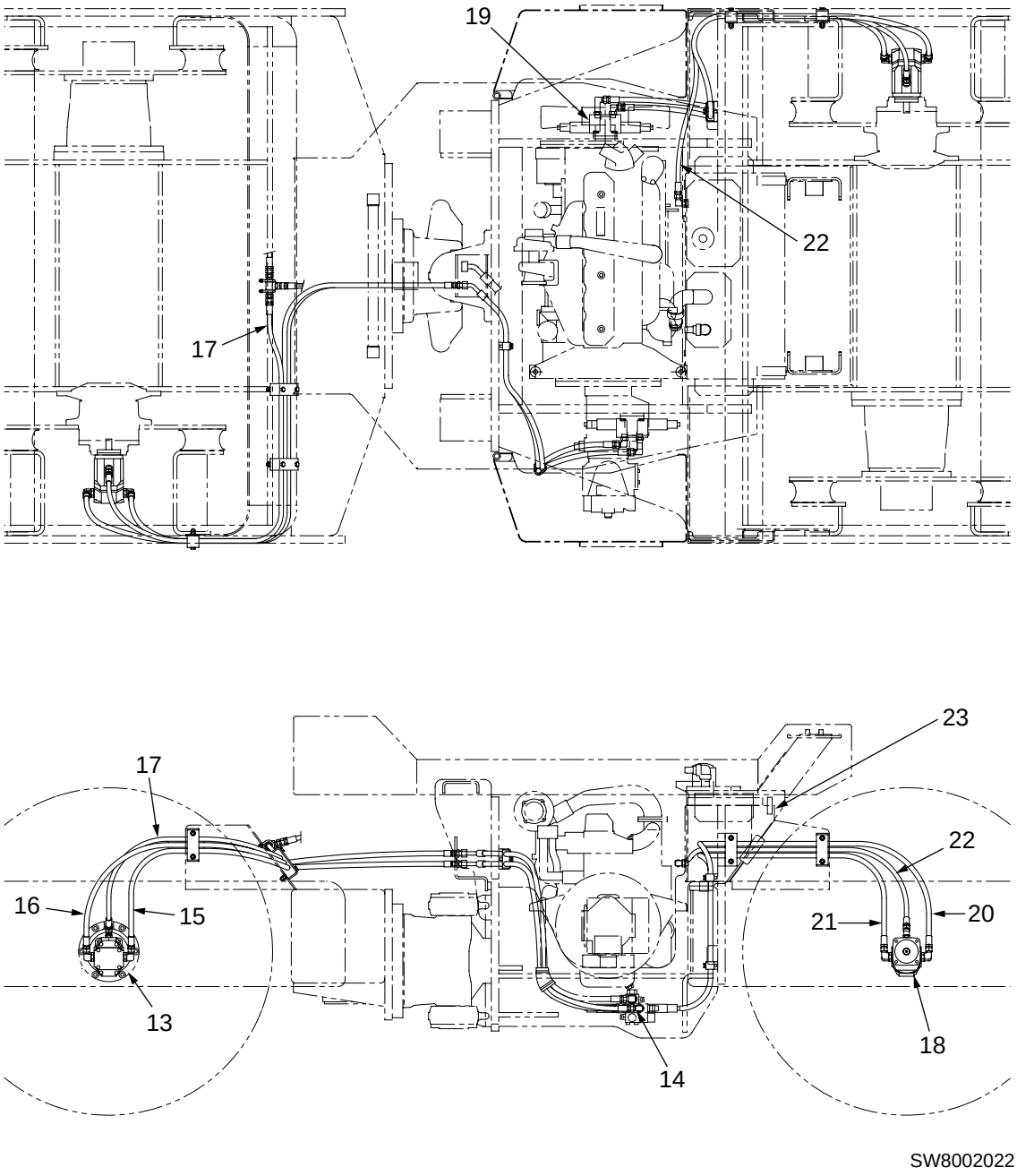
* Rear motor
(Low amplitude with oil fed into port A)
* Front motor
(Low amplitude with oil fed into port B)
★See 2-1-3 Propulsion motor ass'y.

2-4-3. Vibrator piping〔Ⅰ〕



1. Vibrator pump
2. Suction hose
3. Delivery hose (pump to amplitude select valve) (front)
4. Delivery hose (pump to amplitude select valve)
5. Return hose (amplitude select valve to hydraulic tank) (front)
6. Return hose (amplitude select valve to hydraulic tank) (rear)
7. Oil cooler
8. Return hose (oil cooler to hydraulic tank)
9. Drain hose (vibrator pump to hydraulic tank)
10. Suction filter (vibrator pump)
11. Frequency select valve
12. Pilot pressure hose (for frequency select valve)

2-4-4. Vibrator piping〔Ⅱ〕

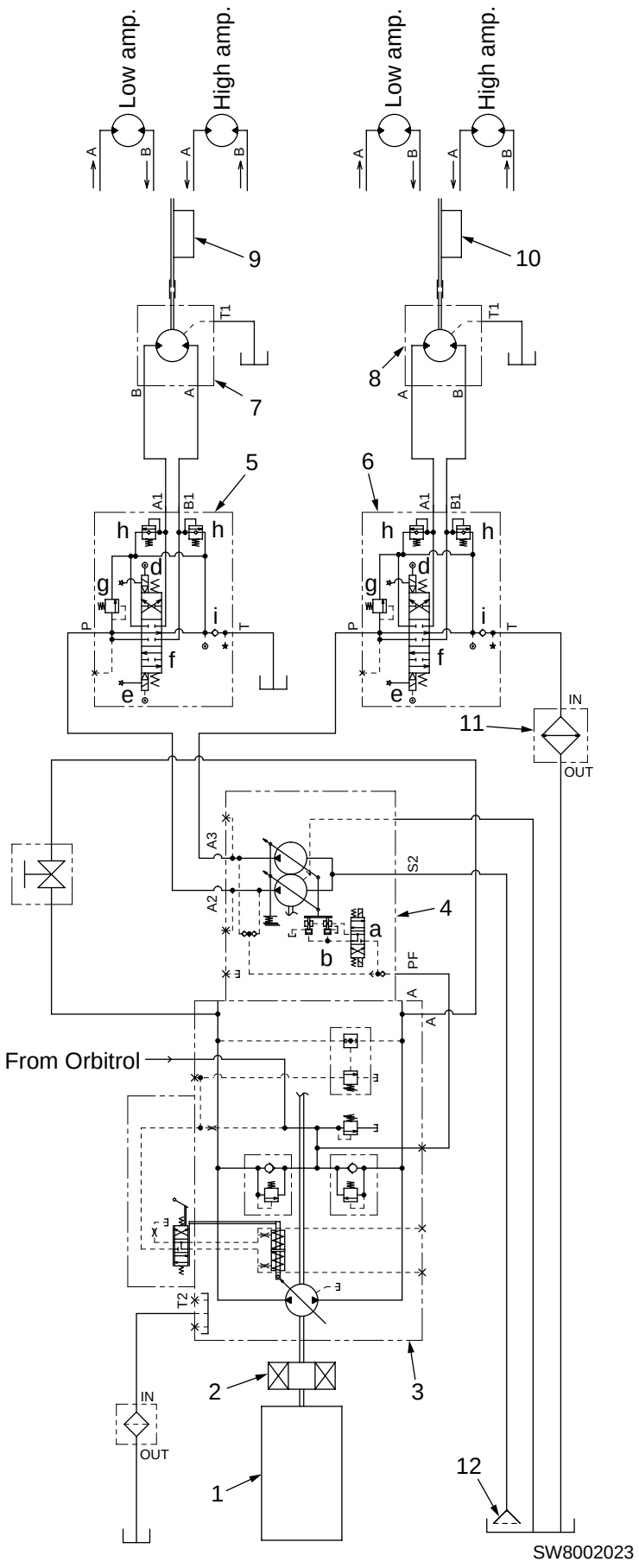


SW8002022

13.Vibrator motor (front)
14.Vibrator operating valve (front)
15.High pressure hose (hose A)
16.High pressure hose (hose B)
17.Drain hose (vibrator motor to hydraulic tank
18.Vibrator motor (rear)
19.Amplitude select valve (rear)
20.High pressure hose (hose B)
21.High pressure hose (hose A)
22.Drain hose (vibrator motor to hydraulic tank)
23.Hydraulic tank

※Hose (17) meets with vibrator motor hose (22) and leads to tank. ·····P. 2-032

2-4-5. Vibrator circuit



1. Engine
2. Coupling
3. Propulsion pump ass'y
4. Vibrator pump ass'y
   a. Solenoid valve (frequency select)
   b. Control piston (frequency select)
   c. Spring (delivery control)
5. Amplitude select valve
   d. Solenoid a (Low)
   e. Solenoid b (High)
   f. Spool
   g. Main relief valve
   h. Port relief valve
6. Amplitude select valve (rear)
   d. solenoid a (High amp.)
   e. Solenoid b (Low amp.)
   f. Spool
   g. Main relief valve
   h. Port relief valve
   i. Check valve
7. Front vibrator motor
8. Rear vibrator motor
9. Front vibrator
10. Rear vibrator
11. Oil cooler
12. Suction filter

2-4-6. Description and operation of vibrating system

Description

- Made up of vibrator pump assembly (4), front amplitude select valve (5), rear amplitude select valve, front vibrator motor (7), rear vibrator motor (8), front vibrator (9) and rear vibrator (10).

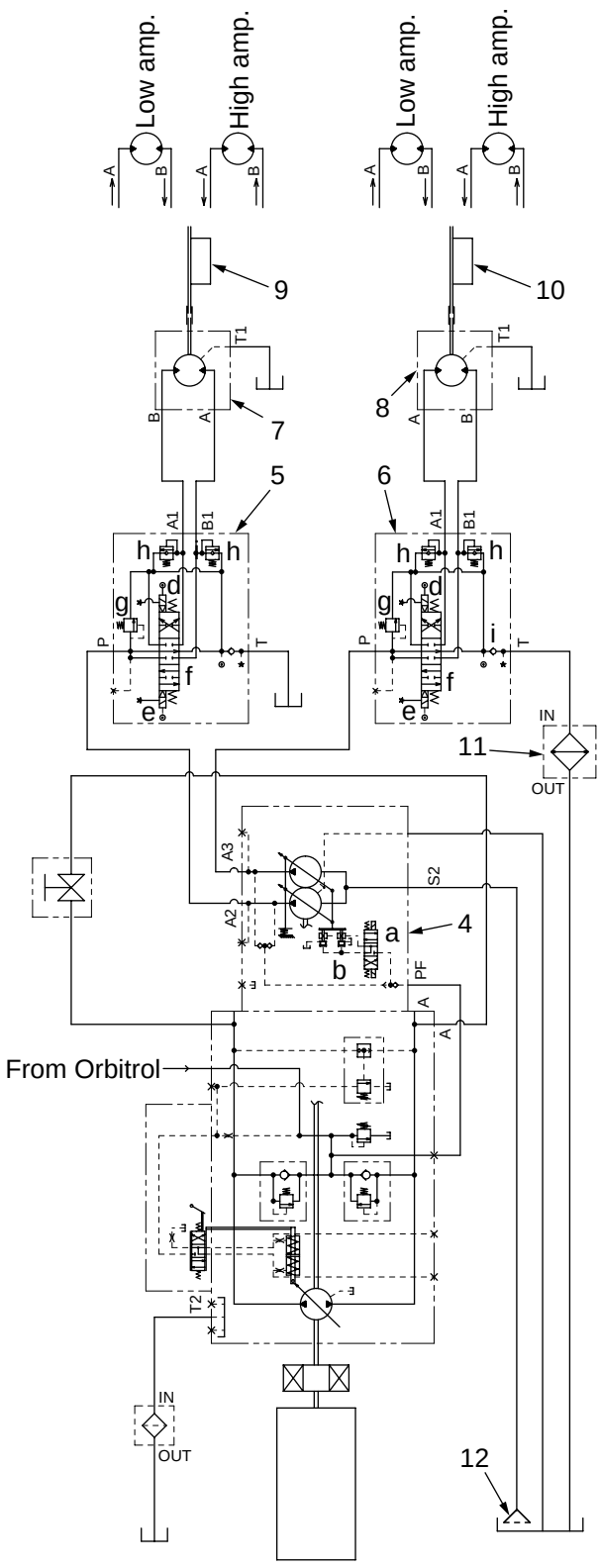
Basic function of vibrator pump and motor

- Vibrator pump
  A piston pump (twin pump) is in use. A pump delivery select solenoid valve selects three steps of delivery (three steps of frequency).

- Vibrator motor
  A bent axis type fixed displacement piston motor is used. The displacement per rotation of motor shaft is not variable.

Operation

- The vibrator pump delivers an amount of oil set by the frequency selector switch, which is drained to the tank via frequency select valves (5), (6) and oil cooler (11).
  ★ Only the rear propulsion circuit includes an oil cooler.
- The frequency select solenoid valves provide:
  Maximum delivery when solenoids (d) and (e) are not energized.
  Medium delivery when solenoid (e) is energized.
  Minimum delivery when solenoid (d) is energized.
- If the amplitude selector switch selects Low amplitude or High, spool (f) of amplitude select valve moves to block the unload circuit and feeds the vibrator motors. Oil drives vibrator motors (7) and (8), being dumped to the tank via one-way valves (i) and oil cooler (11).
  ★ The oil cooler is included in the rear vibrator circuit only.



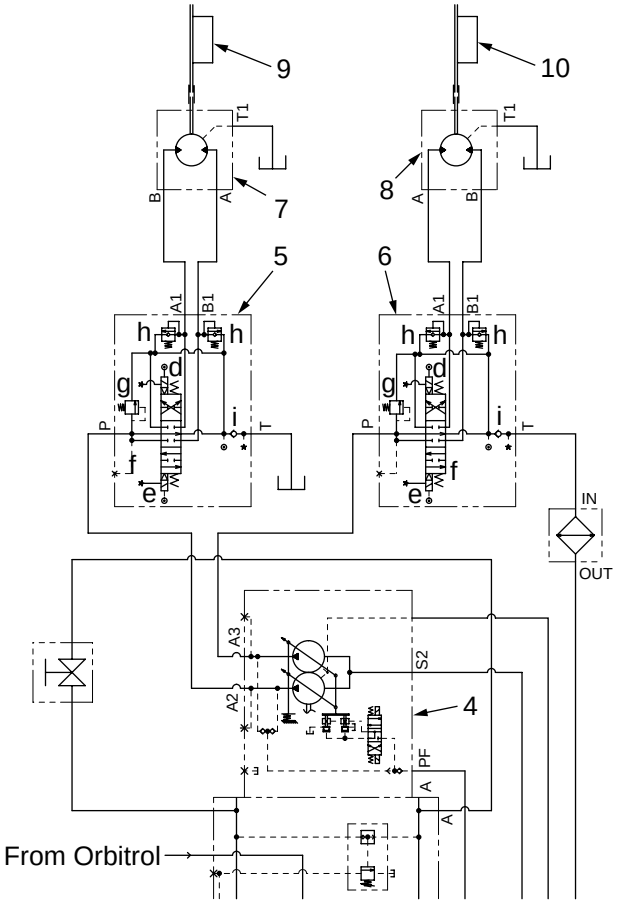
SW8002024

- The amplitude select (Vibrator motor rotating direction select) valves provide:
  - High amplitude when solenoid (d) of front valve (5) and solenoid (e) of rear valve (6) are energized.
  - Low amplitude when the opposite solenoids are energized.

★ **For operation of the solenoid valve, see descriptions on page 2-035.**

Operation of port relief valves

- Even if the amplitude select valve is brought to the neutral position, the vibrator shaft tends to continue rotation due to enertia. On the other hand, there is a shortage of oil in the feed line (line which feeds oil to motor) of the motor, because ports A1 and B1 are blocked.
- Then the one-way valve mounted in port relief valve (h) on the low pressure side opens to feed part of oil in the return line to the motor.
- In addition, because the outlet port of the motor stays closed, oil displaced from the enertia-rotating motor flows into the return line by opening the port relief valve in the outlet circuit.



SW8002025

Circuit protection

* See the circuit diagram on page 2-033.

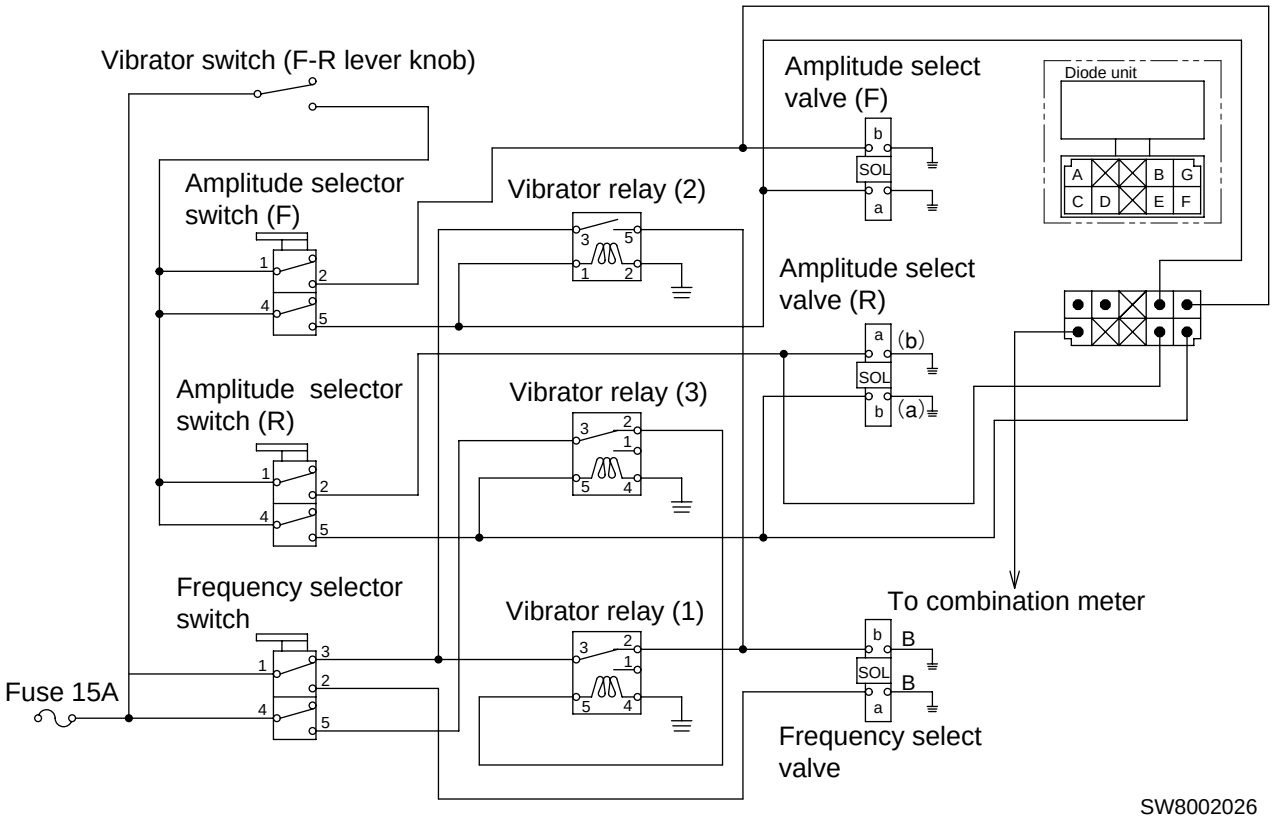
- If the system pressure rises to the setting of relief valves (g) built in solenoid valves (5) and (6), the relief valves open to protect the circuit.

2-4-7. Operation of vibrator switches and solenoids

Models SW800 and SW850 have a system to control vibrator pump delivery in three steps (frequency in sthree steps) and amplitude in two steps (vibratory force in two steps). Description of the system is given below.

★ The vibrator shaft rotation varies with varying pump delivery. That is, the frequency varies. Amplitude is changed by reversing the rotating direction of the vibrator shaft (See P.2-029).

1. Electric wiring diagram for vibrating system



2. Switch connection

2-1.Amplitude selector switch

Amplitude	Terminal number				Solenoid energized		Symbol
	1	2	3	4	F	R	
Low amp.	○—○		○		b	a (b)*	∿
OFF	○		○				
High amp.	○		○—○		a	b (a)*	∿

2-2.Frequency selector switch

Frequency	Terminal number					Solenoid energized	Symbol
	1	2	3	4	5		
High frequency	○		○	○—○		—	∿∿
Medium frequency	○—○			○		b	∿
Low frequency	○—○			○		a	∿

* Amplitude select valve for rear vibrator. Letters (a, b) in parentheses ( ): SW800 → From Machine

3.Operation of amplitude selector switches and solenoids

1) Amplitude selector switch set to Low amplitude [∿]
   Terminal 1 connects to terminal 2. Solenoid (b) of the front amplitude select valve and solenoid (a) of the rear amplitude select valve are energized.

2) Amplitude selector switch set to High amplitude [⩘]
Terminal 4 connects to terminal 5. Solenoid (a) of the front amplitude select valve and solenoid (b) of the rear amplitude select valve are energized. At the same time, front vibrator relay (2) and rear vibrator relay (3) are energized.
★ **For function of relays, see page 2-036.**

4. Operation of amplitude selector switch, relays and solenoids

1) Frequency selector switch in Low frequency position [∩] (Not affected by amplitude selector switch.)
Terminals 1 and 2 of the frequency select switch connect with each other to directly energize solenoid (a) of the frequency select valve. Solenoid (a) moves the pump swash plate to Low Delivery position. This offers Low frequency.

2) Frequency selector switch in Medium frequency position [⩘] (terminal 1 connects with terminal 3) with amplitude selector switch in Low amplitude position [∼] (terminal 1 connects with terminal 2)
Current from terminal 3 of the frequency selector switch flows through terminals 3 and 2 of vibration relay (1), energizing solenoid (b). At the same time current is fed to terminal 3 of relay (2). At this time, the system is not enfluenced by relay (2), because relay (2) remains deenergized. Solenoid (b) shifts the pump swashplate to Medium delivery position. This gives Medium delivery.

3) Frequency selector switch in Medium frequency position [⩘] (terminal 1 connects with terminal 3) with amplitude selector switch in High amplitude position [⩘] (Terminal 4 connects with terminal 5.)
★ **For current flow from the frequency selector switch, see item 3-2) above.**
Terminals 3 and 5 of vibration relay (2) connect with each other and current from the frequency selector switch energizes solenoid (b) of the frequency select valve. This gives the same frequency (Medium frequency) as in item 4-2) above.

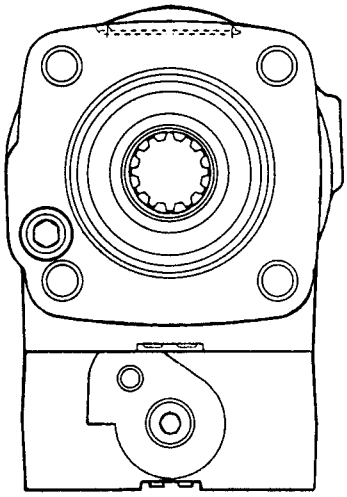
4) Frequency selector switch in High frequency position [⩘⩘] (Terminals 1 and 4 connect with terminals 3 and 5 respectively) with amplitude selector switch in Low amplitude position [∼] (terminal 1 connects with terminal 2)
Current flow from terminal 3 of the frequency selector valve is the same as in item 4-2) above, however, current from terminal 5 passes through terminals 3 and 2 of vibration relay (3) to the coil of relay (1) to energize it. This disconnects terminal 3 from terminal 2. Solenoids (a) and (b) of frequency select solenoid valve are not energized. This sets the swashplate to High delivery position, providing High frequency.

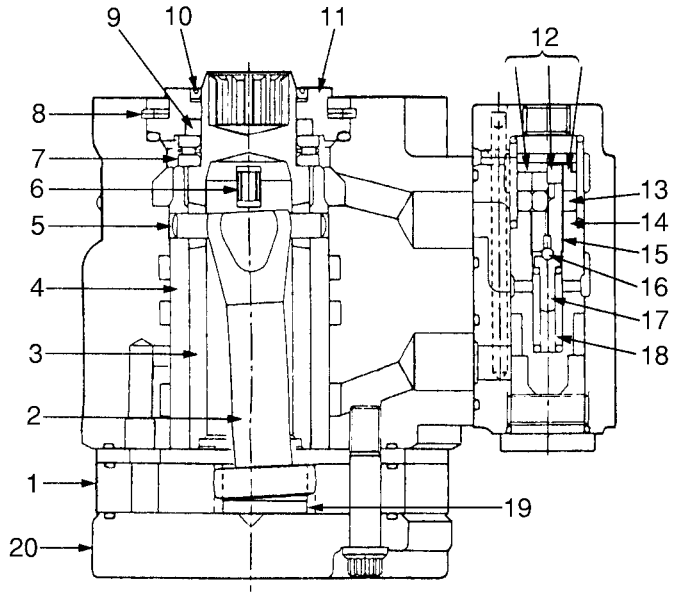
5) Frequency selector switch in High frequency position [⩘⩘] (terminals 1 and 4 connect with terminal 3 and 5 respectively) with amplitude selector switch in High amplitude position [⩘] (terminal 4 connects with terminal 5.)
★ **The connection and circuit formation are the same as those in item 4-4) above.**
★ **For current flow from the amplitude selector switch, see item 3-2) above.**
1. Current from terminal (3) of the frequency selector switch is simultaneously fed to terminal (3) of relays (1) and (2). Current is fed to solenoid (b), because relay (2) is energized to connect terminal 3 with terminal 5 of relay (2).
2. On the other hand, current from terminal 5 of the frequency selector switch does not pass to relay (1), because relay (3) remains energized to disconnect its terminal 3 from terminal 2. Relay (1) remains deenergized. As a result, current from terminal 3 of frequency selector switch is fed to solenoid (b) of amplitude select valve. The pump offers Medium delivery (Medium frequency).

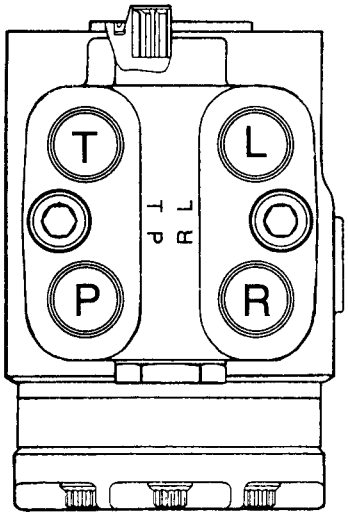
* As described in item 5-5) above, if the amplitude selector switch is in High amplitude position,

2-5. Steering system

2-5-1. Orbitrol







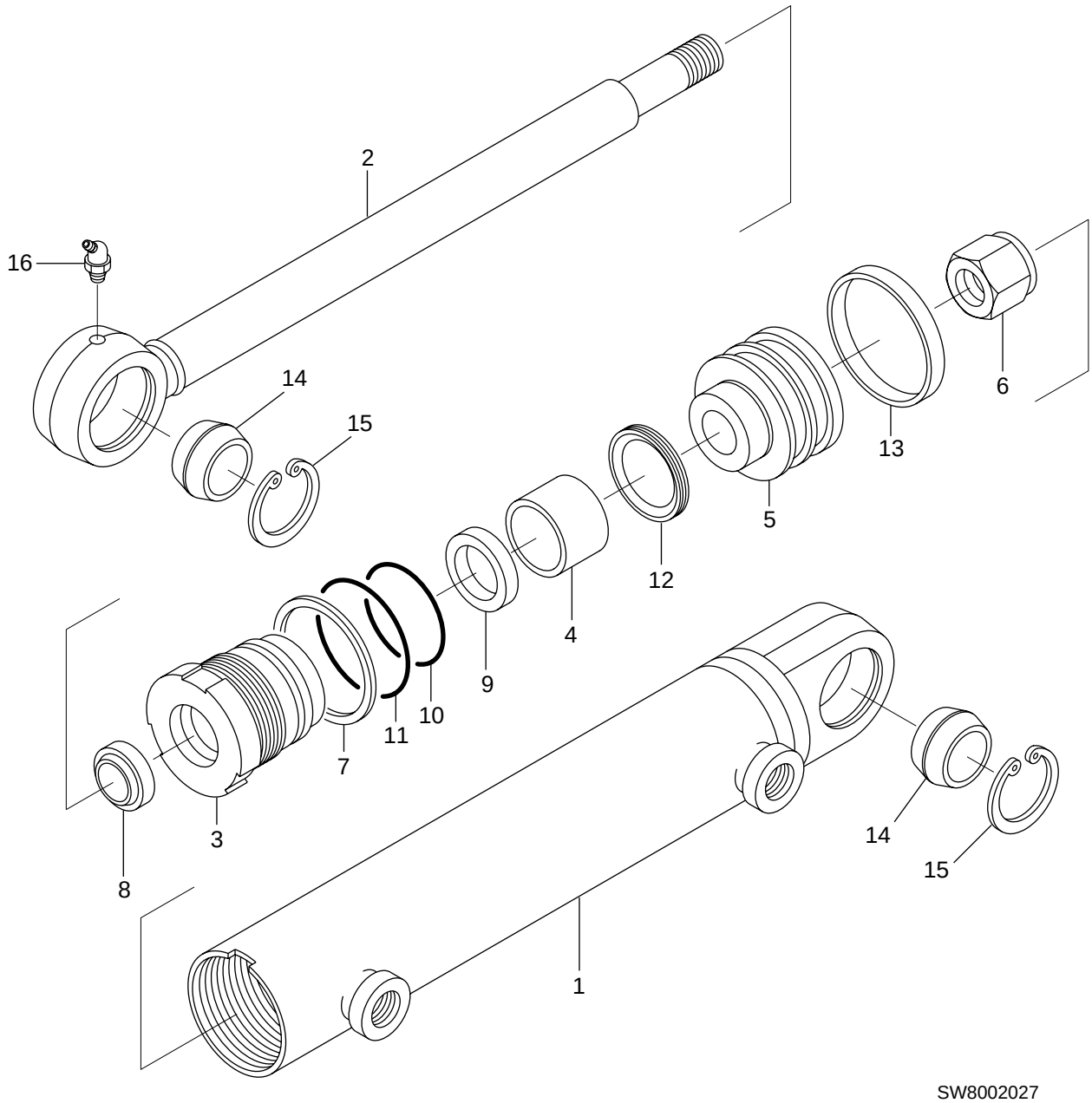
SW8002040

1. Geroler set
2. Drive
3. Spool
4. Sleeve
5. Pin
6. Centering spring
7. Thrust needle
8. Retaining ring
9. Oil seal
10. Dust seal
11. Seal gland bush
12. Filter sub ass'y
13. Lock nut
14. Spool
15. Valve seat
16. Ball
17. Ball guide
18. Inner valve spring
19. Spacer
20. End cap

Specifications

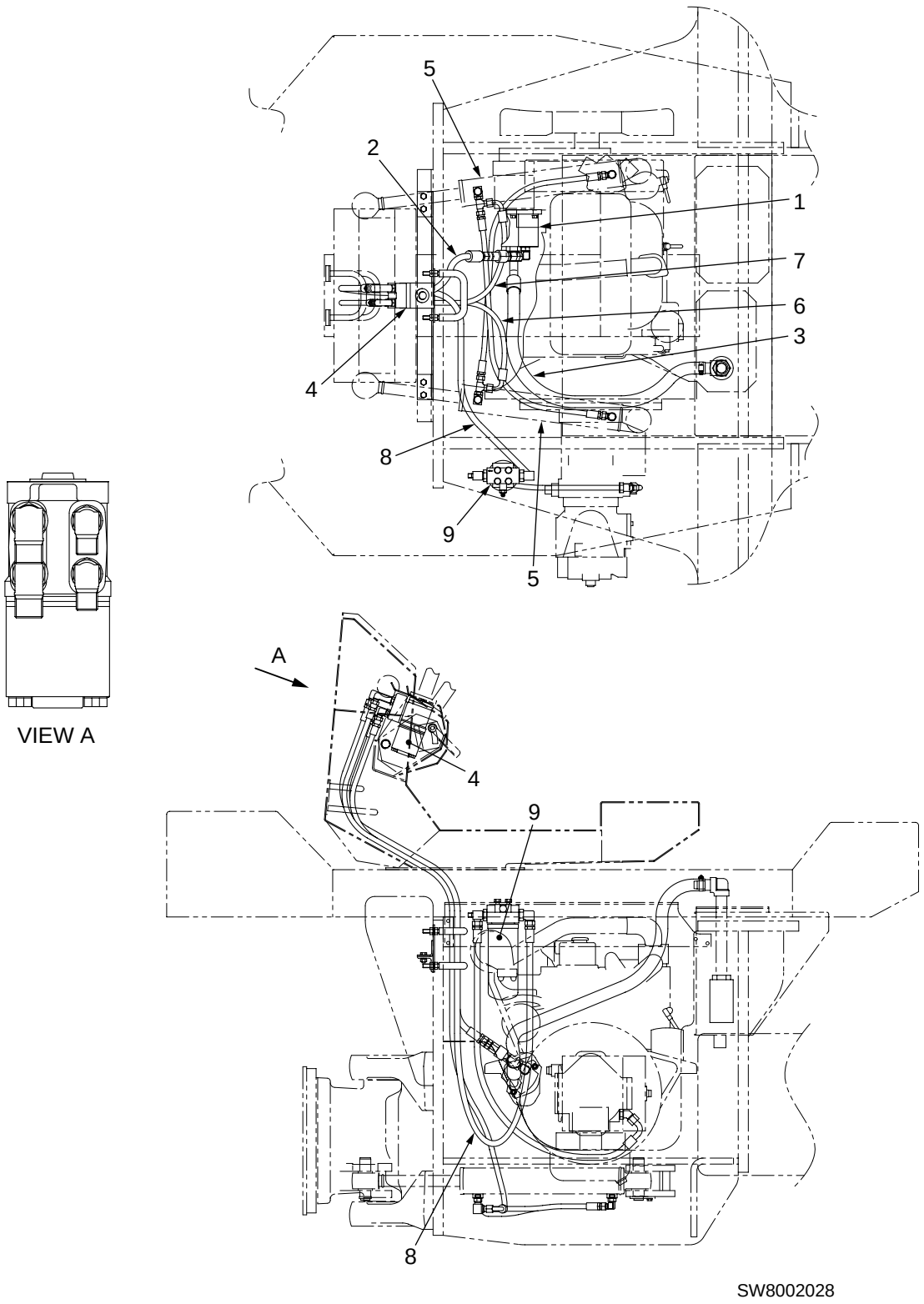
- Valve system
  : Open center non-load reaction
- Displacement
  : 461 cm^3/rev (cc/rev)
- Relief valve setting
  : 15.2 MPa (155 kgf/cm^2) {2200 psi}

2-5-2. Steering cylinder ass'y



1. Cylinder
2. Piston rod
3. End cap
4. Bush
5. Piston
6. Nut
7. Washer
8. Dust seal
9. U-packing
10. O-ring
11. O-ring
12. Slipper seal
13. Wear-ring
14. Spherical bearing
15. Ring
16. Grease fitting

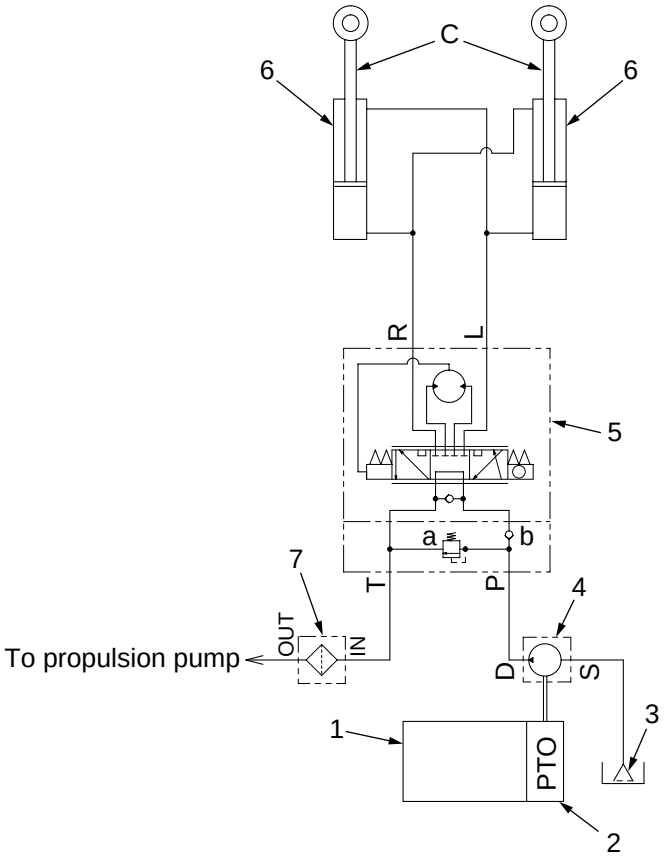
2-5-3. Steering piping



SW8002028

1. Steering pump
2. Pump outlet hose
3. Suction hose
4. Steering valve (Orbitrol)
5. Steering cylinders
6. High pressure hose (left turn)
7. High pressure hose (right turn)
8. Charge line hose (Orbitrol to filter)
9. Line filter (charge line)

2-5-4. Steering circuit



SW8002029

1. Engine
2. PTO (engine side)
3. Suction filter
4. Steering pump
5. Orbitrol
   a. Relief valve
   b. Check valve
6. Steering cylinder
   c. Piston rod
7. Line filter (charge circuit)

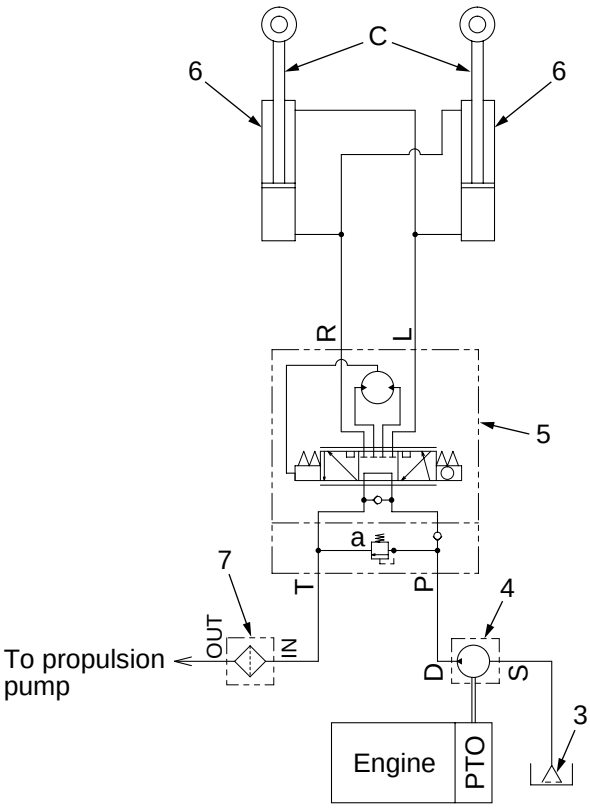
2-5-5. Description and operation of steering system

Description:

- The steering system is made up of steering pump (4), Orbitrol (5), steering cylinders (6) and line filter (7).
  The steering mechanism is of an articulated type in which the machine frame is articulated at its center.

Operation

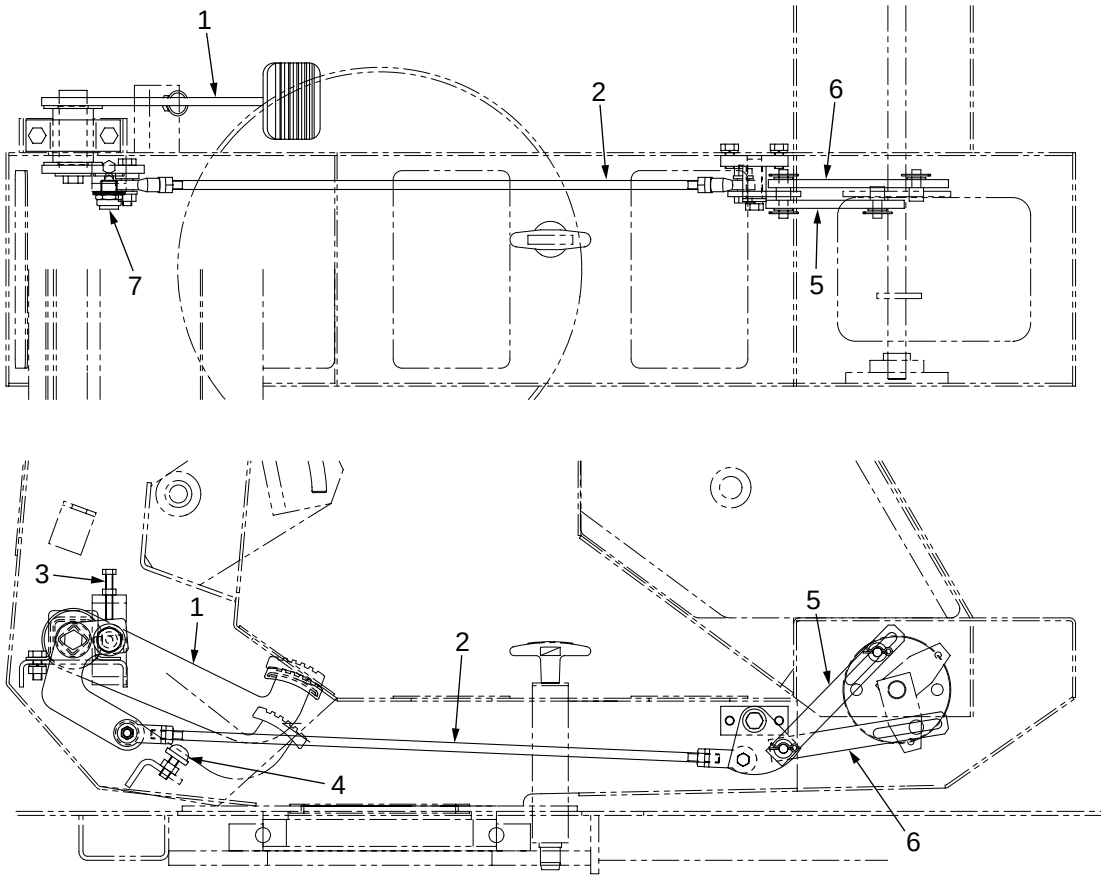
- Oil from pump (4) enters Orbitrol (5). The valve feeds an amount of oil to steering cylinders (6). The amount of oil handled varies with the direction in which the steering wheel is rotated and with the speed at which the steering wheel is turned.
- The fluid fed into both steering cylinders (6) moves the piston rods (c) to achieve steering. The oil displaced from the opposite side of the pistons flows, through Orbitrol (5) and line filter (7), to the propulsion charge circuit.
  ★ Refer to “Charge circuit”.
- Relief valve (a) built in Orbitrol (5) opens to relieve the pressure if the system pressure exceeds the setting of the relief valve, thus protecting the circuit.



SW8002030

3. Brake System

3-1. Brake pedal and linkage



SW8002031

1. Brake pedal
2. Rod
3. Adjusting bolt (pedal height adjustment)
4. Stopper
5. Lever (F-R lever neutral position)
6. Lever (F-R lever neutral position)
7. Foot brake switch

3-2. Description and operation of parking brake circuit

Description:

- Consists of brake pedal (1), foot brake switch (7), brake relay (8), parking brake switch (9), brake release solenoid (10) and parking brakes (negative brakes) (11), (12).

  ★ **The foot brake switch is ON when the brake pedal is not depressed, and OFF if the pedal is pushed down on.**

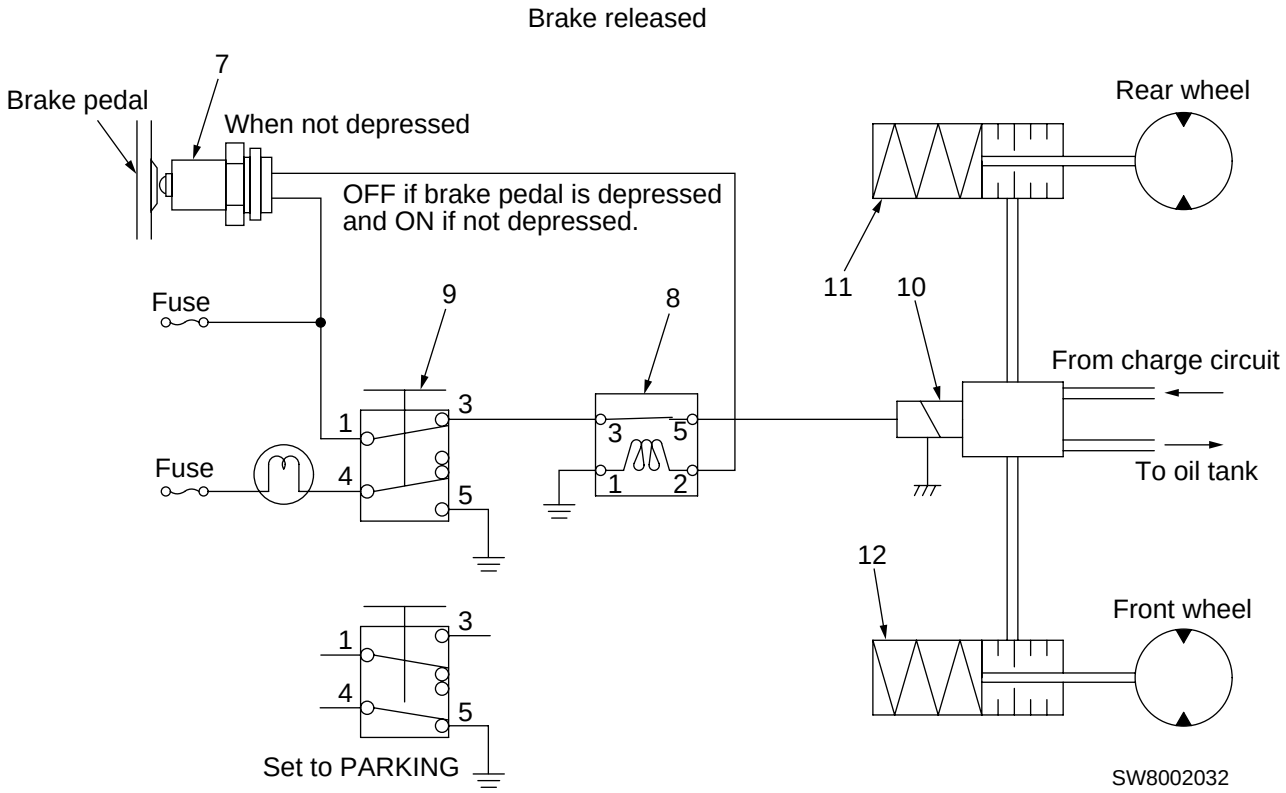
Operation:

Parking brake switch set to position RELEASE:

- Setting the parking brake switch to the RELEASE position causes the current to flow, through terminals 1 and 3, to terminal 3 of the brake relay.
- If, at this time, the brake pedal is not depressed, foot brake switch (7) remains ON, energizing the brake relay.
- This connects terminal 3 with terminal 5 of the brake relay. The solenoid of the brake release valve is energized to disengage the parking brakes (negative brakes) (11).

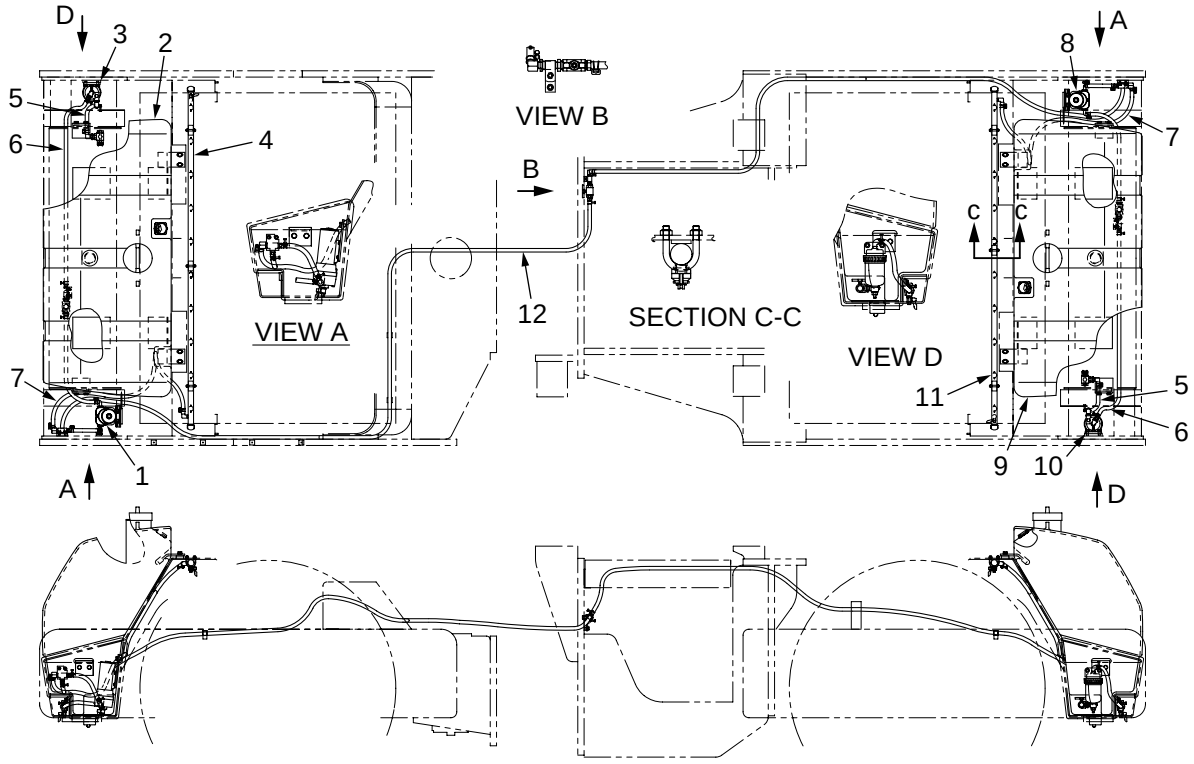
Parking brake switch set to position PARKING:

- Pushing down on the brake pedal opens foot brake switch (7) to deenergize brake relay (8). Even if, at this time, parking brake switch (9) is in the RELEASE position, terminal 3 remains disconnected with terminal 5, for brake relay (8) remains deenergized. Solenoid (10) remains deenergized. Brake is applied.
- Setting parking brake switch (9) to the PARKING position disconnects terminal 1 from terminal 3. Solenoid (10) is deenergized. At the same time, terminal connects with terminal 5 to light brake lamp on the combination meter.



4. Sprinkler

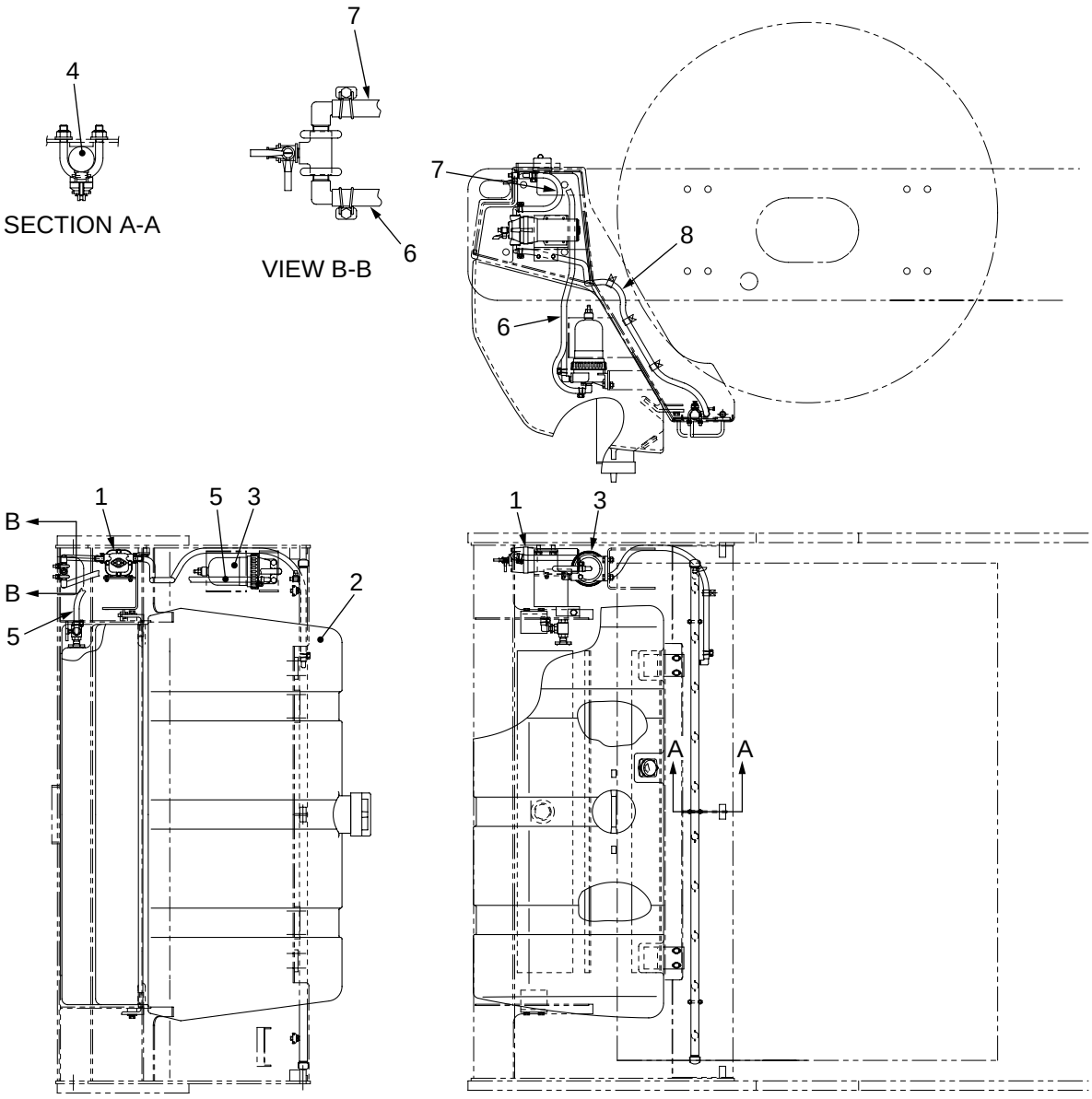
4-1. Sprinkler piping [I] (SW800: To Machine No.10122 SW850: To Machine No.10126)



SW8002033

1. Sprinkler pump (front)
2. Sprinkler tank ass'y (front)
3. Sprinkler filter (front)
4. Sprinkler pipe (front)
5. Hose (tank to filter)
6. Hose (filter to pump)
7. Hose (pump to pipe)
8. Sprinkler pump (rear)
9. Sprinkler tank ass'y (rear)
10. Sprinkler filter (rear)
11. Sprinkler pipe (rear)
12. Hose (front pump to rear pump)

4-2. Sprinkler piping [Ⅱ] (SW800: From Machine No.10123 SW850: From Machine No.10127)

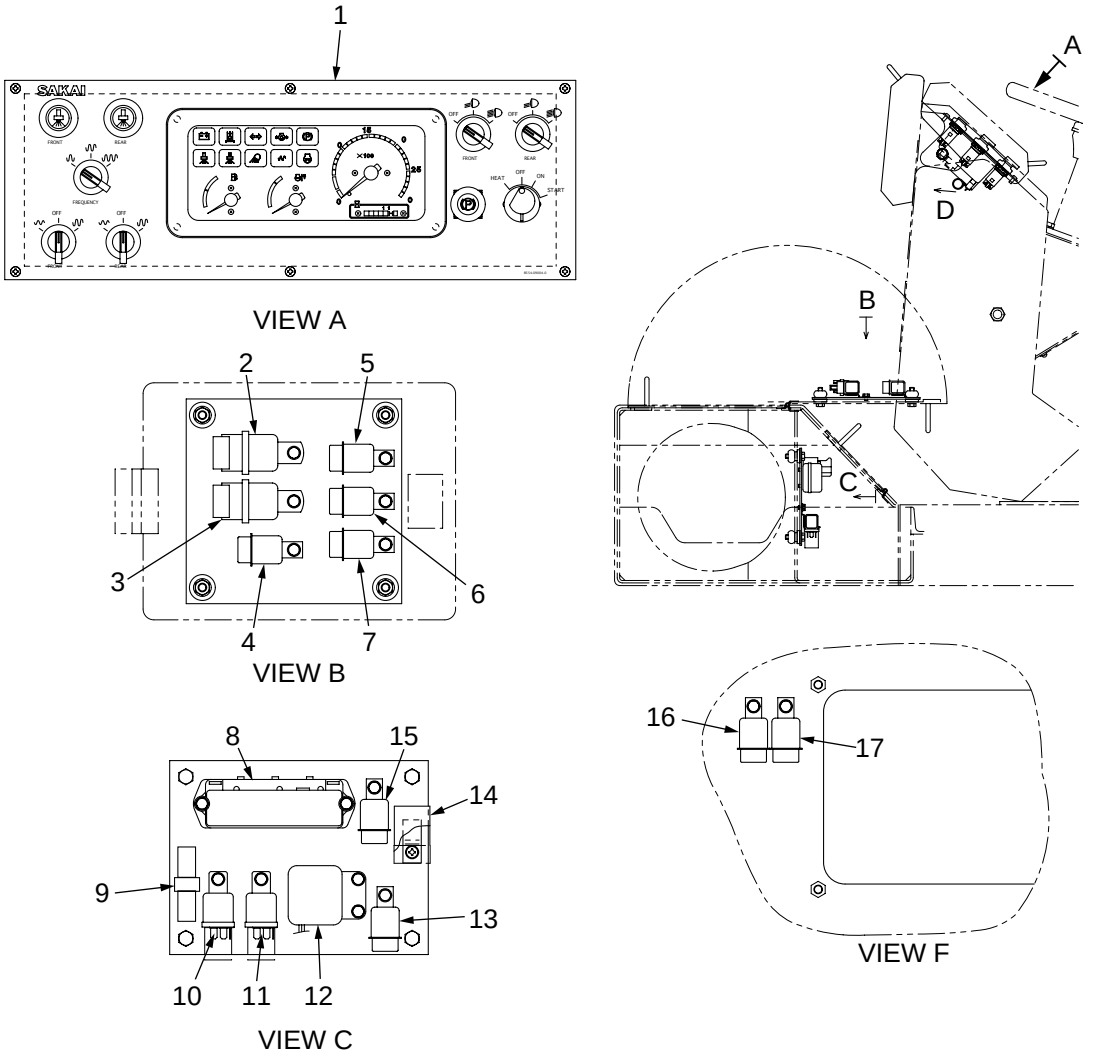


SW8002043

1. Sprinkler pump
2. Sprinkler tank
3. Sprinkler filter
4. Sprinkler pipe
5. Hose (tank to filter)
6. Hose (filter to pump)
7. Hose (filter to pump)
8. Hose (pump to sprinkler pipe)

5. Electric System

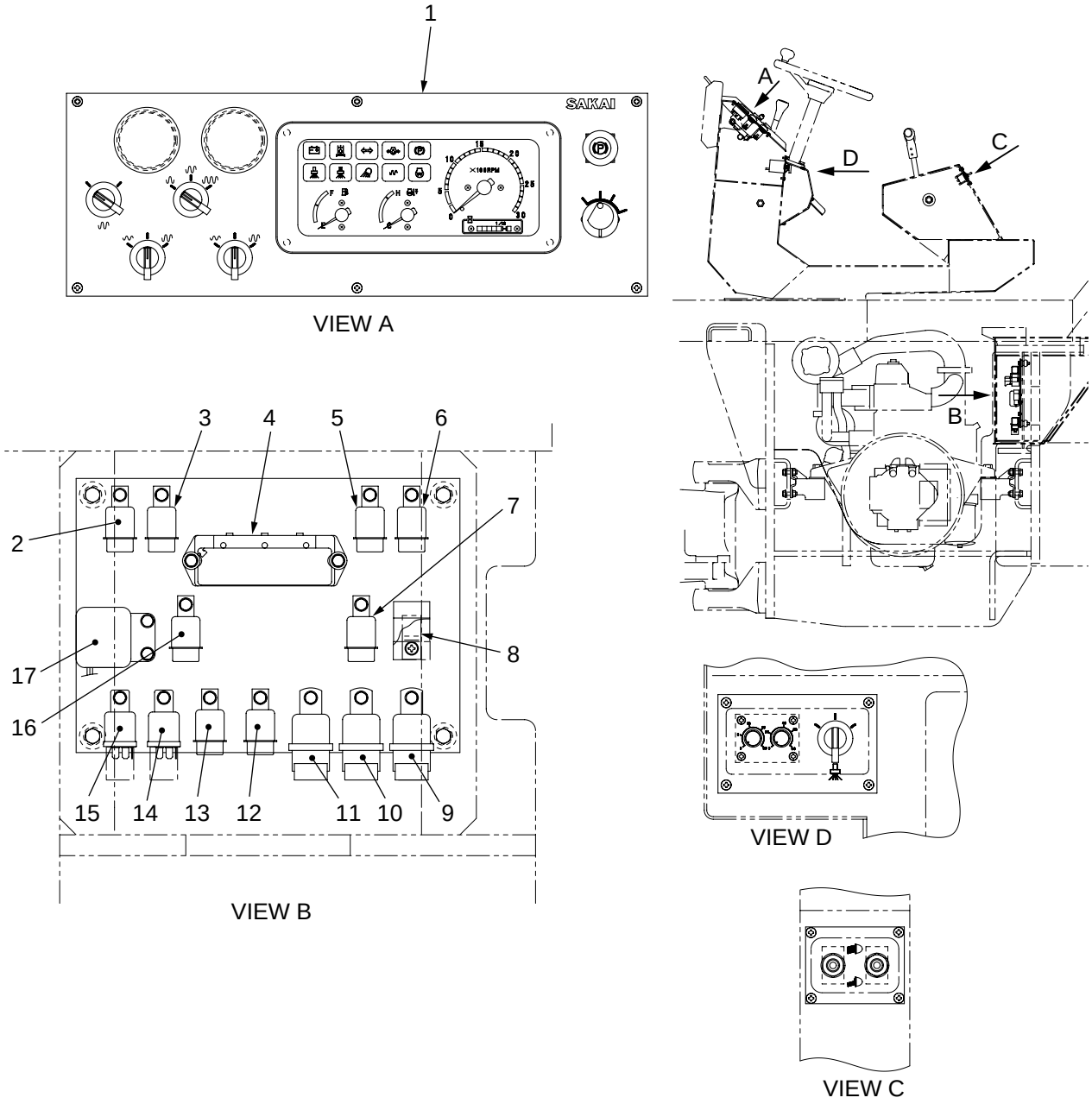
5-1. Instrument panel and relays [I] (SW800: From Machine No.10122 SW850: From Machine No.10126)



SW8002034

1. Combination meter panel
2. Vibrator relay (1)
3. Vibrator relay (3)
4. Vibrator relay (2)
5. Horn relay
6. Lamp check relay
7. Foot brake relay
8. Fuse box
9. Diode
10. Engine stop relay
11. Delay relay
12. Glow timer
13. Job lamp relay
14. Diode unit
15. Lamp relay
16. Sprinkler relay
17. Sprinkler relay

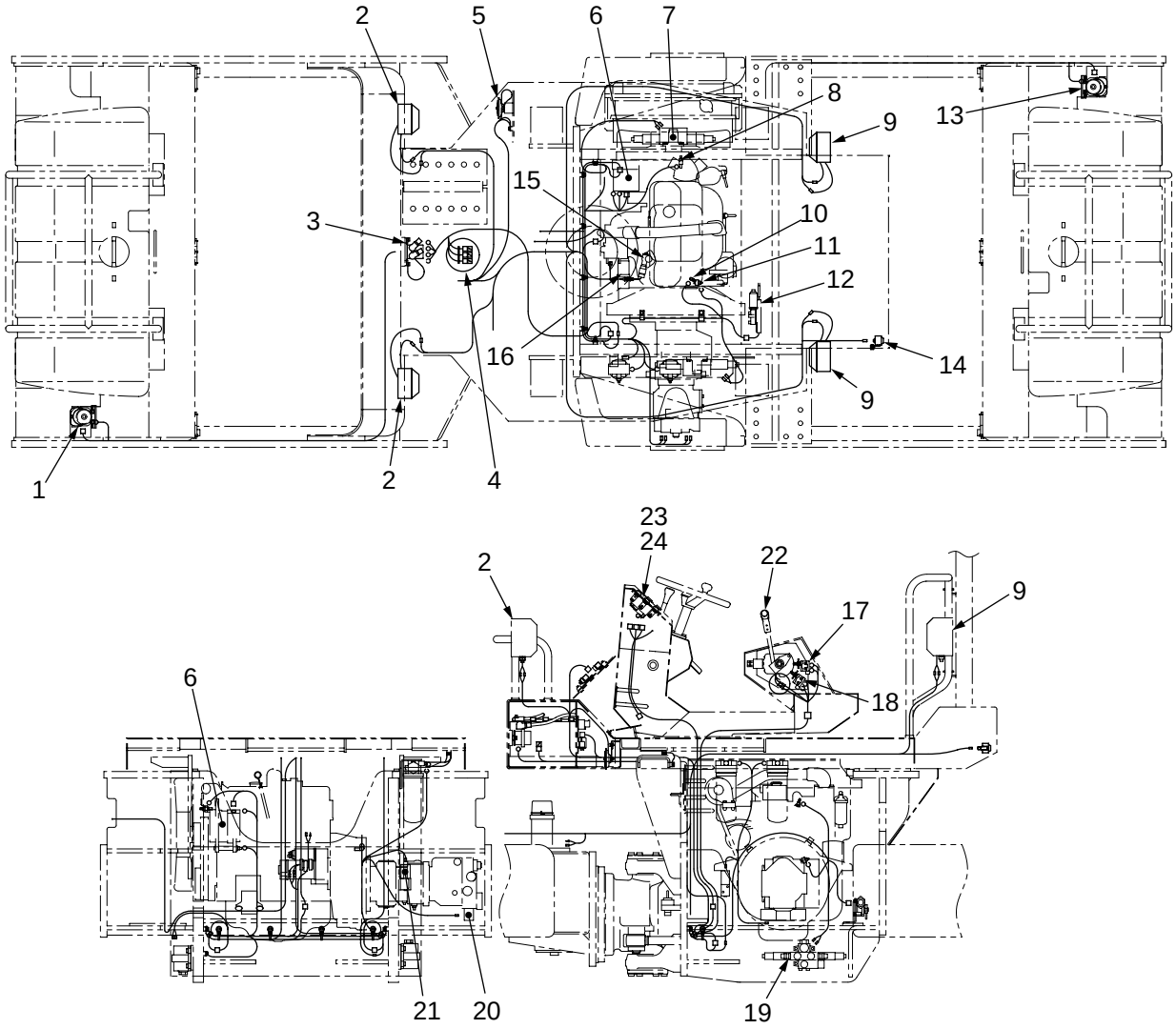
5-2. Instrument panel and relays [Ⅱ] (SW800: To Machine No.10123 SW850: To Machine No.10127)



SW8002041

1. Combination panel
2. Sprinkler relay (rear)
3. Sprinkler relay (front)
4. Fuse box
5. Horn relay
6. Foot brake relay
7. Vibrator relay (4)
8. Diode
9. Vibrator relay (1)
10. Vibrator relay (3)
11. Starter motor relay
12. Lamp check relay
13. Diode
14. Engine stop relay
15. Delay relay
16. Vibrator relay
17. Glow timer

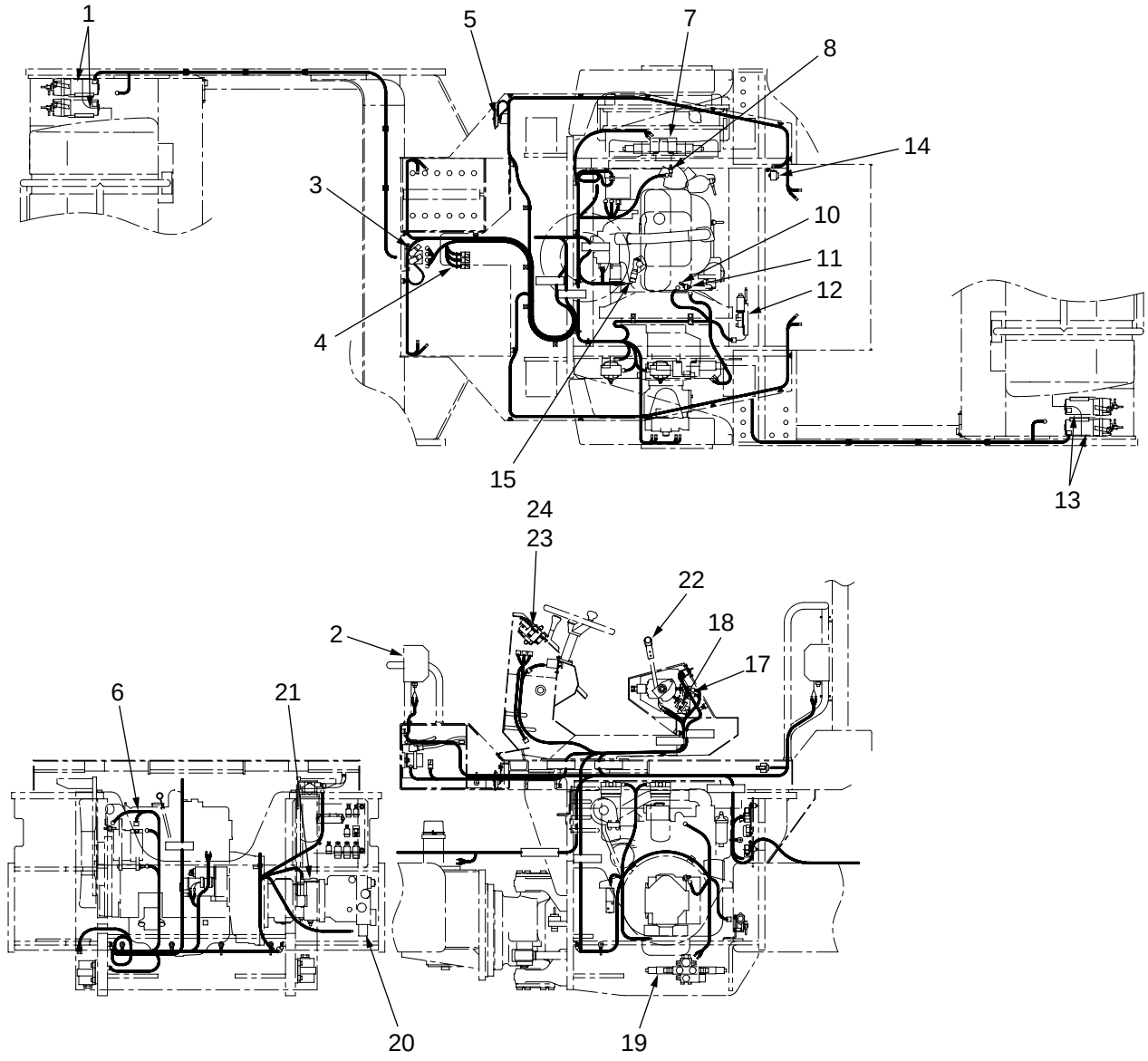
5-3. Locations of electric components [I] (SW800: To Machine No.10122 SW850: To Machine No.10126)



SW8002035

1. Sprinkler pump
2. Headlamps
3. Battery relay
4. Fusible link
5. Horn
6. Alternator
7. Amplitude select valve (front) (vibrator motor rotating direction select)
8. Thermo unit
9. Job lamp
10. Glow plug
11. Engine oil pressure switch
12. Engine stopper
13. Sprinkler pump (rear)
14. Reverse alarm
15. Tachometer sensor
16. Starter
17. F-R lever switch
18. Reverse alarm switch
19. Amplitude selector switch (front) (vibrator motor rotating direction select)
20. Frequency select valve (vibrator pump delivery select)
21. Brake release solenoid valve
22. Vibrator switch
23. Frequency selector switch (vibrator pump delivery select)
24. Amplitude selector switch (vibrator motor rotating direction select)

5-4. Locations of electric components [Ⅱ] (SW800:From Machine No.10123 SW850: from Machine No.10127)



SW8002042

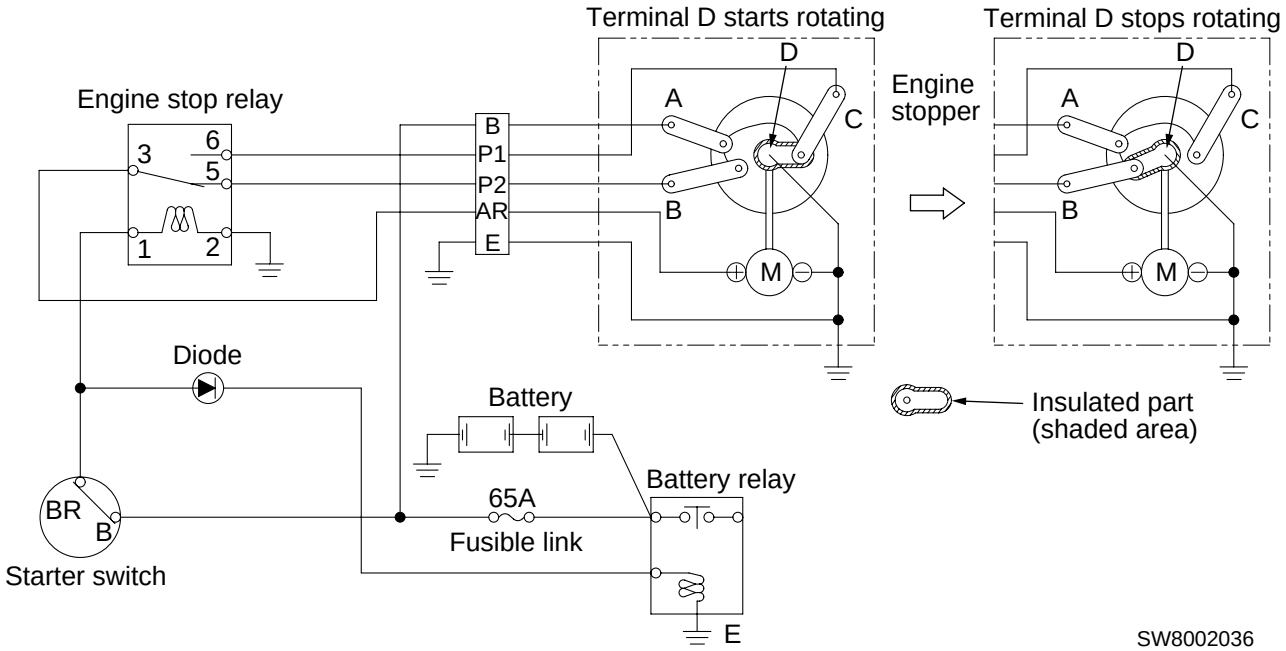
1. Sprinkler pump (front)
2. Headlamps
3. Battery relay
4. Fusible link
5. Horn
6. Alternator
7. Amplitude select valve (rear) (selects rotating direction of vibrator drive motor)
8. Thermo unit
9. Job lamp
10. Glow plug
11. Engine oil pressure switch
12. Engine stopper
13. Sprinkler pump (rear)
14. Reverse alarm
15. Tachometer sensor
16. Starter
17. F-R lever switch
18. Reverse alarm switch
19. Amplitude select valve (front) (selects rotating direction of vibrator drive motor)
20. Frequency select valve (selects vibrator drive pump delivery)
21. Brake release solenoid valve
22. Vibrator switch
23. Frequency selector switch (selects vibrator drive pump delivery)
24. Amplitude selector switch (selects rotating direction of vibrator drive motor)

5-5. Description and operation of engine stopper

Description

• Operation of the starter switch alone starts and stops the engine. The major components of this device are the engine stopper and engine stop relay.

When starting the engine:



Operation

When starting:

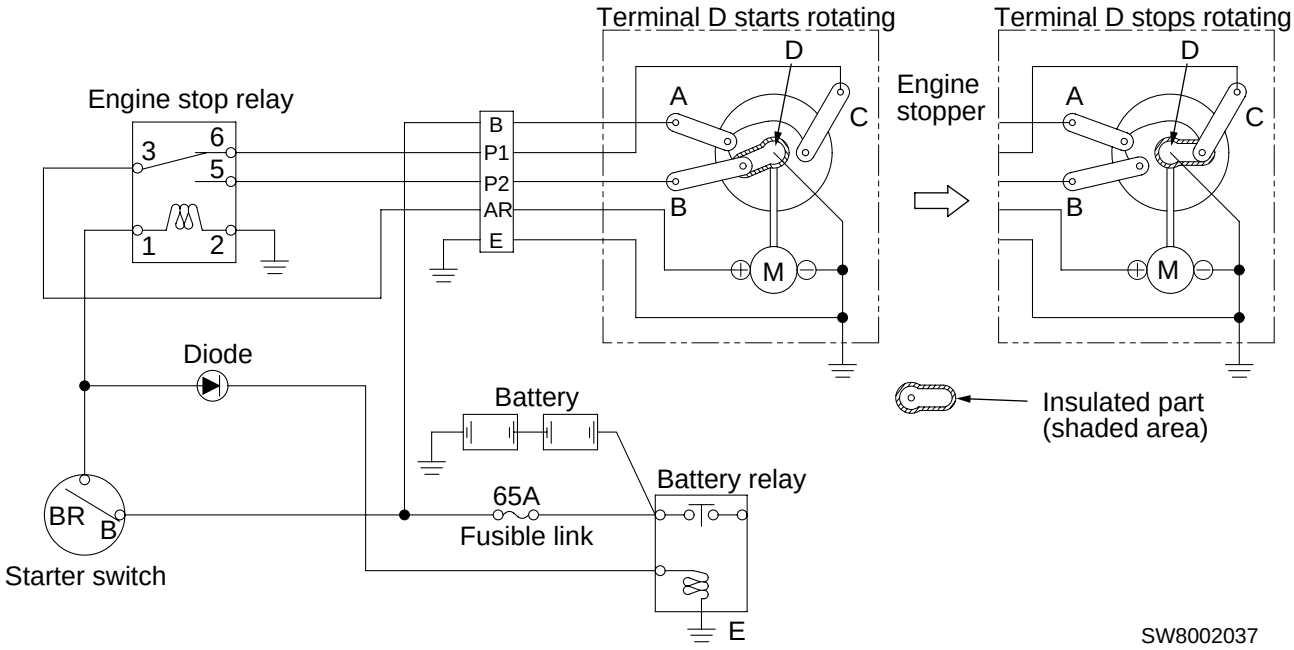
• Turning the starter switch ON connects starter switch terminal B to terminal BR to energize the engine stop relay. In the engine stop relay, terminal 3 connects with terminal 5. The current flows as follows: Battery → Battery relay → Terminal A of engine stopper → Terminal B of engine stopper → Terminal (5) of engine stop relay → Terminal (3) of engine stop relay → Plus (+) terminal of motor in engine stopper.

The motor is driven. (The control cable is extended.) Terminal D rotates with the motor. When insulated part of terminal D reaches terminal B, the circuit between terminal A and terminal B is open to cut off the current from the battery.

The motor continues running by inertia. When the metal part of terminal D makes contact with terminal B, both poles of the motor are earthed to stop the motor.

• In this state, the control cable is extended completely, allowing the injection pump stop lever to stay in the operating position. The engine runs.

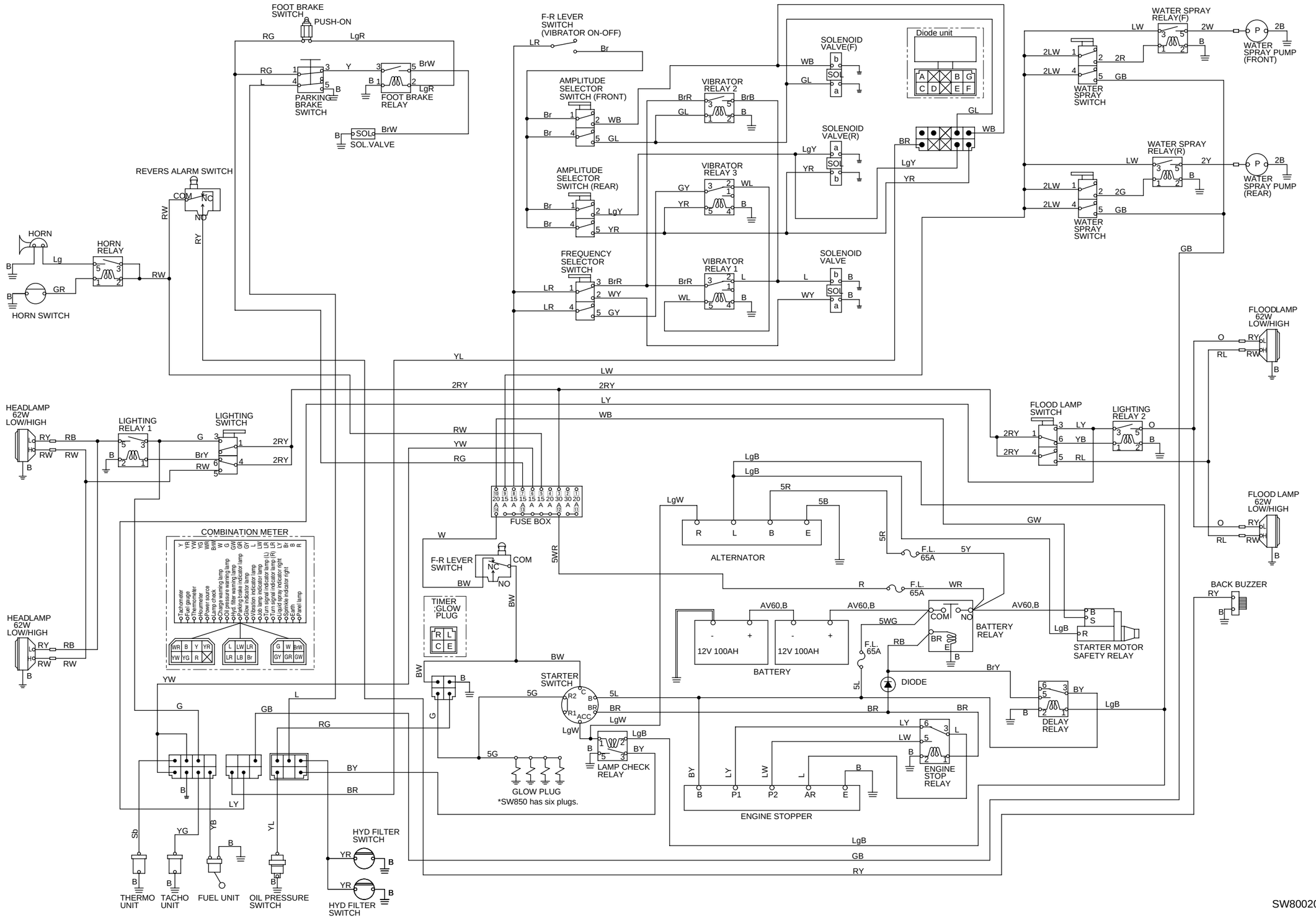
When stopping:



When stopping:

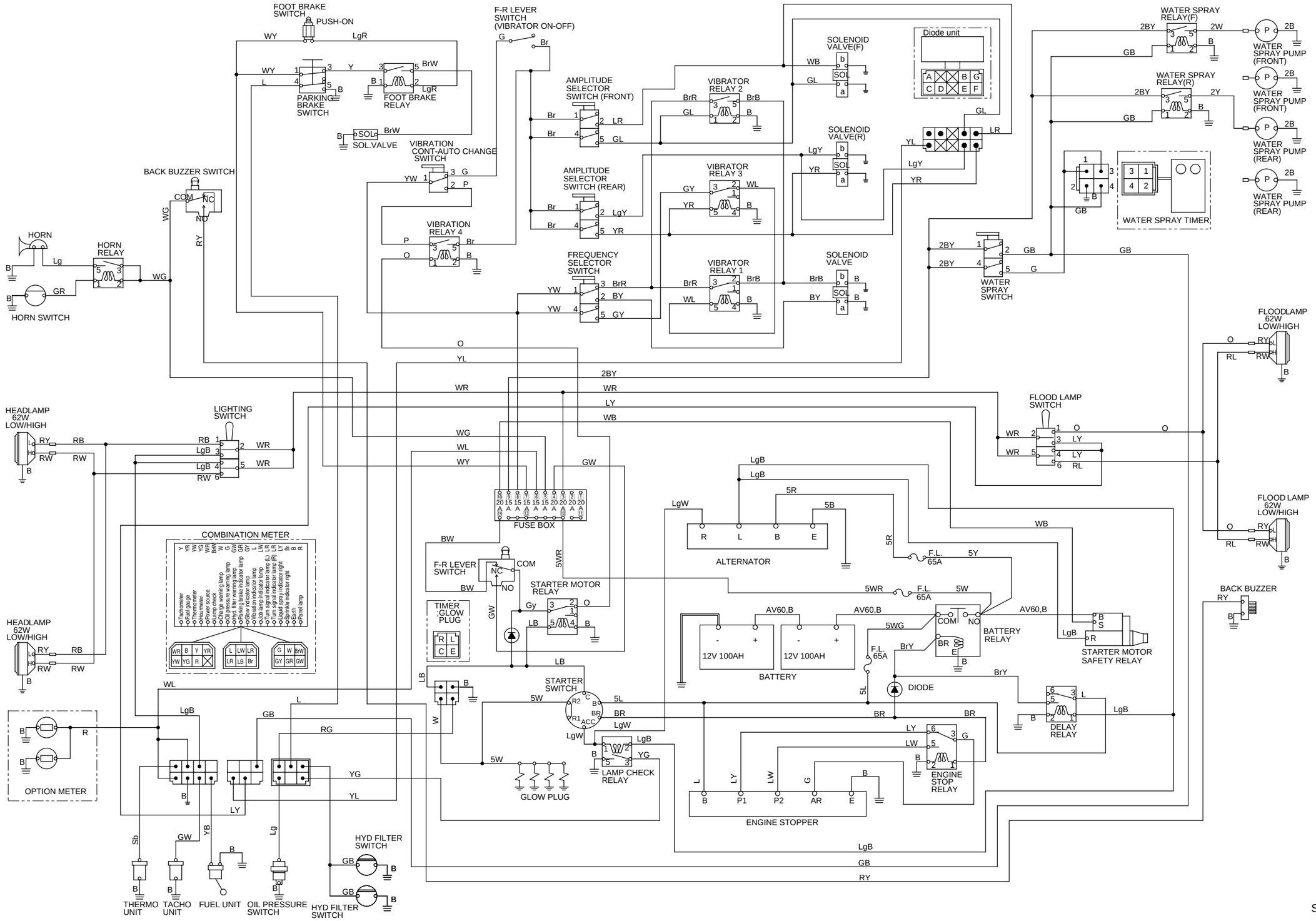
- Turning the starter switch OFF breaks the contact between terminal B and terminal BR, deenergizing the engine stop relay.
  The current is delivered in the sequence as in the following: Battery relay → Terminal A of engine stopper → Terminal C of engine stopper → Terminal (6) of engine stop relay → Terminal (3) of engine stop relay → Plus (+) terminal of motor in engine stopper. The motor runs. (The control cable is retracted.)
- Terminal D rotates with the motor.
  When the insulated portion of terminal D reaches terminal C, the circuit between terminal A and terminal B is open to cut off current from the battery.
  The motor continues running by inertia. When the metal portion of terminal D touches terminal C, both terminals of the motor lead to earth. The motor is shut down.
- In this condition, the control cable is completely retracted. The injection pump stop lever stays in the STOP position to cut off the fuel supply. The engine stops.

5-6. Electric wiring diagram [I] (SW800:To Machine No.10122 SW850:To Machine No.10126)



SW8002038

5-7. Electric wiring diagram [Ⅱ] (SW800:From Mchine No.10123 SW850:From Machine No.10127)



SW8002039

INSPECTION & ADJUSTMENT

INSPECTION & ADJUSTMENT

1.Standard Value Chart

2.Inspection & Adjustment

★Precautions for Use of Standard Value Chart

1) Values in the chart are based upon ones when the machine leaves the factory. They should be used for estimation of wear after extended operation and for guidance when the machine is repaired.
2) Values in the chart are ones based on various test results etc. They should be used for a guide for fault finding practice in due consideration of the past repair frequency and operating record of the machine.
3) Values in the chart should not be used for the standard for claim application.

★Precautions for Checking, Adjustment and Fault Finding

⚠ **For checking, adjustment and fault finding practices, park the machine on level ground and secure with the safety pins engaged.**

⚠ **When working with other workers, use hand signals positively and keep people not concerned away from the work area.**

⚠ **Cool off the coolant or hydraulic fluid when removing the radiator cap or the hydraulic tank filler cap. Hot fluids can burn you.**

⚠ **Do not put your hands close to parts in motion such as fan belts.**

1. Standard Value Chart

1-1. Standard value chart for engine, travel speed and hydraulic pressure (SW800)

Item			Measuring conditions	Unit	Standard value for new machine	Permissible range
Engine	Speed	Low idle	• Coolant temp. : Green zone on gauge • Hydraulic oil working temperature : 50 ± 5°C {122±41°F}	min^{-1} (rpm)	950 ± 25	←
		High idle			2580 $\pm \frac{0}{50}$	←
		Rated speed			2300	———
Travel speed	Forward	1st	• Engine at full throttle • Coolant temp. : Green zone on gauge • Hydraulic oil working temperature : 50 ± 5°C {122±41°F}	km/h (mph)	0 ~ 7.0 ± 1.5 {0 ~ 4.35 ± 0.93}	←
		2nd			0 ~ 11.0 ± 1.5 {0 ~ 6.21 ± 0.93}	←
	Reverse	1st			0 ~ 7.0 ± 1.5 {0 ~ 4.35 ± 0.93}	←
		2nd			0 ~ 11.0 ± 1.5 {0 ~ 6.21 ± 0.93}	←
Oil pressure	Propulsion circuit	Cut off valve setting	• Hydraulic oil working temperature : 50 ± 5°C {122±41°F} • For adjustment, see relevant items in this chapter, "INSPECTION AND ADJUSTMENT"	MPa (kgf/cm^2) {psi}	37.2 $\pm \frac{0}{2.0}$ (380 $\pm \frac{0}{20}$) {5400 ±280}	34.3 (350) {4970}
		High relief pressure			43.1 $\pm \frac{0}{2.0}$ (440 $\pm \frac{0}{20}$) {6260 ±280}	39.2 (400) {5690}
		Charge relief pressure			2.9 ± 0.3 (30 ± 3.0) {420 ± 42}	2.0 (20) {280}
	Vibrator circuit	Main relief pressure			17.2 ± 1.0 (175 ± 10) {2490 ± 140}	20.6 (210) {2130}
		Port relief pressure			22.5 ± 1.0 (230 ± 10) {3270 ± 140}	20.6 (210) {2980}
	Steering relief pressure				18.1 ± 1.0 (185 ± 10) {2630 ± 140}	16.7 (170) {2410}
	Parking brake release pressure				2.9 ± 0.3 (30 ± 3.0) {420 ± 42}	2.0 (20) {280}

1-2. Standard value chart for engine, travel speed and hydraulic pressure (SW850)

Item			Measuring conditions	Unit	Standard value for new machine	Permissible range
Engine	Speed	Low idle	• Coolant temp. : Green zone on gauge • Hydraulic oil working temperature : 50 ± 5°C {122±41°F}	min^{-1} (rpm)	800 ± 25	←
		High idle			2580 $\pm^{0}_{50}$	←
		Rated speed			2300	———
Travel speed	Forward	1st	• Engine at full throttle • Coolant temp. : Green zone on gauge • Hydraulic oil working temperature : 50 ± 5°C {122±41°F}	km/h (mph)	0 ~ 7.0 ± 1.5 {0 ~ 4.35 ± 0.93}	←
		2nd			0 ~ 11.0 ± 1.5 {0 ~ 6.21 ± 0.93}	←
	Reverse	1st			0 ~ 7.0 ± 1.5 {0 ~ 4.35 ± 0.93}	←
		2nd			0 ~ 11.0 ± 1.5 {0 ~ 6.21 ± 0.93}	←
Oil pressure	Propulsion circuit	Cut off valve setting	• Hydraulic oil working temperature : 50 ± 5°C {122±41°F} • For adjustment, see relevant items in this chapter, "INSPECTION AND ADJUSTMENT"	MPa (kgf/cm^2) {psi}	37.2 $\pm^{0}_{2.0}$ (380 $\pm^{0}_{20}$) {5400 ±280}	34.3 (350) {4970}
		High relief pressure			43.1 $\pm^{0}_{2.0}$ (440 $\pm^{0}_{20}$) {6260 ±280}	39.2 (400) {5690}
		Charge relief pressure			2.9 ± 0.3 (30 ± 3.0) {420 ± 42}	2.0 (20) {280}
	Vibrator circuit	Main relief pressure			17.2 ± 1.0 (175 ± 10) {2490 ± 140}	20.6 (210) {2130}
		Port relief pressure			22.5 ± 1.0 (230 ± 10) {3270 ± 140}	20.6 (210) {2980}
	Steering relief pressure				18.1 ± 1.0 (185 ± 10) {2630 ± 140}	16.7 (170) {2410}
	Parking brake release pressure				2.9 ± 0.3 (30 ± 3.0) {420 ± 42}	2.0 (20) {280}

2. Inspection & Adjustment

2-1. Measurement and adjustment of pressure in propulsion main circuit

⚠ **Park on level ground. Apply the parking brake. Stop the engine and block the wheels.**

⚠ **Make certain that the parking brake functions correctly.**

★ **Ensure that the propulsion charge circuit pressure is as specified.**

1. Measurement

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

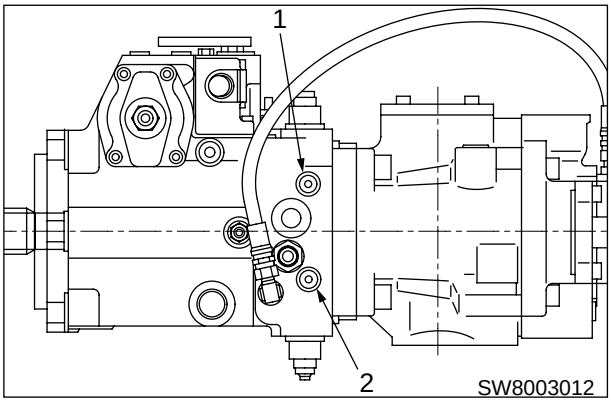
1-1. Cut off valve

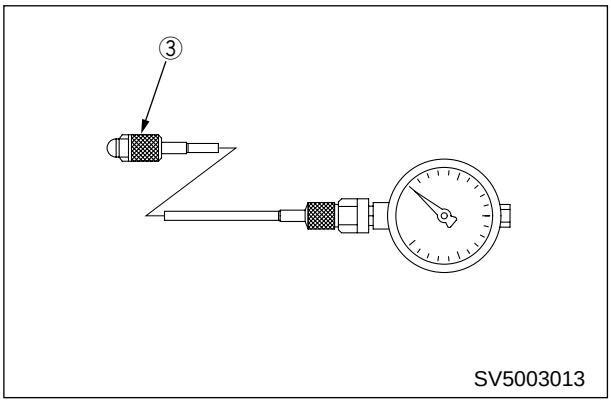
1) Mount a pressure gauge to the couplings fitted in gauge ports (1) and (2) of the propulsion pump.
   - Port (1): for forward travel
   - Port (2): for reverse travel
   - Pressure gauge:
     0 ~ 60 MPa (0 ~ 600 kgf/cm²)
     {0 ~ 9000 psi}

2) Apply the parking brake by operating the parking brake switch.

3) Start the engine and set the throttle to high idle.

4) Move the F-R lever so that the pressure in the port to be measured may build up. Take the pressure reading quickly. Immediately when the measurement has been taken, bring the lever to the neutral position.





1-2. High pressure relief valve

1) The gauge mounting procedure is the same as that in step 1-1-1) above.

2) Screw in adjust screw (5) of cut off valve (3) one full turn. Block the cut off valve.
   ★ **For the adjustment screw, see Fig. SW8003013.**

3) Start the engine and set the throttle to high idle.

4) By the operation of the F-R lever, load the engine so that its revolution is reduced from high idle (2,580 min^{-1}) (2,580 rpm) to the rated speed (2,300 min^{-1}) (2,300 rpm). Read the pressure at the rated revolution and return the F-R lever to the neutral position as quickly as practicable.

★ The procedure (Tilting the F-R lever ➡ Reading the pressure ➡ Bringing the F-R lever to neutral) should not exceed 3 seconds.

5) When the measurement is complete, reset the cut off valve by screwing out cut off valve adjust screw (5) one full turn and tightening locknut (4).

6) Ensure that the cut off valve setting is correct by using procedures as described in steps 1-1-1) to 1-1-4) above.

2. Adjustment

If the measured value falls outside the permissible range, adjust as follows:

2-1. Cut off valve

1) If locknut (4) of cut off valve (3) has no signs of looseness, dismount and disassemble the cut off valve to clean.
Do not loosen locknut (4) to keep the setting unchanged.

★ Renew parts having signs of damages.

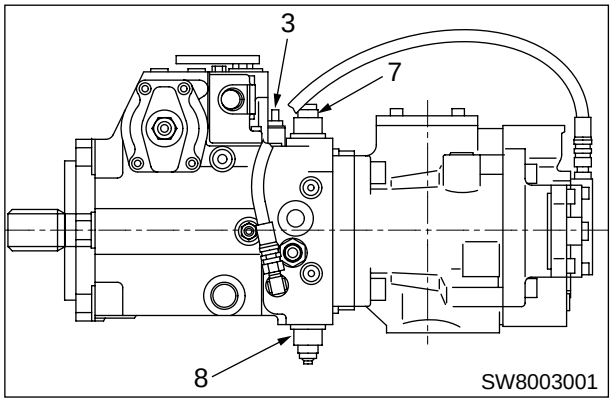
• Tightening torque:
Item (3): 22 N•m (224 kgf•cm) {16.2 lbf•ft}
Item (4): 35 N•m (357 kgf•cm) {25.8 lbf•ft}

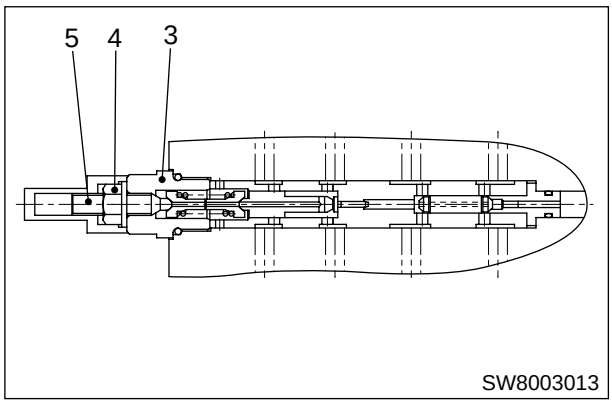
★ Carefully perform disassembly and reassembly taking necessary measures to prevent ingress of foreign matter.

2) To adjust the setting, loosen locknut (4) and rotate adjust screw (5).

• Adjust screw rotation:
Clockwise ➡ Pressure increases
Counterclockwise ➡ Pressure decreases

• Increase or decrease in pressure per 1/4 turns of adjust screw:
2.28 MPa (23.3 kgf/cm^2) {331 psi}





3) For the pressure measurement during the adjustment, use procedures as stated in step 1-1.

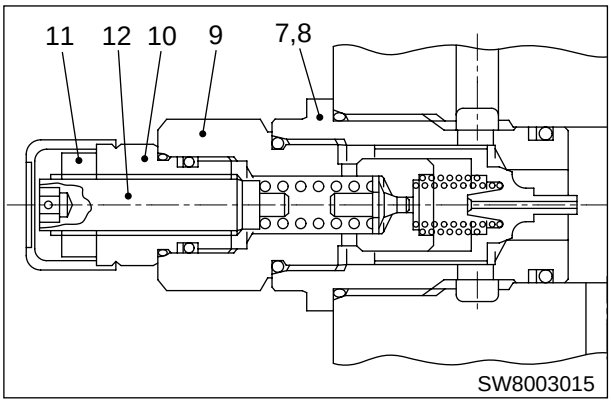
4) When the adjustment is complete, tighten locknut (4) and recheck to see if correctly adjusted.

5) If the valve is beyond adjustment, take necessary measures referring to relevant items in “TROUBLE-SHOOTING”.

2-2. High pressure relief valve

1) Screw in adjust screw (4) of cut off valve (3) one full turn and block the cut off valve.

2) If locknut (11) of high pressure relief valve (7) (for forward travel) or of high pressure relief valve (8) (for reverse travel) has no signs of looseness, dismount and disassemble the high pressure relief valve. Do not loosen locknut (4) to keep the setting unchanged.



★ Renew parts having signs of damage.

• Tightening torque:
Items (7),(8)
150 N•m (1,530 kgf•cm) {110 lbf•ft}
Item (9)
100 N•m (1,020 kgf•cm) {73.8 lbf•ft}
Item (10)
50 N•m (510 kgf•cm) {36.9 lbf•ft}
Item (11)
20 N•m (204 kgf•cm) {14.8 lbf•ft}

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

3) To adjust the setting, loosen locknut (11) and rotate adjust screw (12).

• Adjust screw rotation:
Clockwise ➡ Pressure increases
Counterclockwise ➡ Pressure decreases

• Pressure increase or decrease per 1/4 turns of adjust screw:
4.9 MPa (50 kgf/cm^2) {711 psi}

4) For the pressure measurement during the adjustment, use procedures as described in step 1-2 above.

5) When the adjustment is complete, tighten locknut (11) and recheck to see if correctly adjusted.

6) When the adjustment is complete, bring the cut off valve to the correct setting by screwing out adjust screw (5) of the cut off valve one full turn and tightening locknut (4).

7) Recheck the setting of the cut off valve by using the procedures in steps 1-1-1) to 1-1-4) above.

8) If the valve is beyond adjustment, take necessary measures referring to relevant items in “TROUBLE-SHOOTING”.

2-2. Measurement of propulsion charge circuit pressure

⚠ **Park the machine on level ground. Apply the parking brake. Stop the engine and block the wheels.**

★ **Because oil is supplied from the steering circuit, make sure, before the measurement, that the steering system works correctly.**

⚠ **Ensure that the neutral position of the F-R lever perfectly aligns with the neutral position of the pump swashplate.**

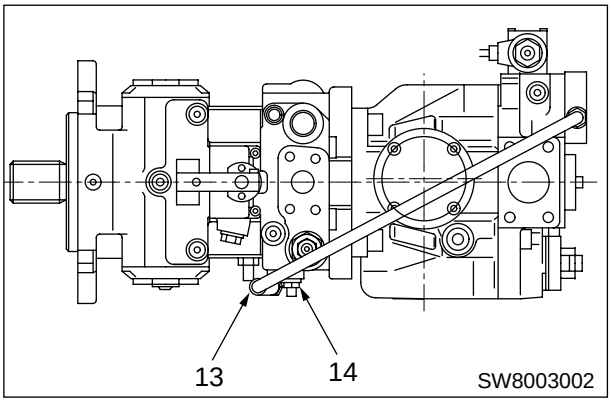
1. Measurement

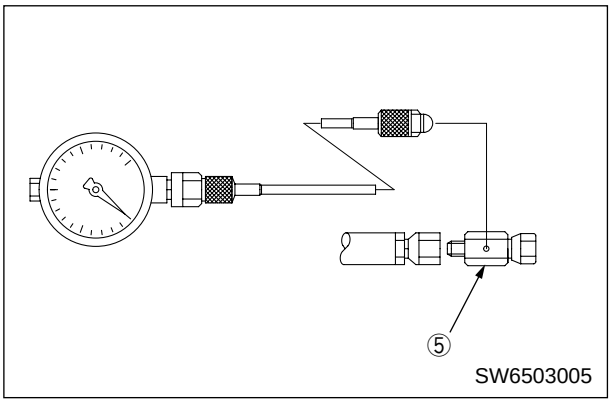
★ **Hydraulic oil temperature: 50±5°C (122±41°F)**

1) Disconnect hose (13) running from propulsion to vibrator pump, and fit a pressure gauge with adapter ⑤.
   • Gauge port: G3/8
   • Pressure gauge:
   0 ~ 5 MPa (0 ~ 50 kgf/cm²) {0 ~ 700 psi}

2) Start the engine and set the throttle to high idle.

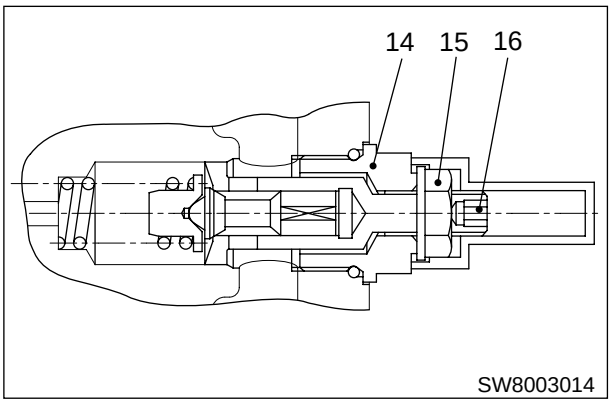
3) The charge pressure will vary. Take the maximum pressure reading.





2.Adjustment

1) If locknut (15) of charge relief valve (14) has no signs of looseness, dismount, disassemble and clean the charge relief valve. Do not loosen locknut (15) to keep the setting unchanged.
   ★ **Renew parts with signs of damage.**
   • Tightening torque:
   Item (13)
   70 N•m (714 kgf•cm) {51.7 lbf•ft}
   Item (14)
   44 N•m (449 kgf•cm) {32.5 lbf•ft}
   ★ **Carefully perform disassembly and reassembly taking necessary measures to prevent ingress of foreign matter.**



2) To adjust the setting, loosen locknut (15) and rotate adjust screw (16).
   • Adjust screw rotation:
     Clockwise ➡ Pressure increases
     Counterclockwise ➡ Pressure decreases
   • Increase or decrease in pressure per 1/4 turns of adjust screw:
     0.38 MPa (3.9 kgf/cm^2) {55 psi}

3) For the pressure measurement during the adjustment, use procedures as described in steps 1-1) to 1-3) above.

4) When the adjustment is complete, tighten locknut (14) and recheck to see if correctly adjusted.

5) If the valve is beyond adjustment, take necessary measures referring to relevant items in “TROUBLE-SHOOTING”.

2-3. Measurement of parking brake release pressure

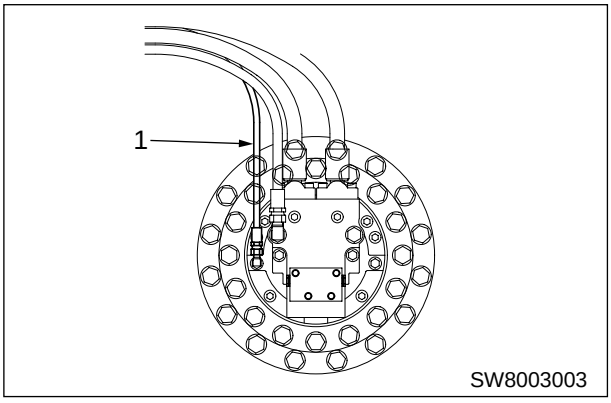
⚠ **Park on level ground. Apply the parking brake. Stop the engine and block the wheels.**

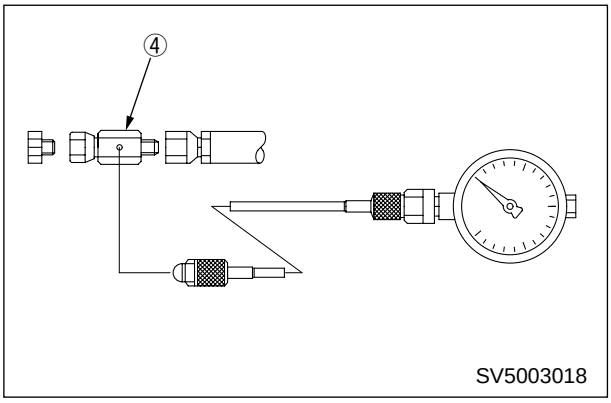
★ **Because the charge pressure is also used for releasing the brake, make sure, before the measurement, that the pressure to change the travel speed is correct.**

1. Measurement

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

1) Disconnect brake release hoses (1) from the propulsion motor and fit a pressure gauge with adapter ④.
   ★ **Plug the open port of the motor.**
   • Pressure gauge:
   0 ~ 5 MPa (0 ~ 50 kgf/cm^2) {0 ~ 700 psi}
2) Start the engine and set the throttle to high idle.
3) Make sure that the F-R lever stays in the neutral position.
4) Press down the parking brake switch to free the brake and read the pressure when the brake is released.





2-4. Measurement and adjustment of vibrator circuit pressure

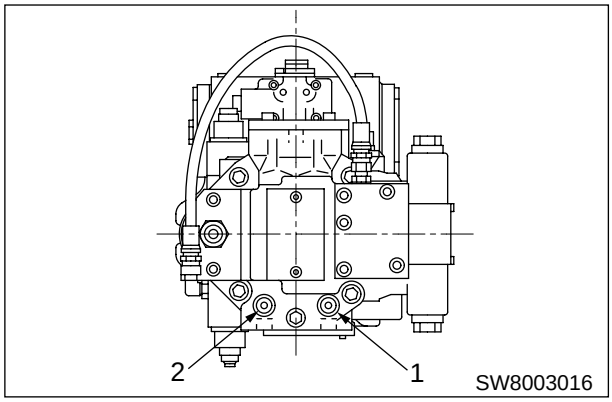
⚠ **Park on level ground. Apply the parking brake. Stop the engine and block the wheels.**

1. Measurement

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

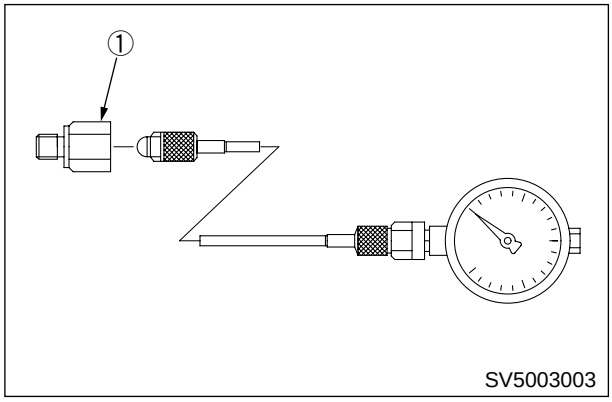
1-1. Main relief valve

1) Remove plugs (1) and (2) from the vibrator pump motor and attach a pressure gauge with adapter ①.
   - Gauge port (1): Front
   - Gauge port (2): Rear
   - Pressure gauge:
     0 ~ 40 MPa (0 ~ 400 kgf/cm²) {0 ~ 6000 psi}



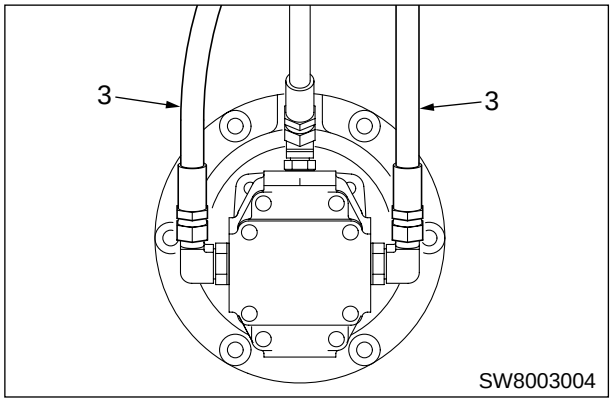
2) Disconnect hose (3) running from frequency select valve to vibrator motor. Plug the end of hose to block the line.
   ★ Plug the open port of the motor.

3) Operate the frequency selector switch and amplitude selector switch to select MEDIUM FREQUENCY and LOW AMPLITUDE respectively. **For the machines falling into the following machine numbers, select CONT mode by means of CONT/AUTO selector switch. SW800: From Machine No. 10123 SW850: From Machine No.10127.**



4) Start the engine and set the throttle to high idle.

5) Operate the vibrator by pressing the vibrator switch on top of the F-R lever. Measure the main relief pressure.
   ★ Take the reading and shut down the vibrator as quickly as practicable.
   ★ The procedure (Starting the vibrator ➡ Pressure measurement ➡ Shutting down the vibrator) should not exceed 3 seconds.



1-2. Port relief valve

1) The gauge points are the same as those of the main relief valve as described in steps 1-1-1) and 1-1-2) above.

2) Screw in adjusting screw (6) of main relief valve (4) by 1/2 turns, and block the main relief valve.
   ★**For the adjust screw, see Fig. SW6503006.**

3) Operate the frequency selector switch to select MEDIUM FREQUENCY. **For the machines of the following machine numbers, select CONT mode by means of the CON/AUTO selector switch. SW800: From Machine No.10123 SW850: From Machine No.10127.**

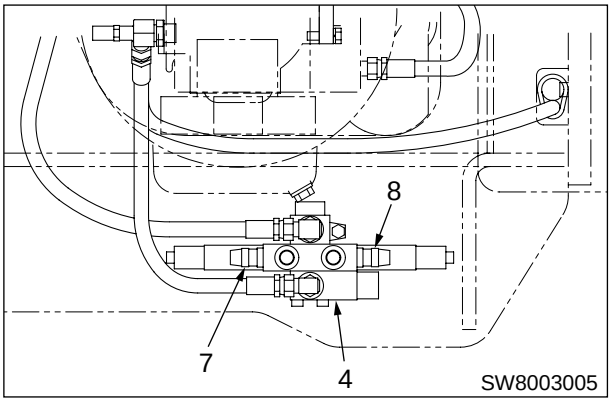
4) Start the engine and set the throttle to high idle.

5) Select HIGH AMPLITUDE by operating the amplitude selector switch. Operate the vibrator by pressing the vibrator switch on top of the F-R lever. Measure the port relief pressure in the HIGH AMPLITUDE port.
   ★**Take the reading and shut down the vibrator as quickly as practicable.**

6) Select LOW AMPLITUDE by operating the amplitude selector switch. Operate the vibrator by pressing the switch on top of the F-R lever. Measure the port relief pressure in LOW AMPLITUDE port.
   ★**Take the reading and shut down the vibrator as quickly as practicable.**
   ★**The procedure (Starting the vibrator ➡ Pressure measurement ➡ Shutting down the vibrator) in steps 5) and 6) should not exceed 3 seconds.**

7) When the measurement is complete, restore the standard setting by screwing out the adjusting screw of the main relief valve by 1/2 turns and tightening locknut (5).

8) Use the procedures in steps 1-1-3) to 1-1-5) above to recheck the main relief valve setting.



2. Adjustment

If measured pressures do not fall within the specified range, adjust as follows:

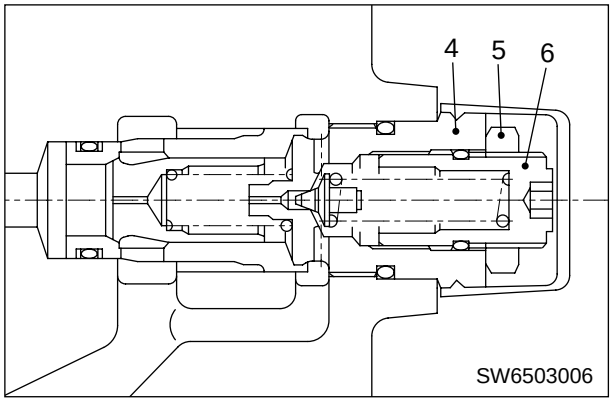
2-1. Main relief valve

1) If there is no signs of looseness in locknut (5) of main relief valve (4), dismount, disassemble and wash clean the main relief valve.
   Do not loosen locknut (5) to keep the setting unchanged.
   ★ **Renew parts with signs of damages.**
   • Tightening torque:
   Item (4): 83 N•m (850 kgf•cm) {61 lbf•ft}
   Item (5): 9.8 N•m (100 kgf•cm) {7.2 lbf•ft}
   ★ **Carefully perform disassembly and reassembly taking necessary means to avoid ingress of foreign matter.**

2) To adjust the setting, loosen locknut (5) and rotate adjusting screw (6).
   • Adjusting screw:
   Clockwise turn increases pressure.
   Counterclockwise turn decreases pressure.
   • Increase or decrease in pressure per 1/4 turns of adjust screw:
   3.38 MPa (34.5 kgf/cm^2) {490 psi}

3) Use the procedures in item 1-1 (Main relief valve) for pressure measurement during the setting adjustment.

4) When the adjustment is complete, tighten the locknut and recheck the setting.
   ★ **If the valve is beyond adjustment, take necessary measures referring to relevant instructions in the chapter, TROUBLESHOOTING.**



2-2. Port relief valve

1) Screw in adjust screw (6) of the main relief valve by 1/2 turns and block the main relief valve.

2) If there is no signs of looseness in locknut (10) of port relief valve (7) or (8), remove, disassemble and wash clean the high pressure relief valve.
   Do not loosen locknut (10) to keep the setting unchanged.
   ★ **Renew parts with signs of damages.**
   • Tightening torque:
   Items (7),(8)
   78.4 N•m (800 kgf•cm) {57.8 lbf•ft}
   Item (9)
   58.8 N•m (600 kgf•cm) {43.4 lbf•ft}
   Item (10)
   9.8 N•m (100 kgf•cm) {7.2 lbf•ft}
   ★ **Carefully perform disassembly and reassembly taking necessary means to avoid ingress of foreign matter.**

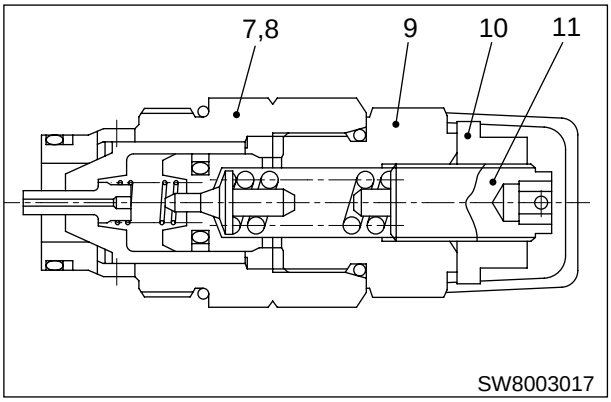
3) To adjust the setting, loosen locknut (10) and rotate adjusting screw (11).
   • Adjusting screw:
   Clockwise turn increases pressure.
   Counterclockwise turn decreases pressure.
   • Increase or decrease in pressure per 1/4 turns of adjust screw:
   5.5 MPa (56 kgf/cm^2) {796 psi}

4) Use the procedures in item 1-2 (Port relief valve) for pressure measurement during the setting adjustment.

5) When the adjustment is complete, tighten the locknut and recheck the setting.

6) When the adjustment is complete, restore the standard setting of the main relief valve by screwing out adjusting screw (6) of the main relief valve by 1/2 turns, and tightening the locknut.

7) Use the procedures in steps 1-1-3) to 1-1-5) above to check to see if the main relief valve setting is as specified.
   ★ **If the valve is beyond adjustment, take necessary measures referring to relevant instructions in the chapter, TROUBLESHOOTING.**



2-5. Measurement of steering circuit pressure

⚠ **Park on level ground. Apply the parking brake. Stop the engine and block the wheels.**

1. Measurement

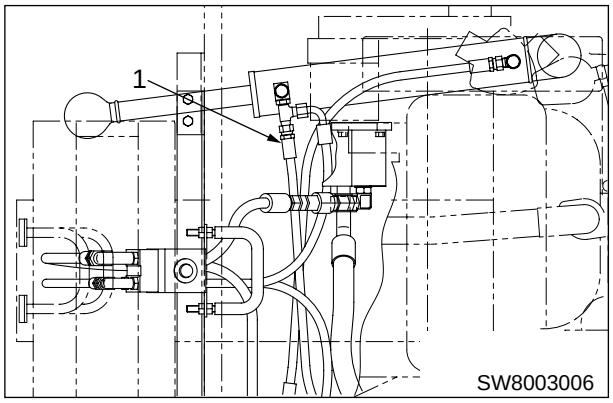
★ **Hydraulic oil temperature: 45 ~ 55°C (122±41°F)**

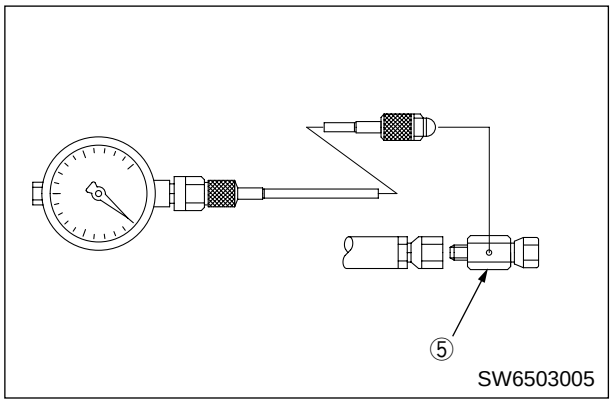
★ **Because the propulsion charge circuit makes use of the pressure of return oil from the steering circuit, check to see if the pressure in the propulsion charge circuit is normal.**

1) Disconnect inlet hose (1) from the steering cylinder, and connect a pressure gauge to the hose end using adapter ⑤.
   • Pressure gauge:
   0 ~ 25 MPa (0 ~ 250 kfg/cm²) {0 ~ 3,500 psi}

2) Start the engine. Ensuring that the F-R lever is in the neutral position, set the throttle lever to high idle.

3) Rotate the steering wheel clockwise to full lock and take the reading of the pressure gauge.
   ★ **Do not allow the relief valve to stay open longer than 3 seconds.**





2. Adjustment

If the measured value is not within the permissible range, disassemble and clean the relief valve built in Orbitrol.

★ **The valve is not adjustable.**

★ **Carefully perform disassembly and reassembly taking necessary means to avoid entry of foreign matter.**

★ **If the valve is beyond adjustment, take necessary measures referring to relevant instructions in the chapter, TROUBLESHOOTING.**

2-6. Throttle linkage adjustment

★ **When the throttle linkage has been renewed (or reconnected) or if the high idle or low idle rpm is not to specification, adjust as follows:**

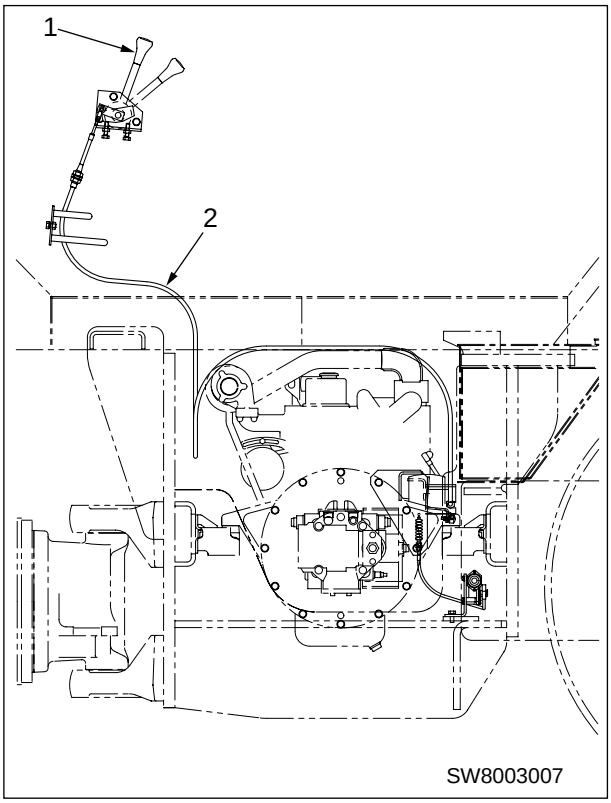
1. Adjustment

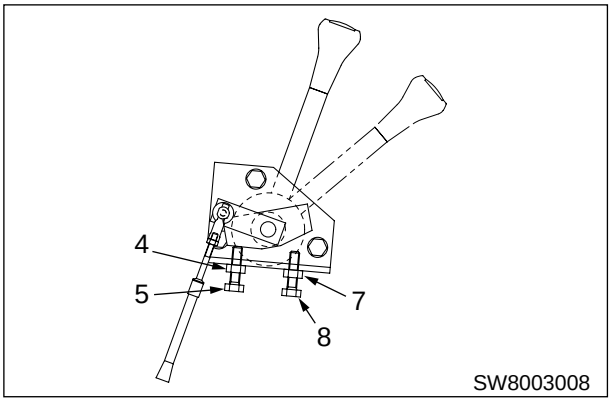
★ **Coolant temperature: Green area on gauge.**

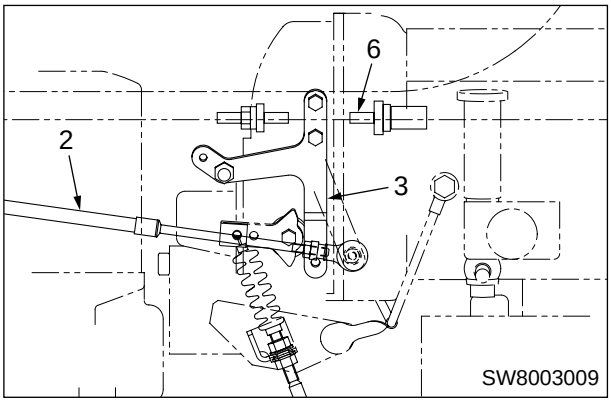
1) Set throttle lever (1) to the low idle position.
2) Connect throttle cable (2) to fuel injection pump governor lever (3).
3) Start the engine. Slacken lock nut (4) and adjust stop bolt (5) until correct low idle revolution is reached.
   ★ **Low idle:**
   SW800: 950±25 min^{-1} (rpm)
   SW850: 800±25 min^{-1} (rpm)
4) With throttle lever (1) set to full throttle, loosen locknut (7) and adjust stop bolt (8) so that governor lever (3) makes contact with stopper (6) on the full throttle side.
5) Start the engine. Check that the high idle rpm is to specification.
   ★ **High idle: 2,580±50 min^{-1} (rpm)**

♦ If high idle is lower than specified with governor lever (3) in contact with the stopper on the full throttle side, adjust the fuel injection nozzles or repair or renew the fuel injection pump.

★ **The engines of both SW800 and SW850 models are equipped with an exhaust gas control system, and are incapable of adjustment on the high idle side.**







2-7. F-R lever linkage adjustment

★When the F-R lever linkage has been renewed (or reconnected) or if the F-R lever fails to move smoothly, adjust as described below:

1. Adjustment

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

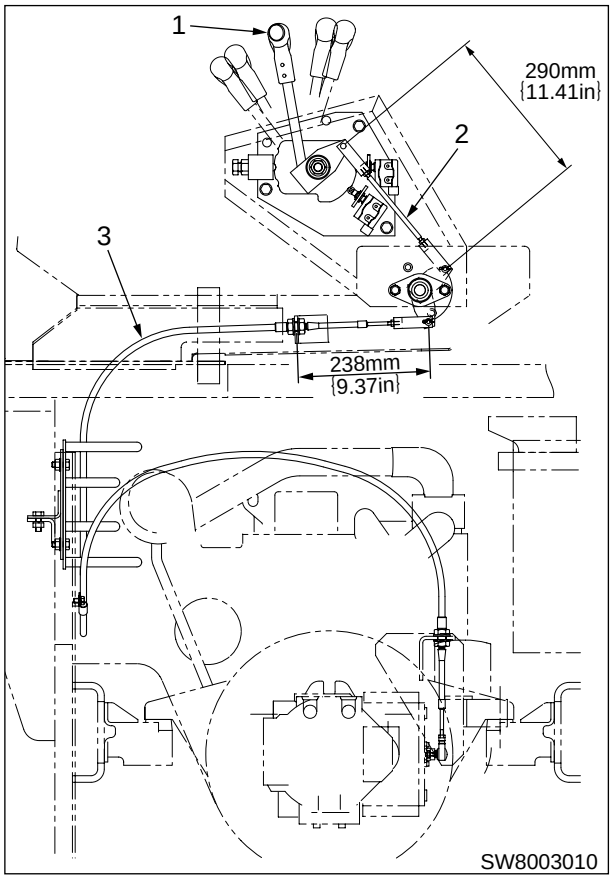
★Adjust the length of linkage between the F-R lever and pump control lever so that the pump control lever secures the correct neutral position with the F-R lever held in the neutral position. (F-R lever (1) is positively detent-positioned in the neutral, forward travel and reverse travel positions.)

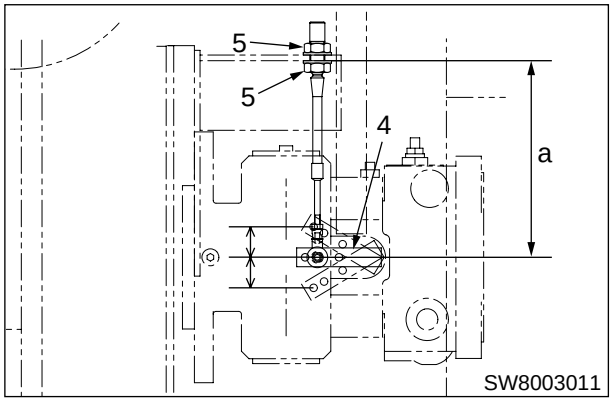
1) Set the F-R lever to the correct neutral position. Adjust the length of rod (2) and cable (3) as shown.
   • Length:
   Rod (2) ➡ 290 mm (11.41 in.)
   Cable (3) ➡ 401 mm (9.37 in.)
   ★Make sure that the F-R lever moves smoothly.

2) Set pump control lever (4) to the neutral position. Connect the cable to the pump control lever with length 'a' adjusted by nuts (5).

3) Move the F-R lever to notch positions (forward and backward) to see if lever(4) certainly follows the F-R lever movement.

4) To adjust the neutral position, rotate nuts (5), while moving the F-R lever (neutral ➡ forward ➡ neutral ➡ backward ➡ neutral), so that the F-R lever travel from the neutral position to the position in which the machine starts traveling is equal for both forward and backward traveling.
   ★Perform this adjustment on level and flat concrete pavement while varying the engine revolution in several steps ranging from low to high idles.





TROUBLESHOOTING

TROUBLESHOOTING

1. Precautions for Troubleshooting

⚠ **Park the machine on level ground. Make sure that the safety pins are engaged, wheels chocked and parking brake applied.**

⚠ **When working with other workers, use hand signals authorized, and keep people not concerned away from the work area.**

⚠ **If the radiator cap is carelessly removed from a hot engine, hot coolant will gush out to cause a burn. Remove the cap only when the engine has been cooled off.**

⚠ **Exercise care not to touch hot parts or not to be caught in rotating parts.**

⚠ **When disconnecting electric wires, disconnect the battery negative (-) cable.**

⚠ **When taking off plugs or caps from units which are under pressure such as hydraulic, water and air pressures, fit gauges after removing residual pressure.**

- Troubleshooting is to determine the root cause of troubles, repair faulty parts as quickly as practicable, and prevent recurrence of the troubles.
- Important when conducting troubleshooting practice is of course to well understand the structure and function of machines to be handled. For effective troubleshooting, however, it is of prime importance to have a clear picture of the trouble concerned by contacting the operator.

1. When a trouble has occurred, do not attempt to disassemble blindly.

Disassembling in a hurry will invite disadvantageous situations as described below:

- Parts which need not be disassembled may be disassembled.
- Tracing the cause of trouble will become more difficult.

These will cause increased service costs because of wasteful service hours, spare parts or expendables like oil or grease. To make matters worse, such a careless practice will invite operator's (customer's) distrust. For these reasons, sufficient advance investigations and diagnosis in accordance with troubleshooting procedures specified are essential for efficient fault finding practices.

2. Questions to be addressed to the operator (customer) .

1) Are there any trouble other than the one in question?
2) Was there any abnormal condition with the machine before the trouble occurs?
3) Did the trouble occur suddenly without signs of abnormal conditions in advance?
4) In what occasion did the trouble occur?
5) Has the machine been repaired before the trouble occurs? If so, when has it been repaired?
6) Did similar trouble occur in the past?

3. Before-diagnosis inspection

1) Perform daily inspections.
2) Perform other inspections required for diagnosis.

4. Confirmation of trouble

Know the degree of the trouble. Determine whether it is a trouble cause by improper design etc. or the trouble was caused by incorrect handling.

★ **When making the trouble reccur in an attempt to trace the source of the trouble by putting the machine in motion, use care not to cause more damage to the machine.**

5. Troubleshooting

From the results of items 2 to 4 above, narrow down the cause of the trouble, and pinpoint the source of the trouble by utilizing the diagnosis flow chart.

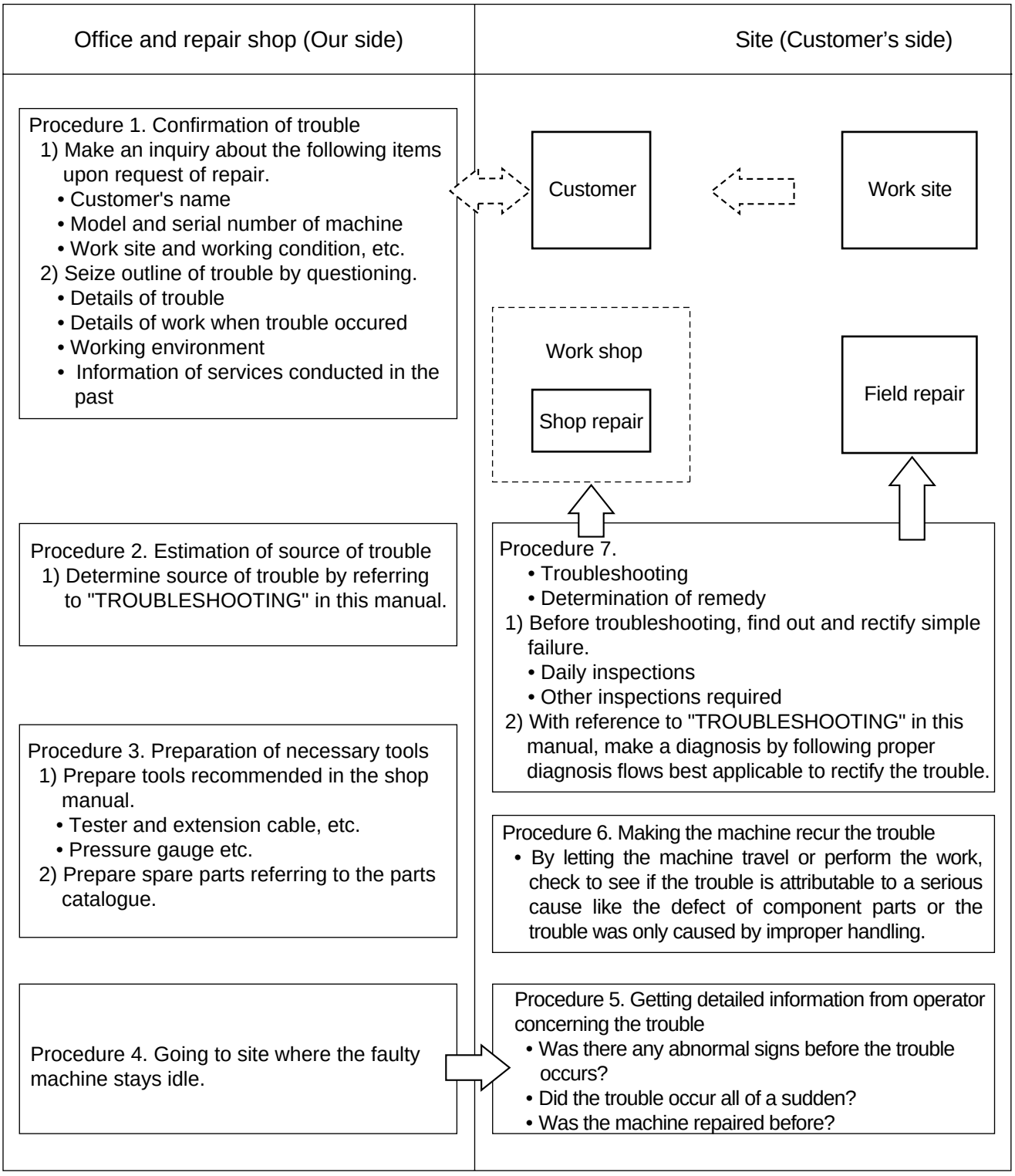
★ **The basic points of the diagnosis are:**

1) Start from the simple portion.
2) Start from the portion having a high probability to solve the problem.
3) Investigate related matters.

6. Basic remedy for the trouble

Even if a trouble is rectified, it will develop again if its cause is not determined. It is of prime importance to trace the very cause of the trouble.

2. How to Diagnose the Machine



3. How to Use this Chapter, "TROUBLESHOOTING" and How to Follow the Troubleshooting Flow

1. Troubleshooting codes

1) Electric system: E-01 to E-15
2) Hydraulic and mechanical systems: H-01 to H-10

2. How to follow the troubleshooting flow

★ See example shown on page 4-005.

①Troubleshooting code No.and fault symptom
On top of the flow chart are code No.and fault symptom.

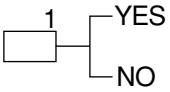
②General precautions
Under the code and fault symptom are precautions (with mark ★) common to the whole items in the flow chart. Though these precautions are not indicated inside each box (□) which contains checking instructions, pay attention to these precautions when making inspections described in the box (□).

③Sub classification
To make diagnosis easier or for simplified flow chart, fault symptom is subclassed . Ex. a) Starter does not run

④How to forward the diagnosis

- Each box (□) contains diagnosis procedure. Depending upon these results of inspection or measurement, proceed to YES or NO line.
- Normally, if the result is YES then proceed to upper line. If NO then go to the lower line.

NOTE: The number above each box (□) is a reference number. It does not mean a sequence in which diagnoses proceed.



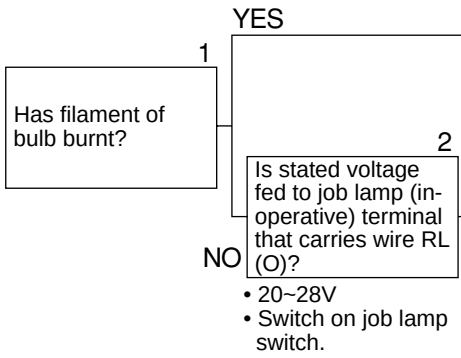
- As a result of a diagnosis, if YES line or NO line directly goes to the description in CAUSE column, take necessary action as indicated in REMEDY column.
- Under each box (□) are normal values and conditions necessary for inspection and adjustment. If the result gives an affirmative answer to the question in the box or agrees with the normal value indicated under the box, go to YES line. Otherwise, go to NO line.
- The normal values were taken from the standard value list.
- For locations of component parts such as relay mentioned in the flow chart, see drawings which show locations of key units. Line colors mentioned in the flow charts are indicated in the electric wiring diagram shown under the flow charts. In the actual machine, each harness is identified by color.

① E-07 Head lamps do not operate

② **★Measure the voltage with the starter switch ON.**
★Before diagnosis, check to see if the fuse has burnt.

③ b) Either right or left lamp does not light
* Wire color codes in parentheses ( ): SW800 ➡ To Machine No.10122
SW850 ➡ To Machine No.10126
Codes with no parentheses ➡ Common to both models

④



Possible cause	Remedy
Bulb filament has burnt.	Renew.
Job lamp earth wire not connected or incorrectly connected.	Repair or renew wire.
High beam: Wire RL from job lamp to job lamp switch terminal 5 (from branch point) not connected or incorrectly connected. Low beam: Wire O from job lamp to relay terminal 5 (from branch point) not connected or incorrectly connected.	Repair or renew wire.

4. Precautions for Diagnosis of Electric Circuit

1. When disconnecting or connecting connectors or harnesses, cut the power supply.

2. Before making a diagnosis, check the connectors or harnesses for poor connection.
   ★ **If a connector is at fault, check it by repeating connection and disconnection several times.**

3. Before proceeding to the next step, reconnect removed connectors or harnesses in place.
   ★**Care must be used for the controller circuit. If the power source is switched on with the connector disconnected, this can cause an incorrect measurement.**

4. When making a diagnosis of circuits (measurement of voltage, resistance, current, test for continuity, etc.), check to see if tester readings vary by shaking connectors or harnesses.
   ★ **If readings vary, a possible cause is a poor connection of the circuit.**

5. For voltage measurement, turn the starter switch ON. For resistance checking, let the switch stay in the Off position.
   ★ **If necessary to take a measurement of resistance by energizing relays or other units with the starter switch ON, necessary instructions are given in the flow charts.**

5. Troubleshooting for Electric System (Mode E)

Wire color code

B	Black	BrY	Brown/ Yellow stripe	L	Blue	LgW	Light green/ White stripe	W	White	YG	Yellow/ Green stripe
BR	Black/ Red stripe	G	Green	LB	Blue/ Black stripe	LgY	Light green/ Yellow stripe	WB	White/ Black stripe	YL	Yellow/ Blue stripe
BW	Black/ White stripe	GB	Green/ Black stripe	LR	Blue/ Red stripe	R	Red	WG	White/ Green stripe	YR	Yellow/ Red stripe
BY	Black/ Yellow stripe	GL	Green/ Blue stripe	LW	Blue/ White stripe	RB	Red/ Black stripe	WL	White/ Blue stripe	YW	Yellow/ White stripe
Br	Brown	GR	Green/ Red stripe	LY	Blue/ Yellow stripe	RG	Red/ Green stripe	WR	White/ Red stripe	Gy	Gray
BrB	Brown/ Black stripe	GW	Green/ White stripe	Lg	Light green	RL	Red/ Blue stripe	WY	White/ Yellow stripe	O	Orange
BrR	Brown/ Red stripe	GY	Green/ Yellow stripe	LgB	Light green/ Black stripe	RW	Red/ White stripe	Y	Yellow	Sb	Sky blue
BrW	Brown/ White stripe			LgR	Light green/ Red stripe	RY	Red/ Yellow stripe	YB	Yellow/ Black stripe	P	Pink

E-01 Engine does not start

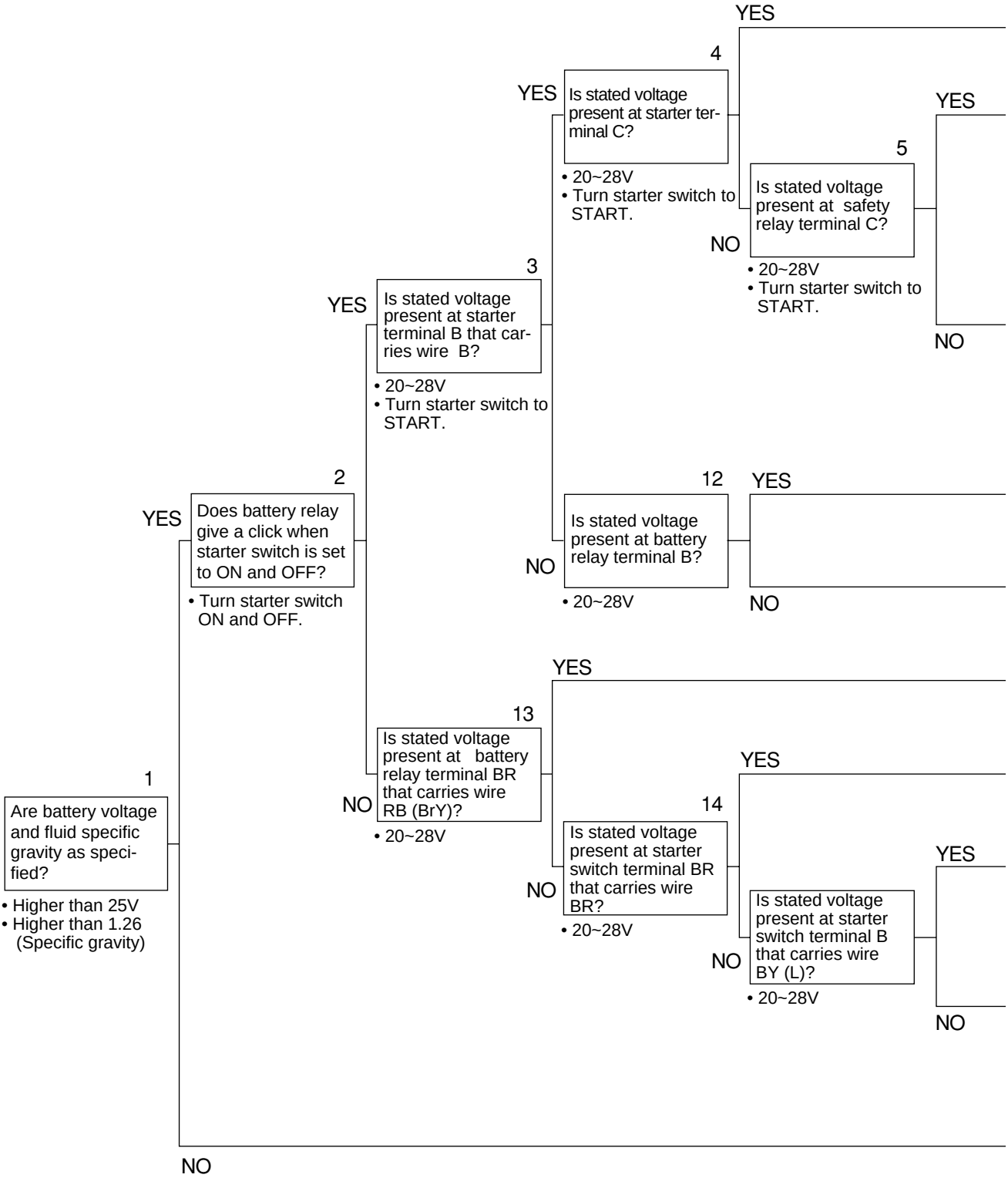
★Set the F-R lever to the neutral position.

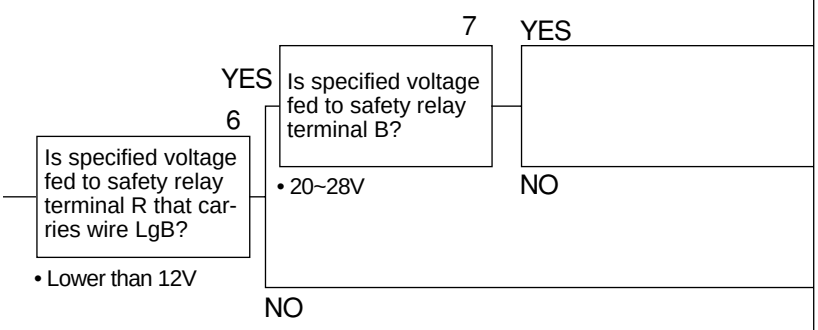
★For voltage measurement, turn the starter switch ON.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Wire color codes having no parentheses ➡ Common to both models

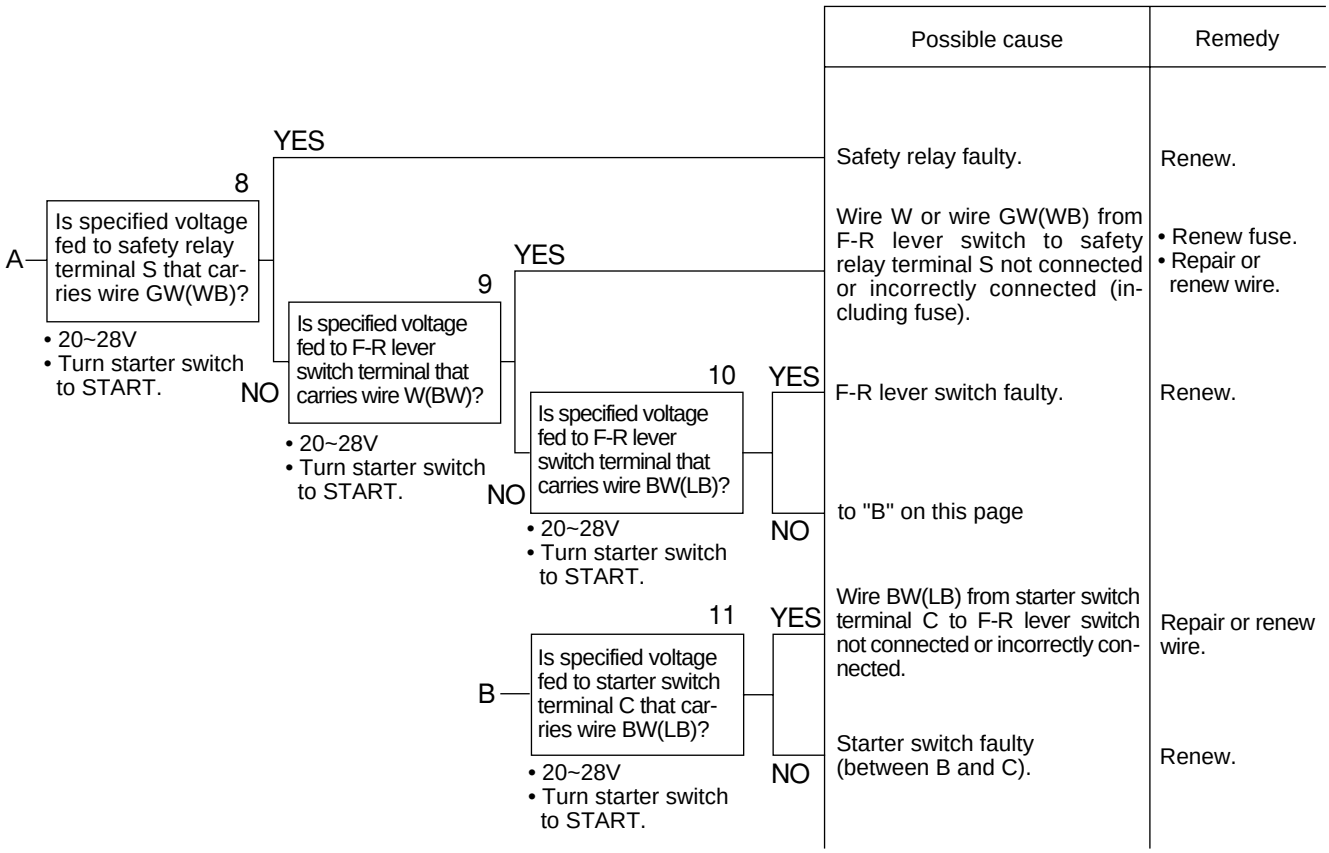
a) Starter is inoperative. (1/2)





Possible cause	Remedy
Starter faulty.	Renew.
Wire from safety relay terminal C to starter terminal C not connected or incorrectly connected.	Repair or renew wire.
To A on page 4-204	
Wire from starter terminal B to safety relay terminal B not connected or incorrectly connected.	Repair or renew wire.
Alternator faulty (including regulator).	Renew.
Wire B from battery relay to starter not connected or incorrectly connected.	Repair or renew wire.
Battery relay contact faulty.	Renew.
Battery relay coil faulty.	Renew.
Wire BR or RB(BrY) from starter switch terminal BR to battery relay terminal BR not connected or incorrectly connected (including diode).	Repair or renew wire.
Starter switch faulty (between terminals B and BR).	Renew.
Wire BY(L) or WG from battery relay to starter switch terminal B not connected or incorrectly connected.	Repair or renew wire.
Wire from battery to battery relay not connected or incorrectly connected.	Repair or renew cable.
Battery capacity lowered.	Charge or renew.

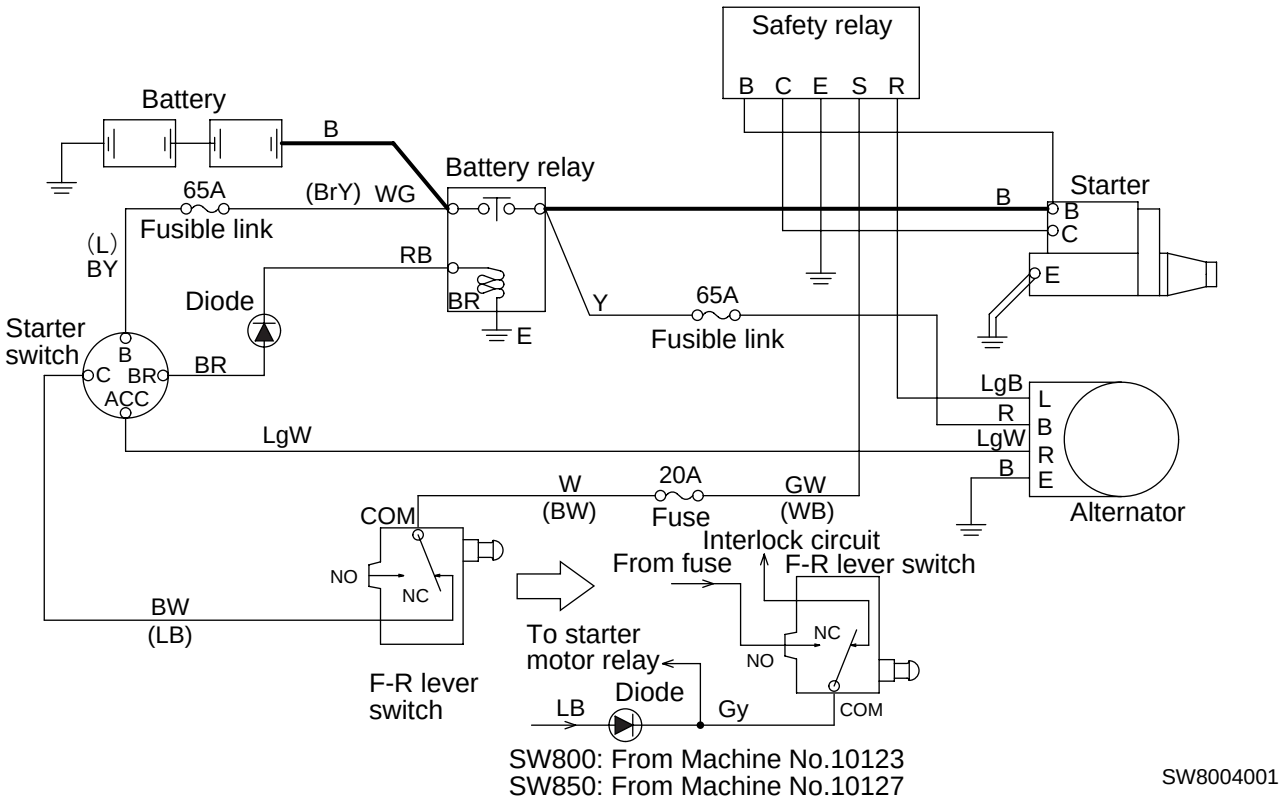
a) Starter is inoperative. (2/2)



Electric wiring diagram for mode E-01 (a)

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



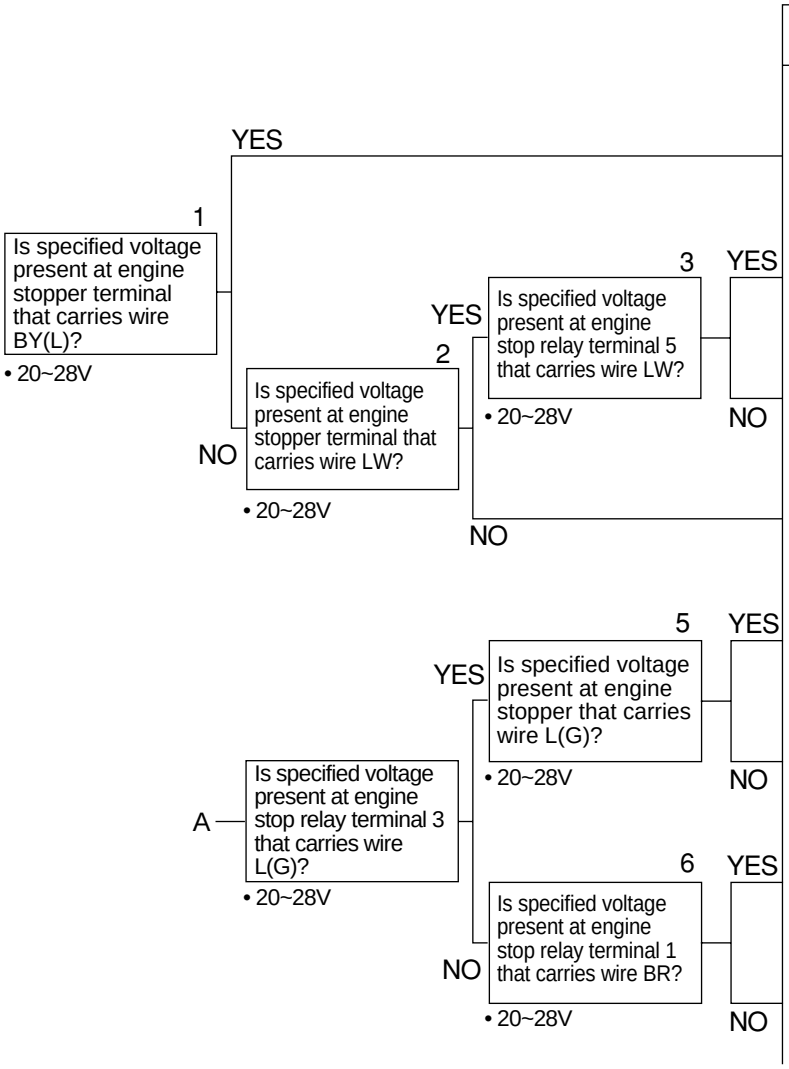
b) Engine stopper does not operate.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

★It is assumed that the starter operation is normal.

★Measure the voltage with the starter switch ON.

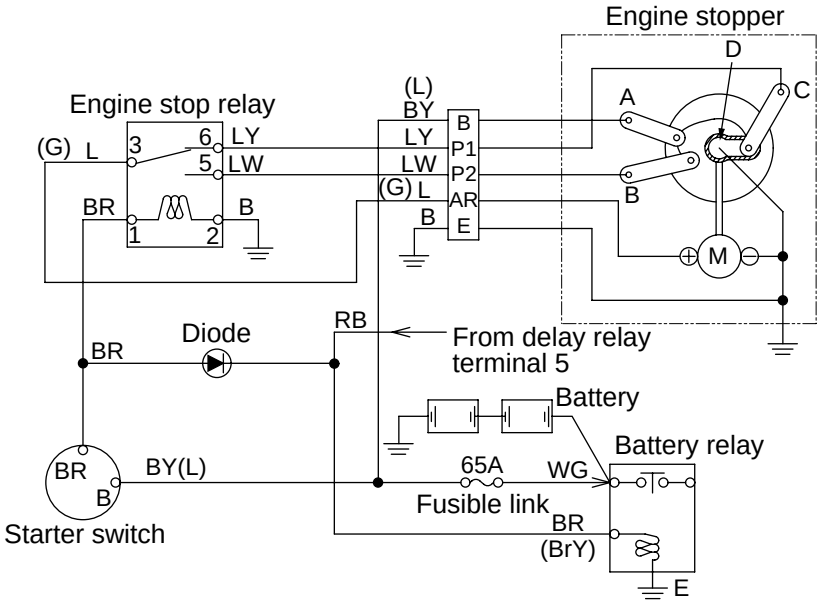


Possible cause	Remedy
Wire BY(L) from engine stopper to battery relay (to branch point) not connected or incorrectly connected.	Repair or renew wires.
To "A" on this page	
Wire LW from engine stopper to engine stop relay terminal 5 not connected or incorrectly connected.	Repair or renew wires.
Engine stopper faulty.	Renew.
Engine stopper faulty.	Renew.
Wire L(G) from engine stop relay terminal 3 to engine stopper not connected or incorrectly connected.	Repair or renew wires.
Engine stop relay faulty (including earth wire).	Renew.
Wire BR from engine stop relay terminal 1 to starter switch terminal BR not connected or incorrectly connected.	Repair or renew wires.

Electric wiring diagram for mode E-01 (b) and E-02

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

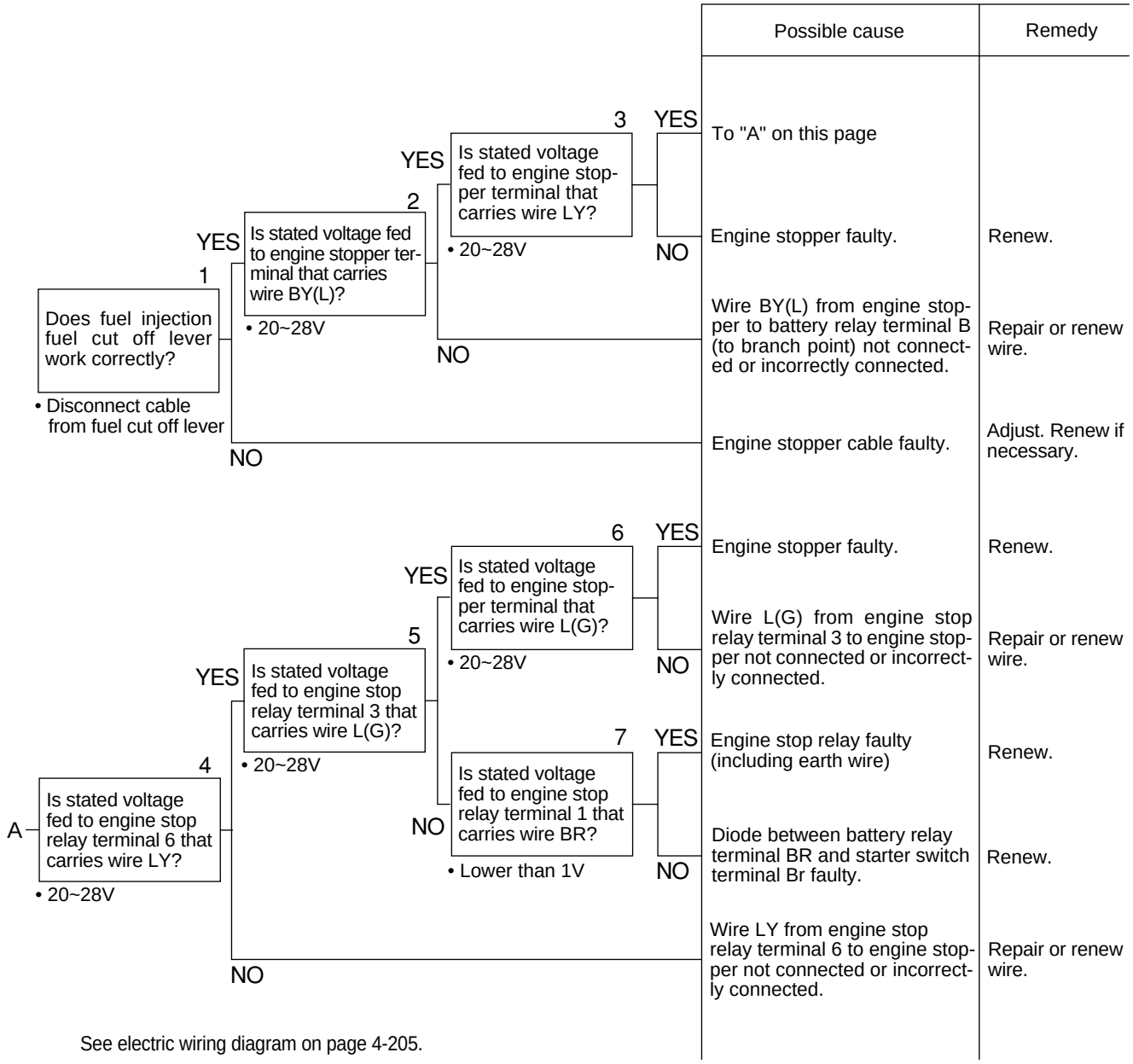


SW8004002

E-02 Engine does not stop

★Measure the voltage with the starter switch OFF.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127
Codes with no parentheses ➡ Common to both models



See electric wiring diagram on page 4-205.

E-03 Glow plugs do not become red-hot (Engine is hard to start)

★It is assumed that the starter operation is normal.

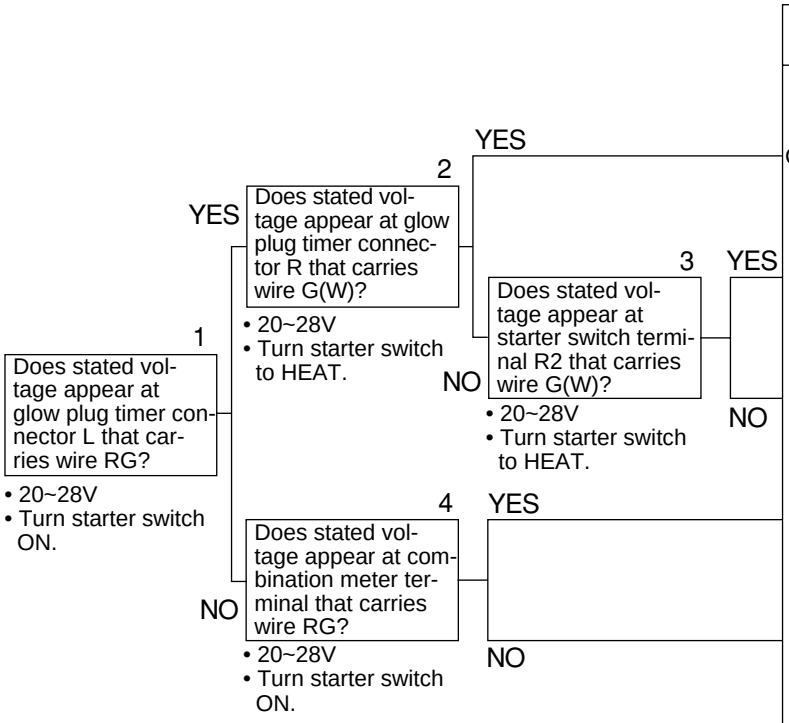
★Measure the voltage with the starter switch ON.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

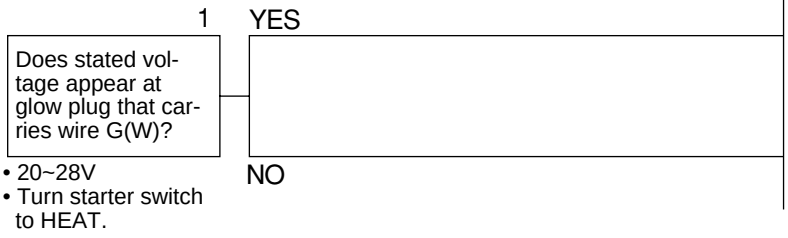
a) Glow indicator does not become bright.

★The glow indicator should become bright when the starter switch is turned to the HEAT position, and come off when preheating is complete.



Possible cause	Remedy
Glow plug timer faulty.	Renew.
Wire G(W) from starter switch terminal R2 to glow plug timer connector not connected or incorrectly connected.	Repair or renew wire.
Starter switch faulty (between terminals B and R2).	Renew.
Wire RG from glow plug timer connector L to combination meter not connected or incorrectly connected.	Repair or renew wire.
Bulb filament blown or wire YW(WL) from fuse to combination meter not connected or incorrectly connected.	• Renew lamp • Repair or renew wire.

b) Indicator becomes bright, but engine does not start smoothly.

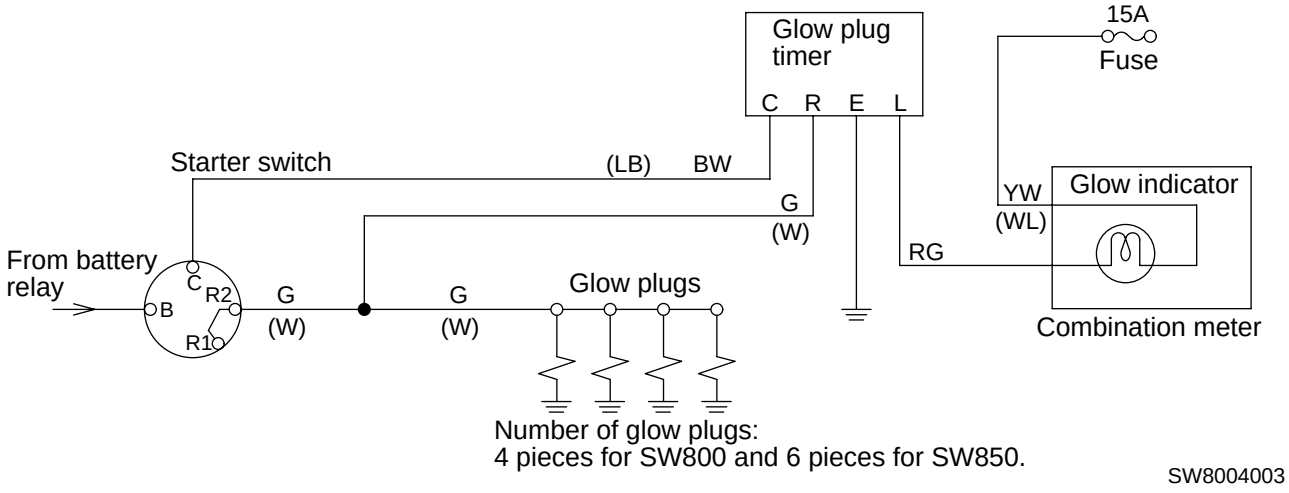


Possible cause	Remedy
Some plugs falulty.	Renew.
Wire G(W) from starter switch terminal R2 to glow plugs not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-03

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

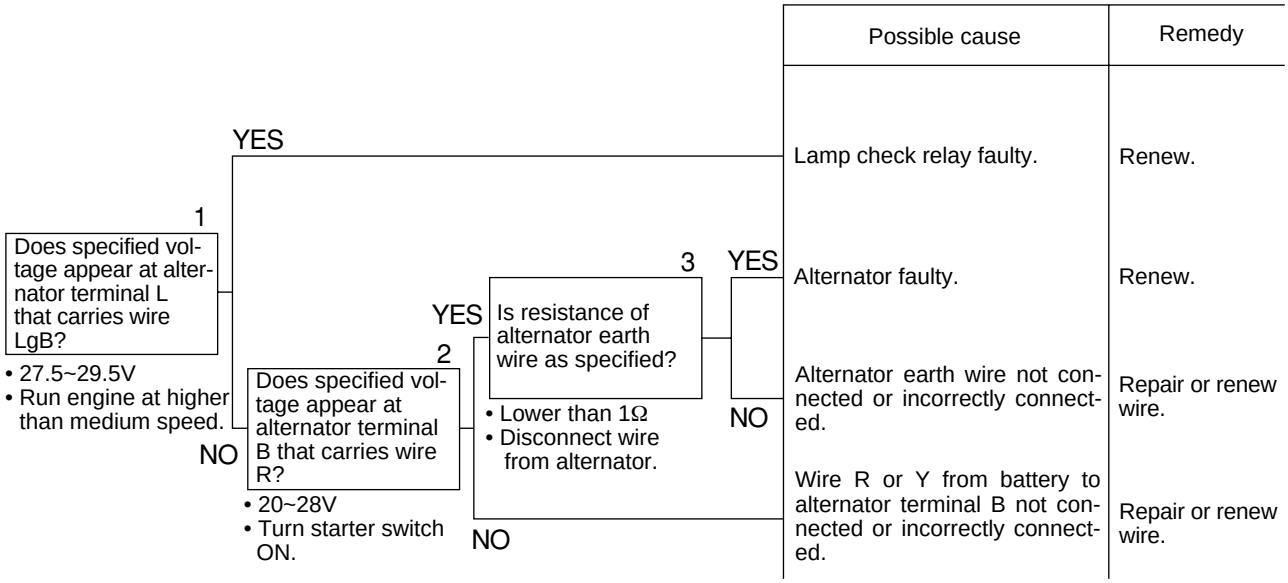


SW8004003

E-04 No charging (charge lamp stays bright.)

★The voltage measurement should be taken with the starter switch ON.

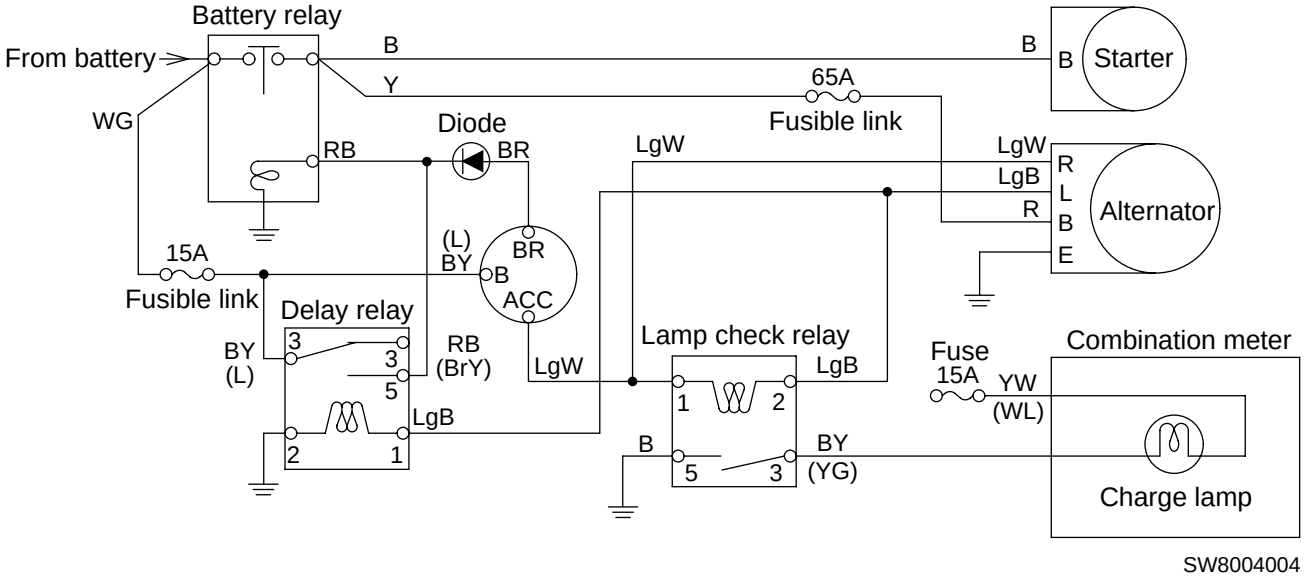
★First, check to see if fuse has burnt.



Electric wiring diagram for mode E-04

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



SW8004004

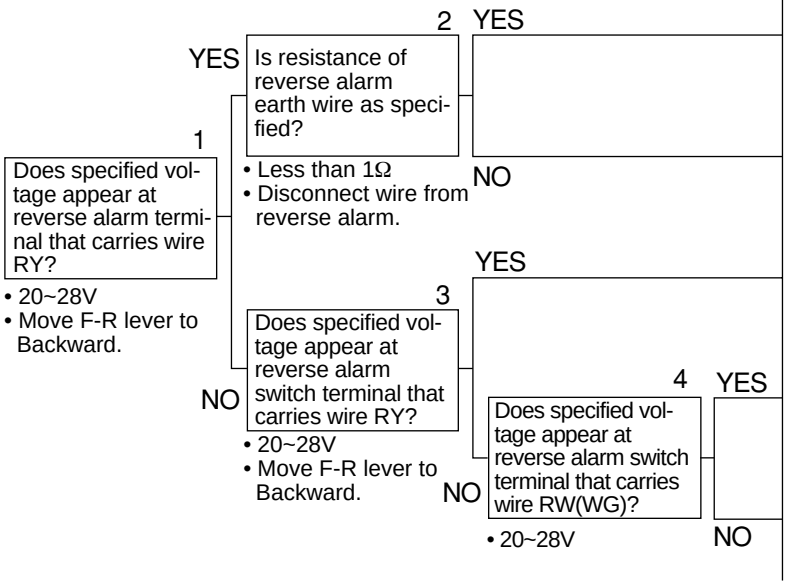
E-05 Reverse alarm does not sound

★First, check that the fuse is not blown.

★The voltage measurement should be taken with the starter switch ON.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

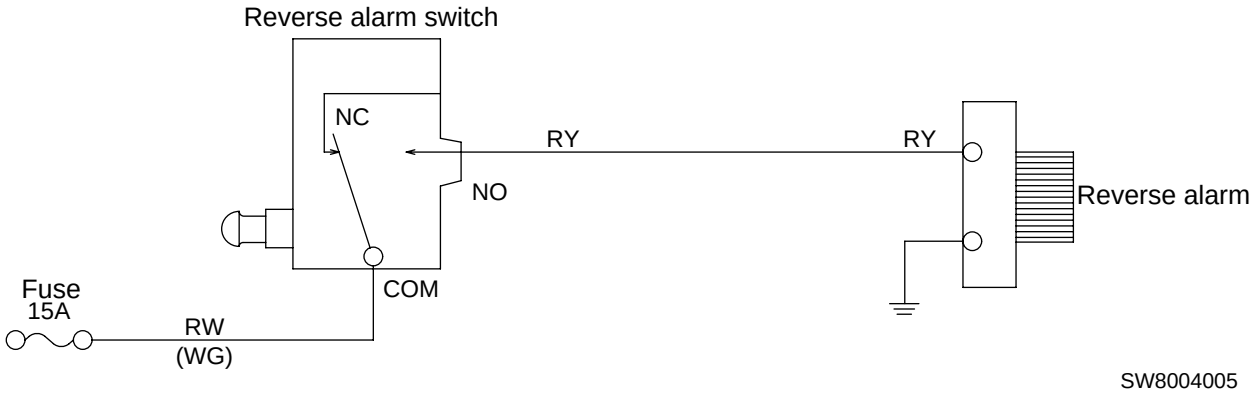


Possible cause	Remedy
Reverse alarm faulty.	Renew.
Reverse alarm earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire RY from reverse alarm switch to reverse alarm not connected or incorrectly connected.	Repair or renew wire.
Reverse alarm switch faulty.	Renew.
Wire RW(WG) from reverse alarm switch to fuse not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-05

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

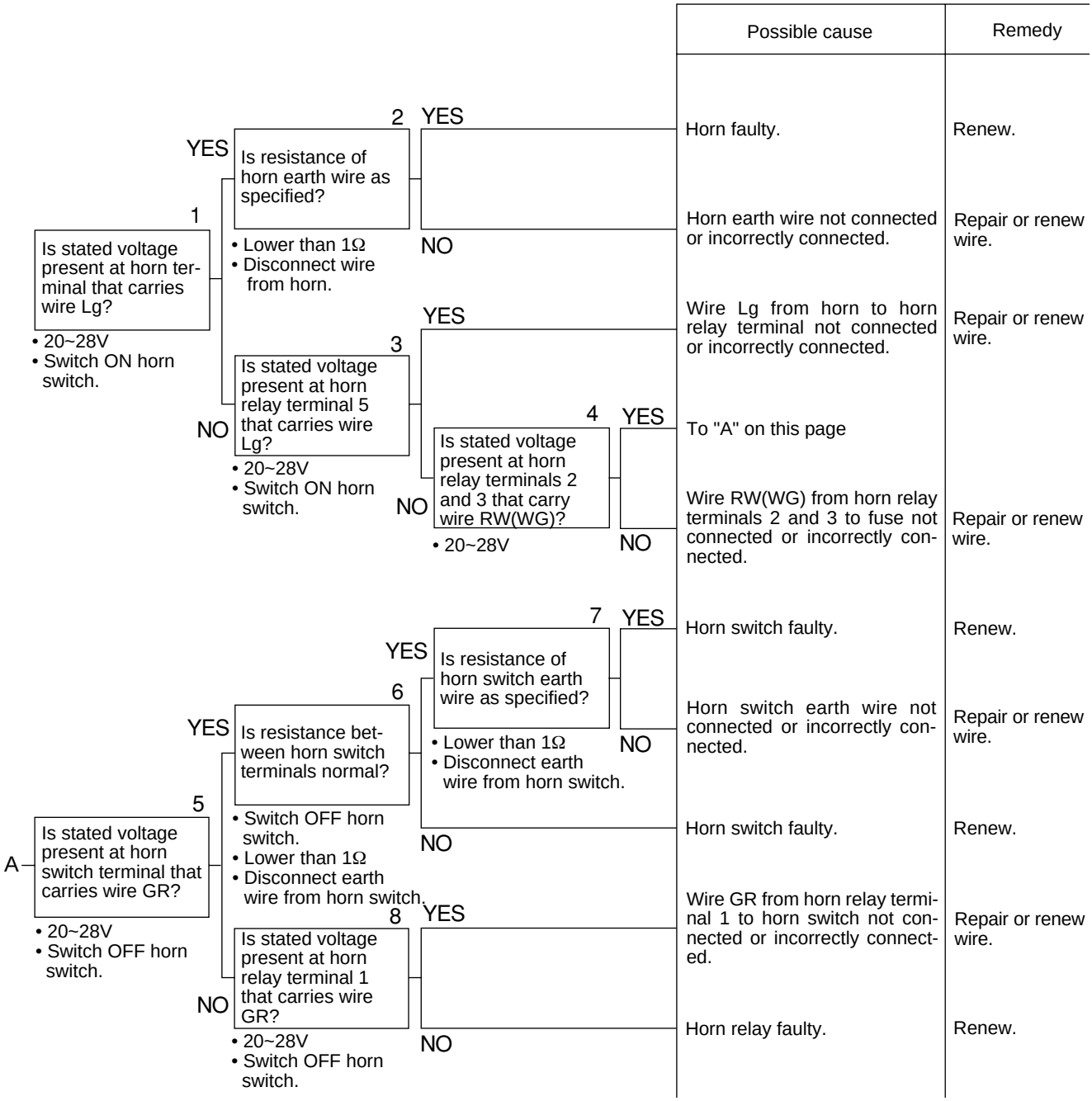


E-06 Horn does not sound

★First, check that fuse is not blown.

★Take the voltage measurement with the starter switch ON.

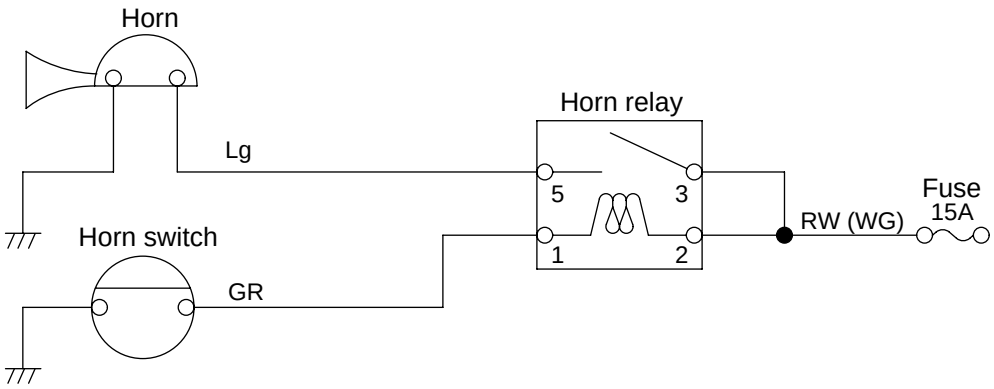
* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127
Codes with no parentheses ➡ Common to both models



Electric wiring diagram for mode E-06

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

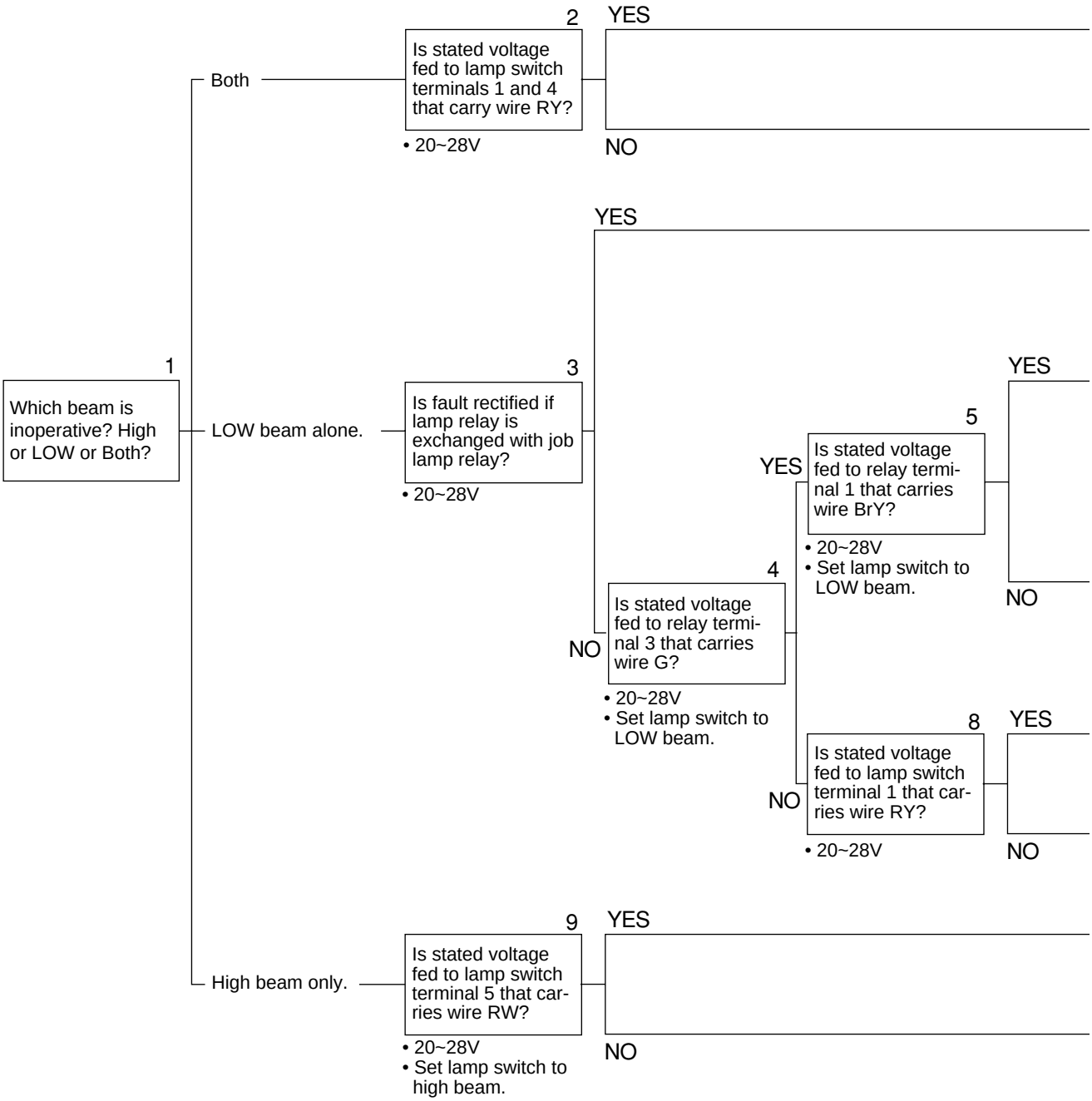


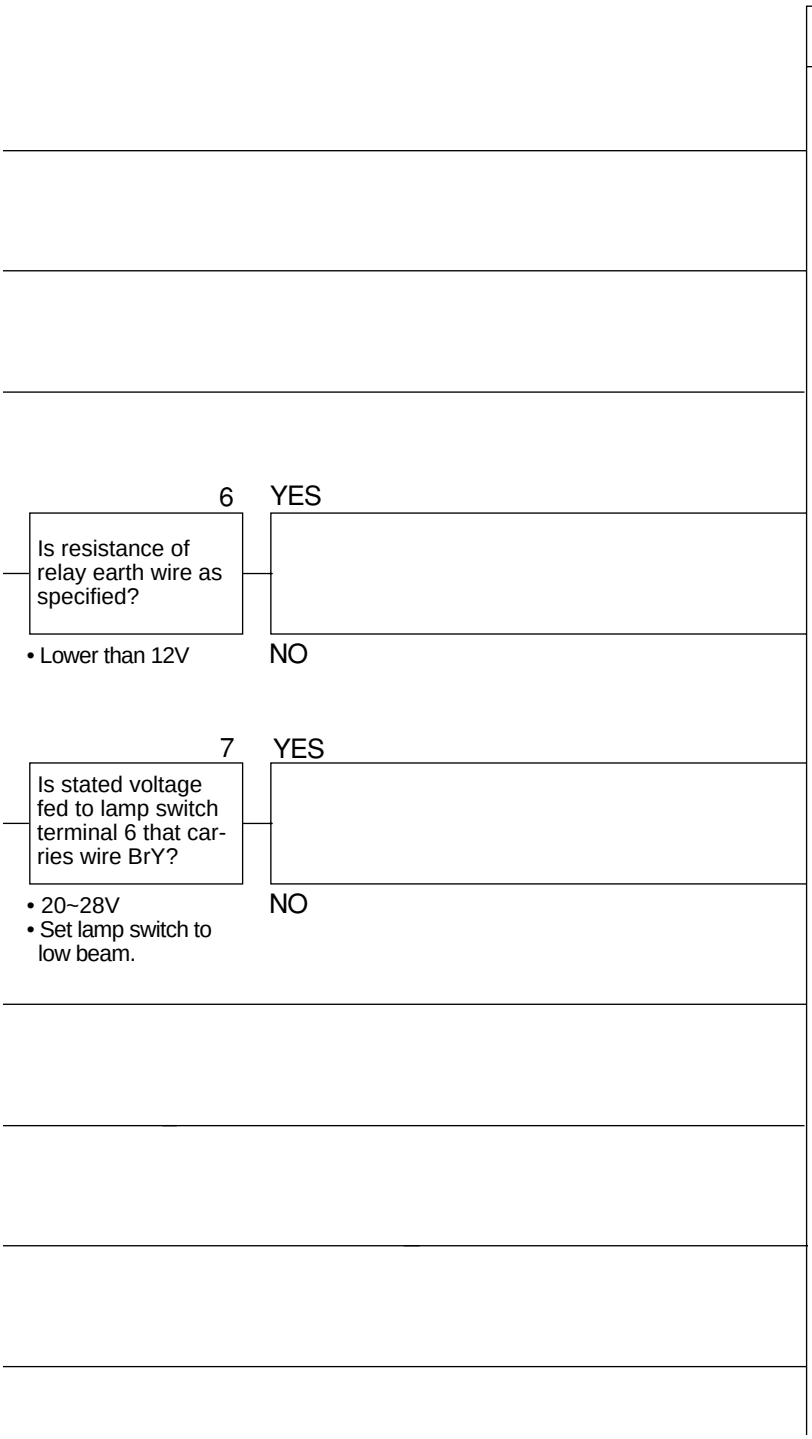
E-07 Headlamps do not operate

★Measure the voltage with the starter switch ON.

★Before diagnosis, check to see if the fuse has burnt.

a) Lamp on each side does not come on.
(SW800:To Machine No.10122 SW850: To Machine No.10126)



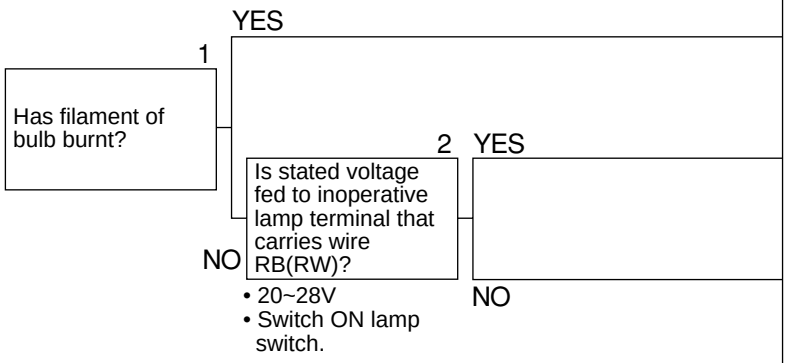


Possible cause	Remedy
Lamp switch defective.	Renew.
Wire RY from fuse to lamp switch terminals 1 and 4 not connected or incorrectly connected.	Repair or renew wire.
Relay defective.	Renew.
Wire RB from relay terminal 5 to head lamp (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire BrY from lamp switch terminal 6 to relay terminal 1 not connected or incorrectly connected.	Repair or renew wire.
Lamp switch defective.	Renew.
Lamp switch defective.	Renew.
Wire RY from lamp switch terminal 1 to fuse (from branch point) not connected or incorrectly connected.	Repair or renew wire.
Wire RW from lamp switch terminal 5 to lamp (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Lamp switch defective.	Renew.

b) Either right or left lamp does not light

* Wire color codes in parentheses ( ): SW800 ➡ To Machine No.10122
SW850 ➡ To Machine No.10126

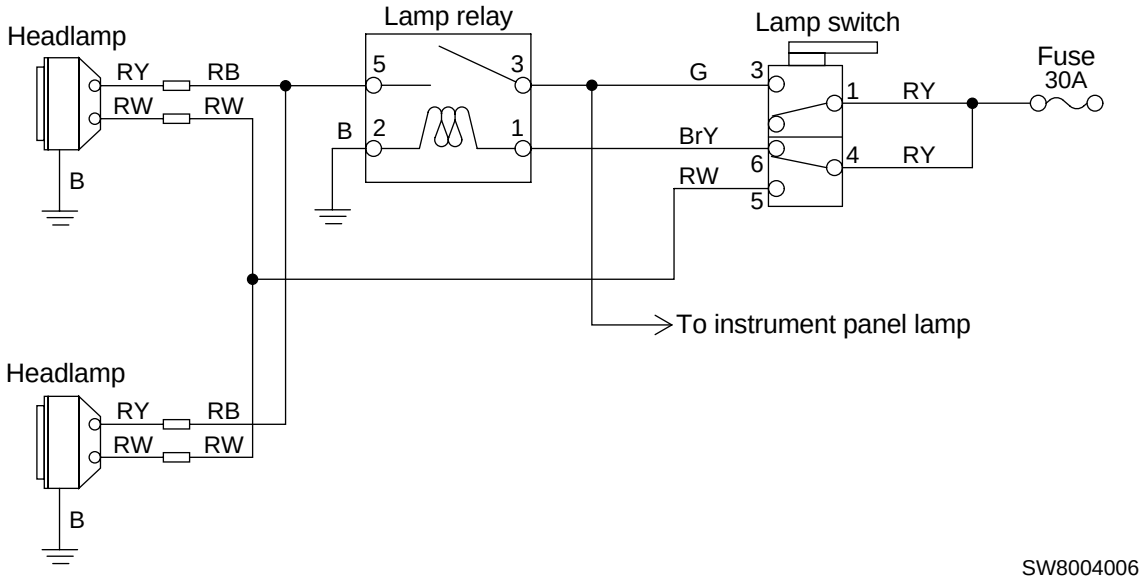
Codes with no parentheses ➡ Common to both models



Possible cause	Remedy
Filament has burnt.	Renew.
Lamp earth wire not connected or incorrectly connected.	Repair or renew wire.
High beam: Wire RW from lamp to lamp switch terminal 5 (from branch point) not connected or incorrectly connected. Low beam: Wire RB from lamp to relay terminal 5 (from branch point) not connected or incorrectly connected.	Repair or renew wire.

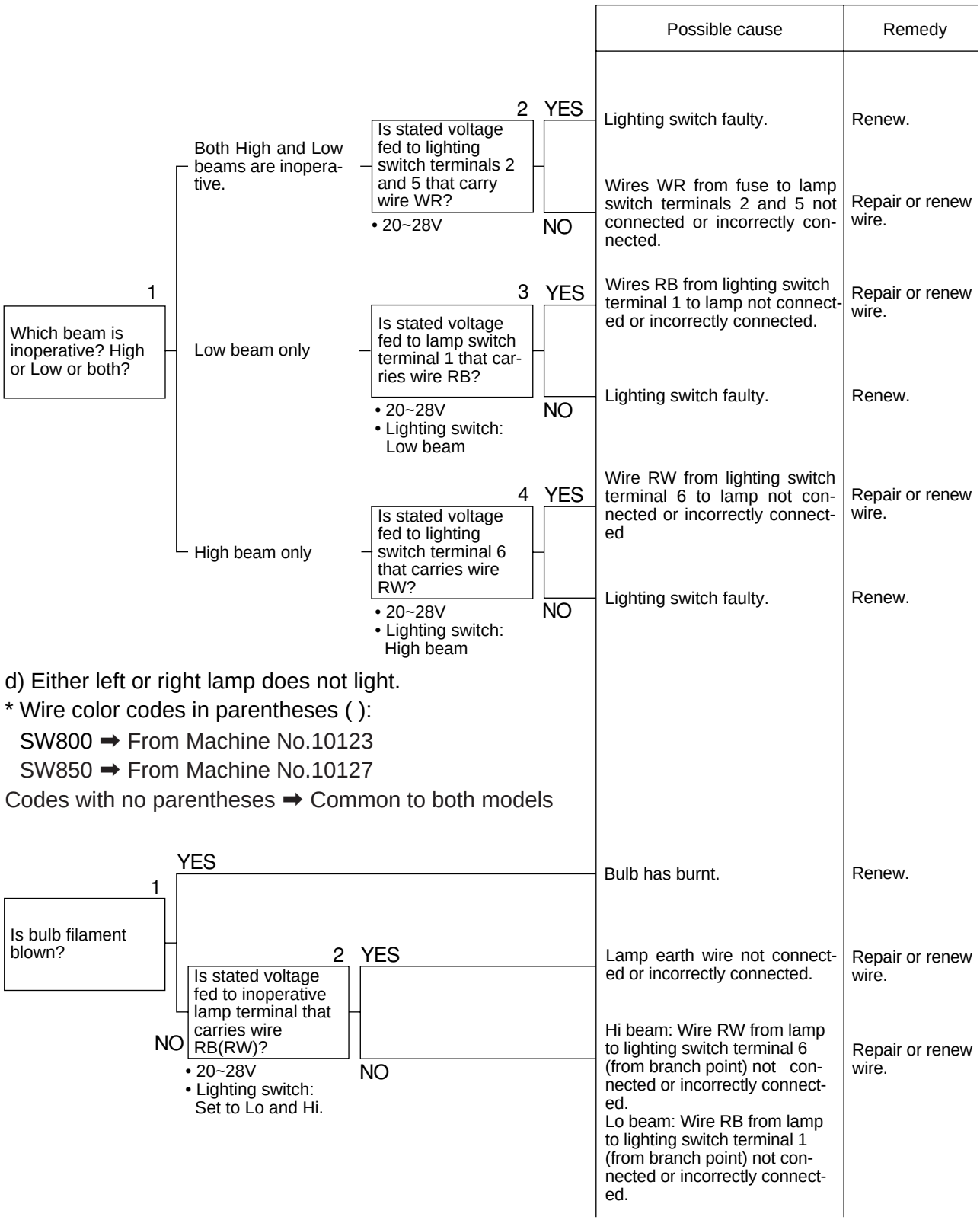
Electric wiring diagram for mode E-07 (a), (b)

(SW800: To Machine No.10122 SW850: To Machine No.10126)



SW8004006

c). Both left and right lamps do not come on
(SW800: From Machine No.10123 SW850: From Machine No. 10127).

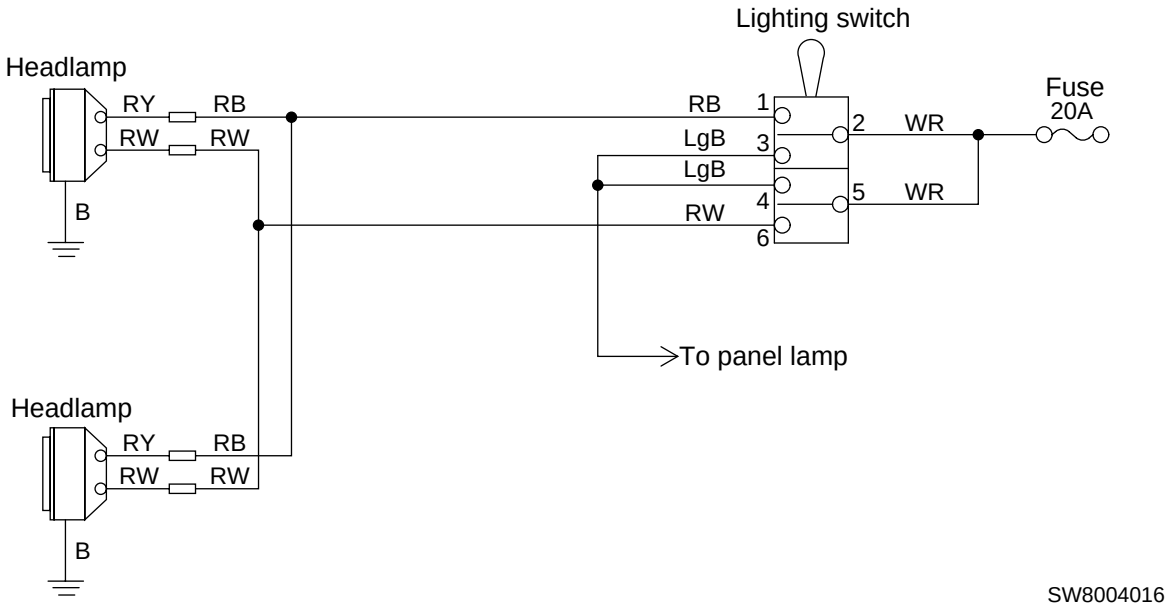


d) Either left or right lamp does not light.

* Wire color codes in parentheses ( ):
SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127
Codes with no parentheses ➡ Common to both models

Electric wiring diagram for mode E-07 (c), (d)

(SW800: From Machine No.10123 SW850: From Machine No.10127)

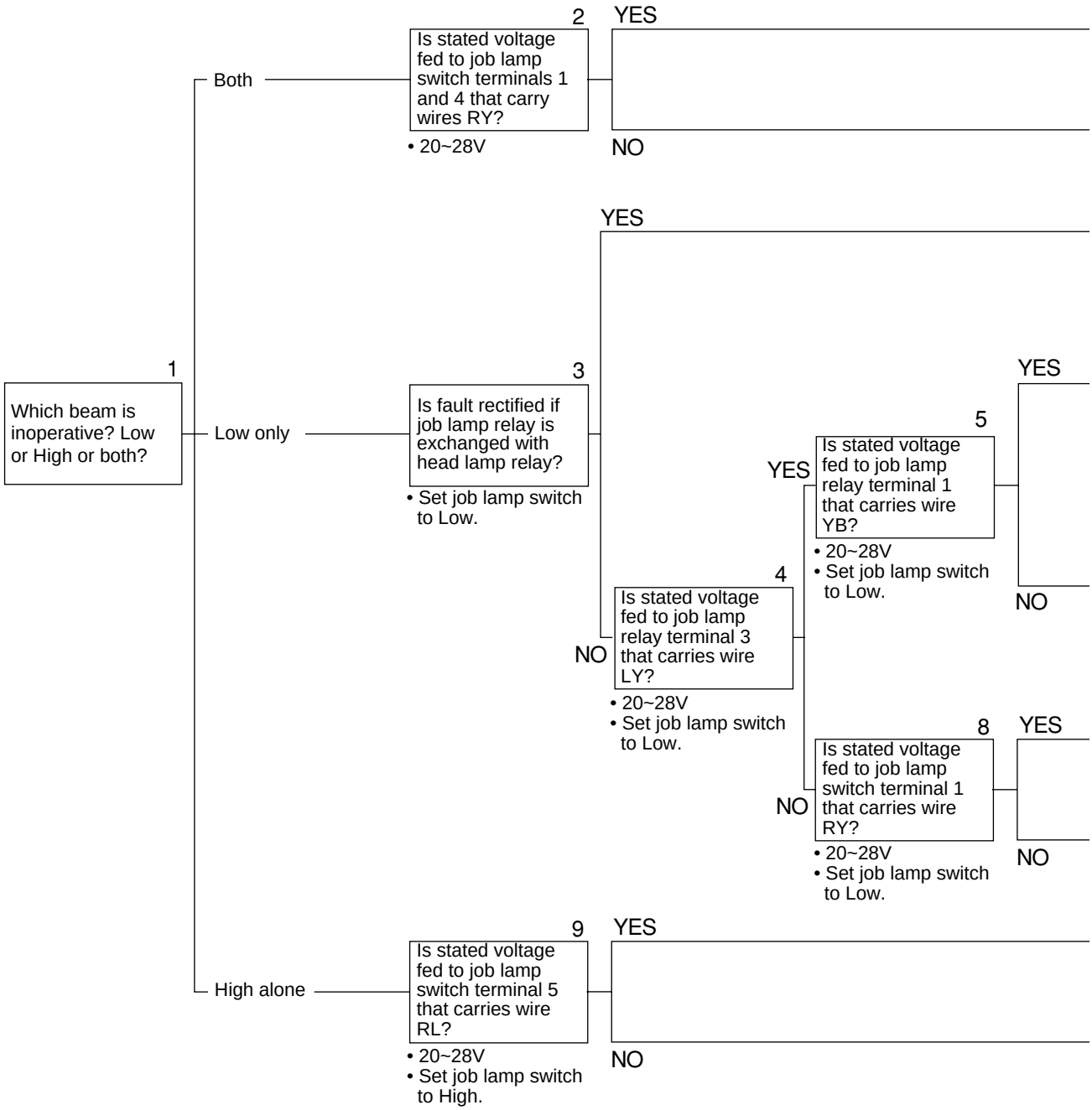


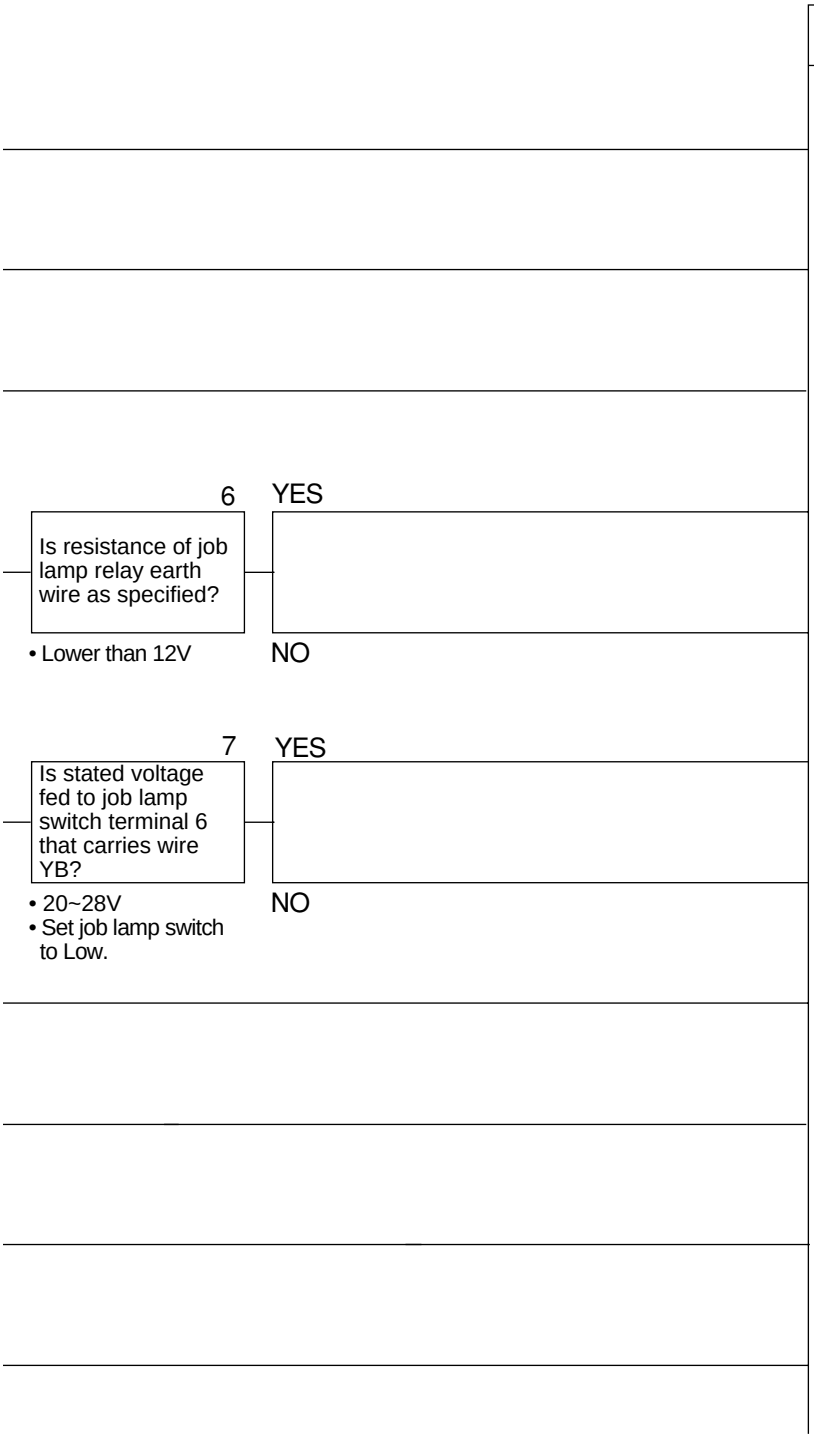
E-08 Job lamps do not come on

★Measure the voltage with the starter switch ON.

★First, check to see if the fuse has burnt.

a) Both left and right lamps do not come on.
(SW800:To Machine No.10122 SW850: To Machine No.10126)



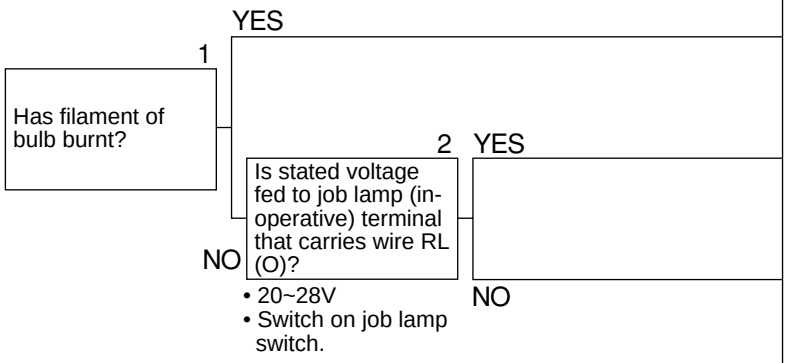


Possible cause	Remedy
Job lamp switch defective.	Renew.
Wire RY from fuse to job lamp switch terminals 1 and 4 not connected or incorrectly connected.	Repair or renew wire.
Job lamp relay defective.	Renew.
Wire O from job lamp relay terminal 5 to job lamps (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Job lamp relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire YB from job lamp switch terminal 6 to job lamp relay terminal 1 not connected or incorrectly connected.	Repair or renew wire.
Job lamp switch defective.	Renew.
Job lamp switch defective.	Renew.
Wire RY from job lamp switch terminal 1 to fuse (from branch point) not connected or incorrectly connected.	Repair or renew wire.
Wire RL from job lamp switch terminal 5 to lamps (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Job lamp switch defective.	Renew.

b) Eigher left or right lamp does not come on.

* Wire color codes in parentheses ( ): SW800 ➡ To Machine No.10122
SW850 ➡ To Machine No.10126

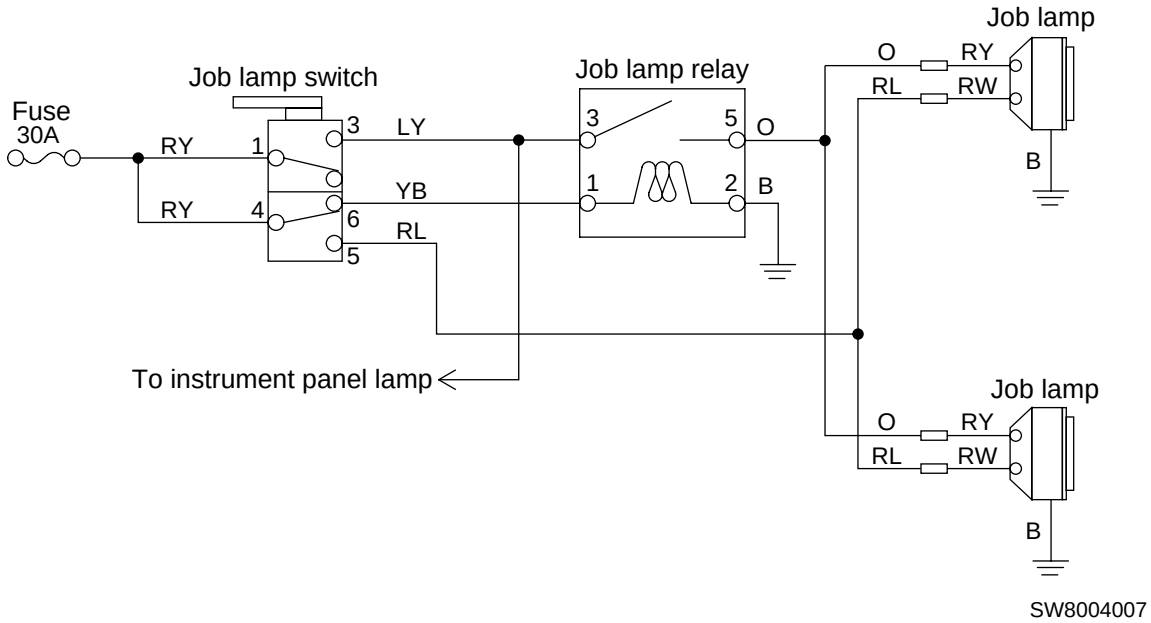
Codes with no parentheses ➡ Common to both models



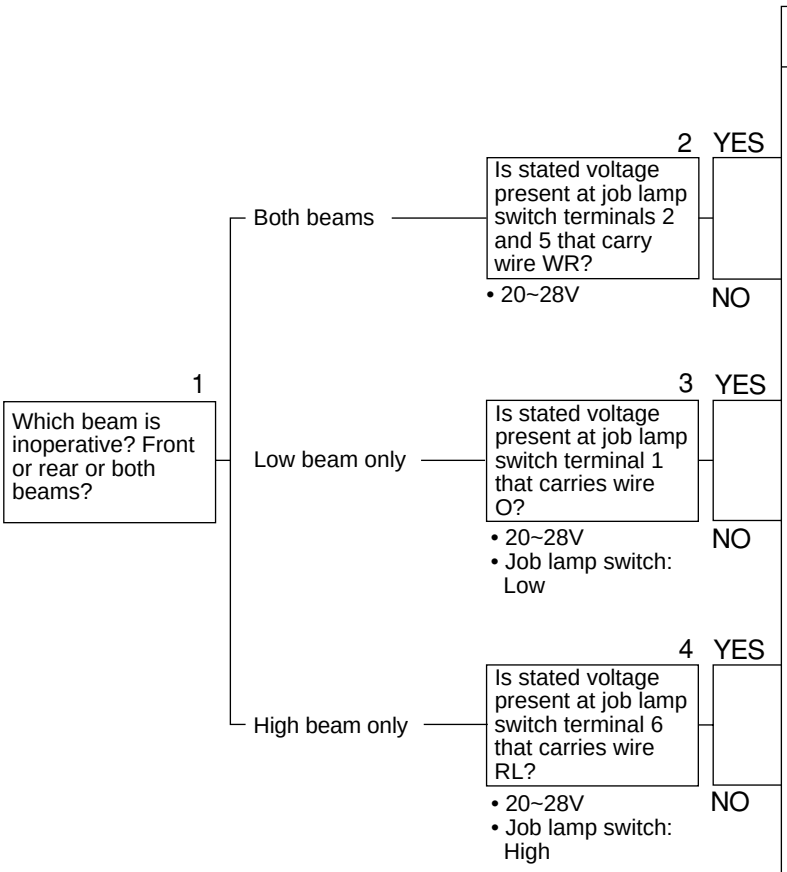
Possible cause	Remedy
Bulb filament has burnt.	Renew.
Job lamp earth wire not connected or incorrectly connected.	Repair or renew wire.
High beam: Wire RL from job lamp to job lamp switch terminal 5 (from branch point) not connected or incorrectly connected. Low beam: Wire O from job lamp to relay terminal 5 (from branch point) not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-08

(SW800: To Machine No.10122 SW850: To Machine No.10126)



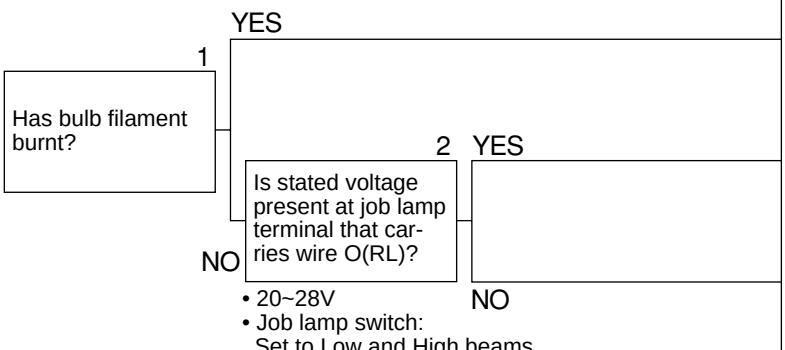
c). Both lamps do not come on.
(SW800: From Machine No.10123 SW850: From Machine No. 10127).



Possible cause	Remedy
Job lamp switch is faulty.	Renew.
Wire WR from fuse to job lamp switch terminals 2 and 5 not connected or incorrectly connected (including fuse).	Repair or renew wire.
Wire O from job lamp switch terminal 1 to job lamps not connected or incorrectly connected (including fuse).	Repair or renew wire.
Job lamp switch is faulty.	Renew.
Wire RL from job lamp switch terminal 6 to job lamps not connected or incorrectly connected.	Repair or renew wire.
Job lamp switch is faulty.	Renew.

d) Either left or right lamp does not come on.

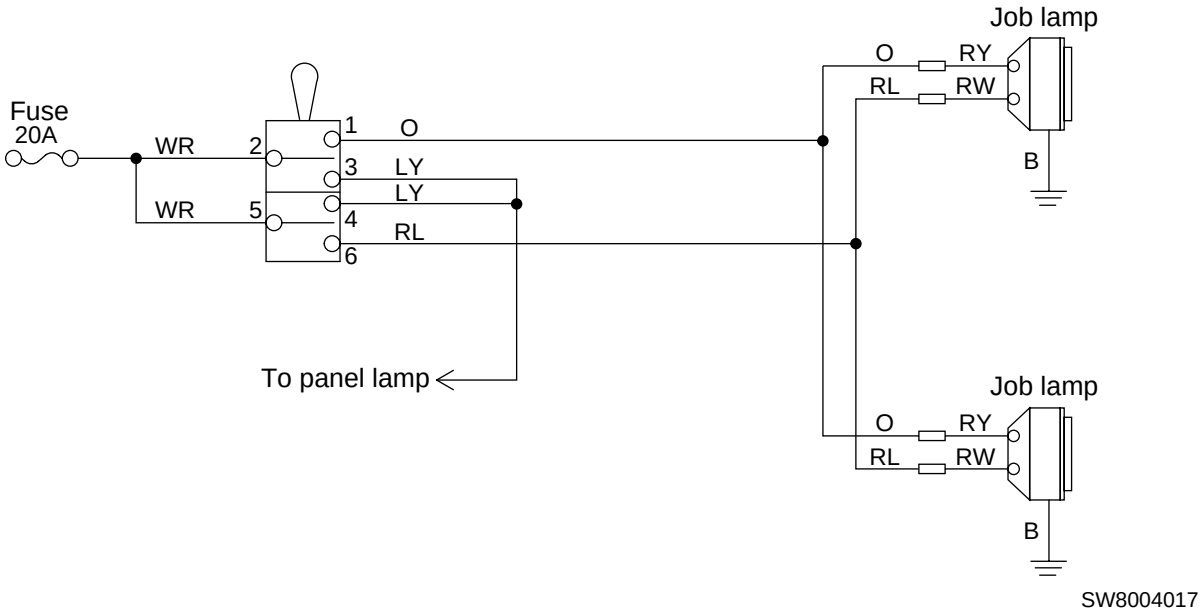
* Wire color codes in parentheses ( ):
SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127
Codes with no parentheses ➡ Common to both models



Possible cause	Remedy
Bulb filament has burnt.	Renew.
Job lamp earth wire not connected or incorrectly connected.	Repair or renew wire.
High beam: Wire RL from job lamp to job lamp switch terminal 6 (from branch point) not connected or incorrectly connected. Low beam: Wire O from job lamp to job lamp switch terminal 1 (from branch point) not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-08 (c), (d)

(SW800: From Machine No.10123 SW850: From Machine No.10127)



E-09 Vibrator does not operate (Modes E-09 a) to mode E-09 e) are common to both models)

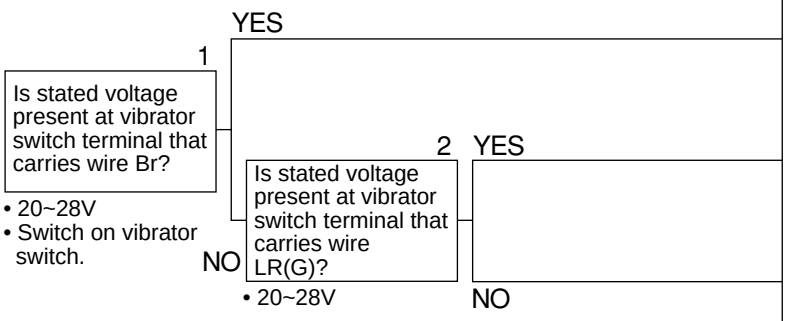
★Measure the voltage with the starter switch ON.

★First, check that fuse has not burnt.

a). Both left and right side vibrators are inoperative.

* Wire color codes in parentheses ( ): SW800 ➡ To Machine No.10122
SW850 ➡ To Machine No.10126

Codes with no parentheses ➡ Common to both models



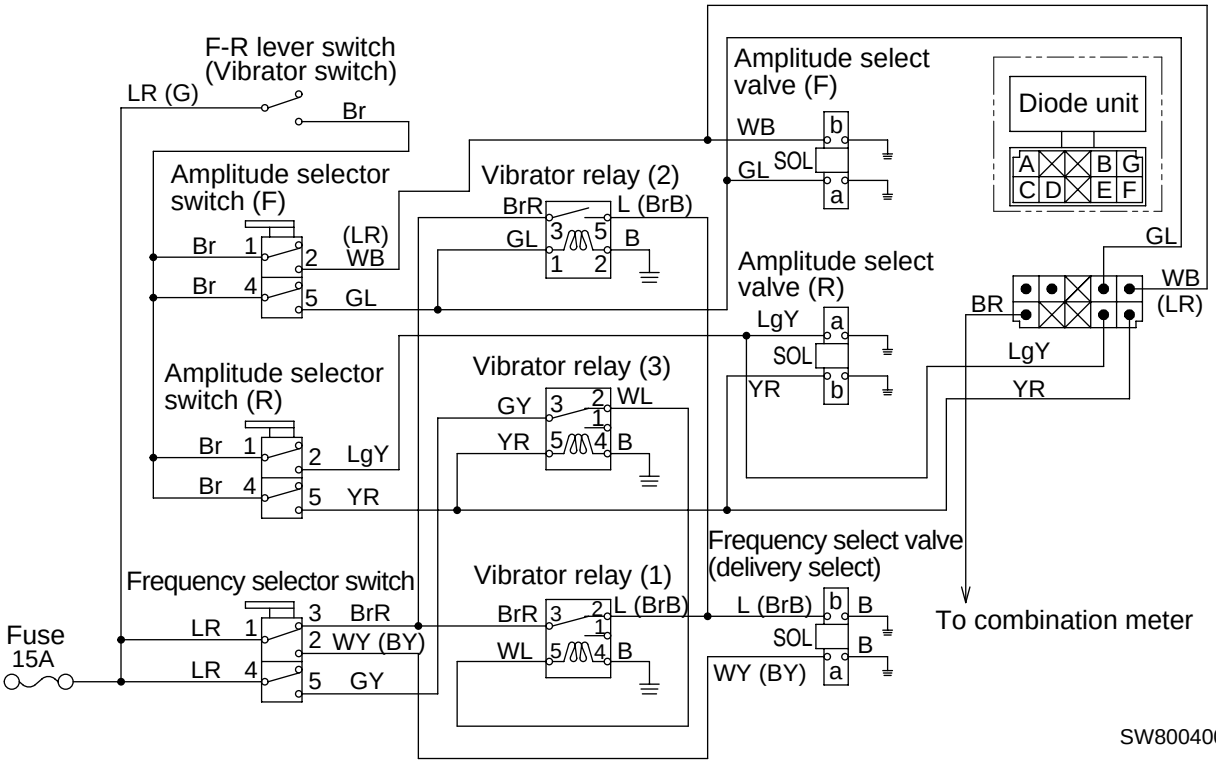
Possible cause	Remedy
Wire Br from vibrator switch to amplitude selector switch (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Vibrator switch defective.	Renew.
***1**: Wire LR from fuse to vibrator switch not connected or incorrectly connected. ***2**: Wire G from CONT/AUTO selector switch terminal 3 to F-R lever switch (vibrator switch) not connected or incorrectly connected. See Electric wiring diagram for modes E-09 (f), (g) and (h).	Repair or renew wire.

***1: SW800 To Machine No.10122 SW850 To Machine No.10126**
***2: SW850 From Machine No.10123 SW850 From Machine No.10127**

Electric wiring diagram for mode E-09 (a), (b), (c), (d) and (e)

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



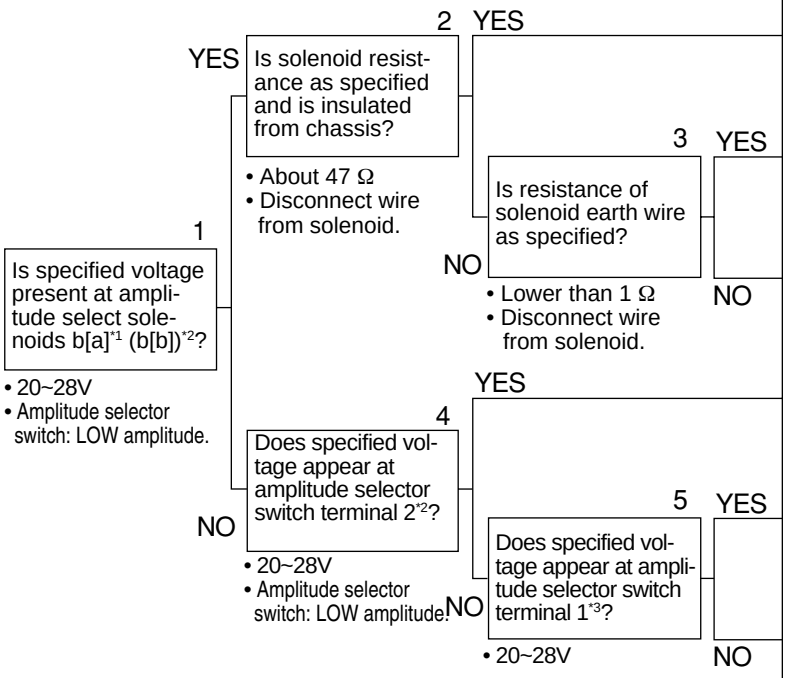
b). LOW amplitude not selected.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

Solenoid code letters in brakets [ ] indicate solenoids for rear vibrators

★Diagnose with vibrator switch ON.



Possible cause	Remedy
Solenoid valve defective. (See H-03)	
Amplitude select valve solenoid defective	Renew.
Solenoid earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire*2 from solenoid to amplitude selector switch terminal 2 not connected or incorrectly connected.	Repair or renew wire.
Wire*3 from vibrator switch to amplitude selector switch terminal 1 not connected or incorrectly connected.	Repair or renew wire.
Amplitude selector switch on inoperative side defective.	Renew.

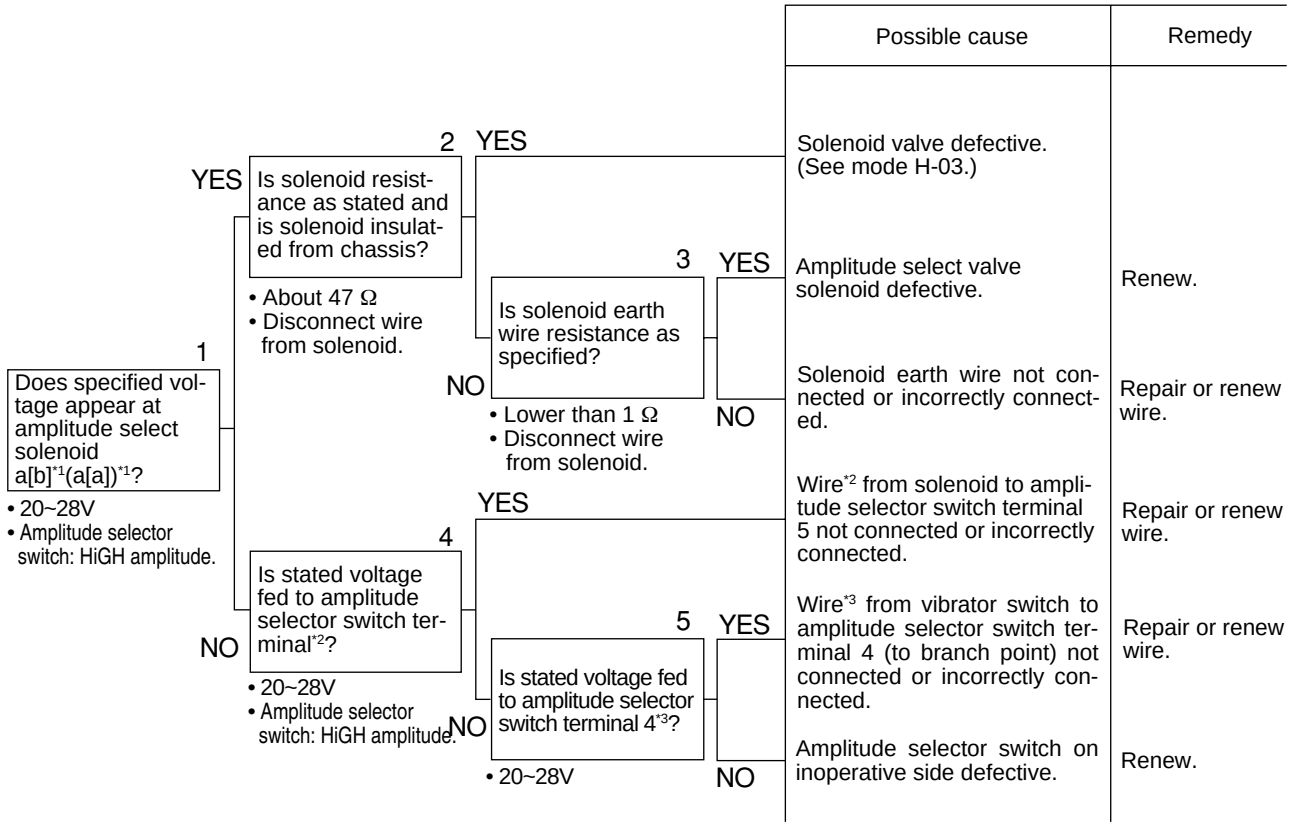
*1 Solenoids which function when Low amplitude is selected.
(SW800:To Machine No.10122 SW850: To Machine No.10126)
- Front: b Wire color code WB
- Rear: a Wire color code LgY

(SW800: From Machine No.10123 SW850 From Machine No.10127)
- Front: b Wire color code WB
- Rear: b Wire color code LgY

*2 Color code of wire connected to amplitude selector switch terminal 2
- Front: WB(LR)
- Rear: LgY

*3 Color code of wire connected to amplitude selector switch terminal 1
- Front: Br
- Rear: Br

c). HIGH amplitude not selected.
Solenoid code letters in brakets [ ] solenoids for rear vibrators
★Diagnose with vibrator switch ON.



*1 Solenoids which function when HIGH amplitude is selected.
(SW800:To Machine No.10122 SW850: To Machine No.10126)
- Front: a Wire color code GL
- Rear: b Wire color code YR

(SW800: From Machine No.10123 SW850 From Machine No.10127)
- Front: a Wire color code GL
- Rear: a Wire color code YR

*2 Color code of wire connected to amplitude selector switch terminal 5
- Front: GL
- Rear: YR

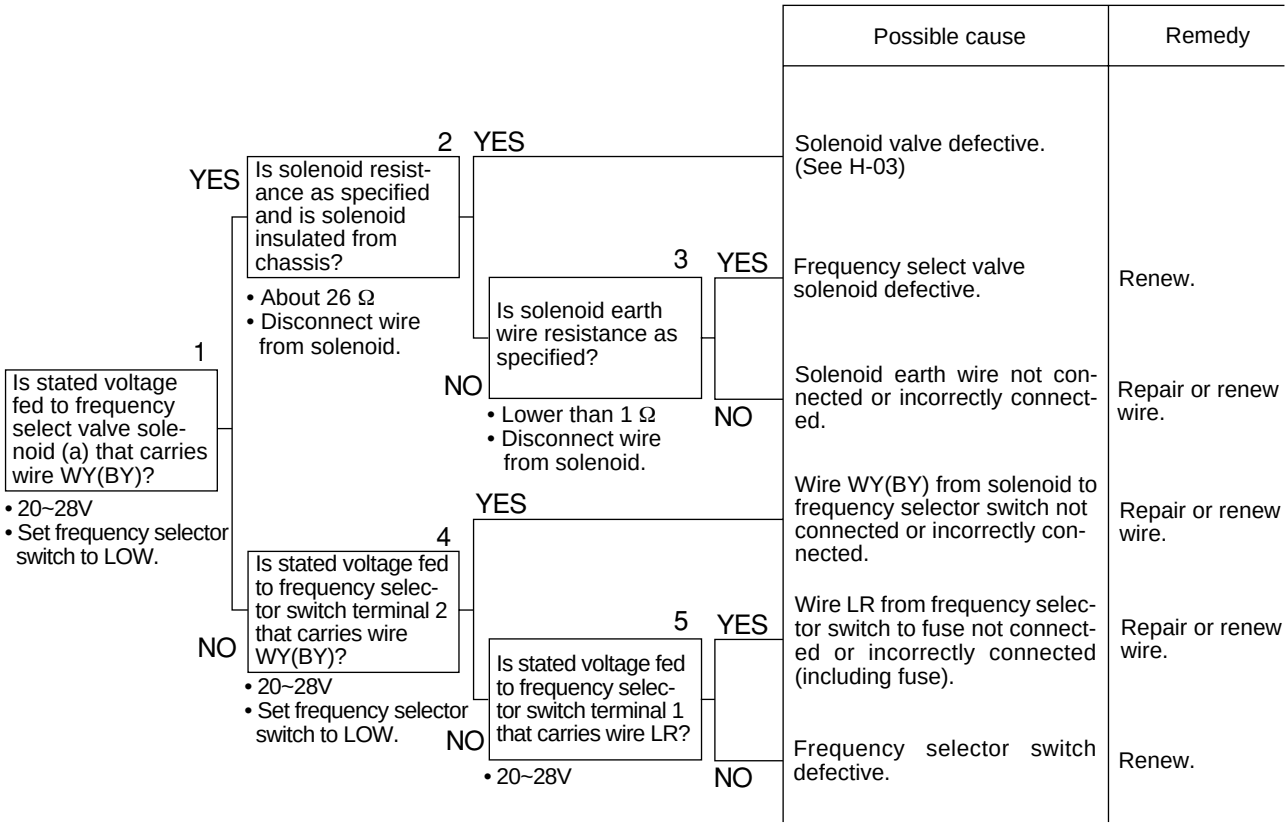
*3 Color code of wire connected to amplitude selector switch terminal 4
- Front: Br
- Rear: Br

d). LOW frequency (⎍) not selected.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

★To diagnose, set amplitude selector switch to LOW or HIGH. (LOW frequency is not influenced by the amplitude selector switch.)

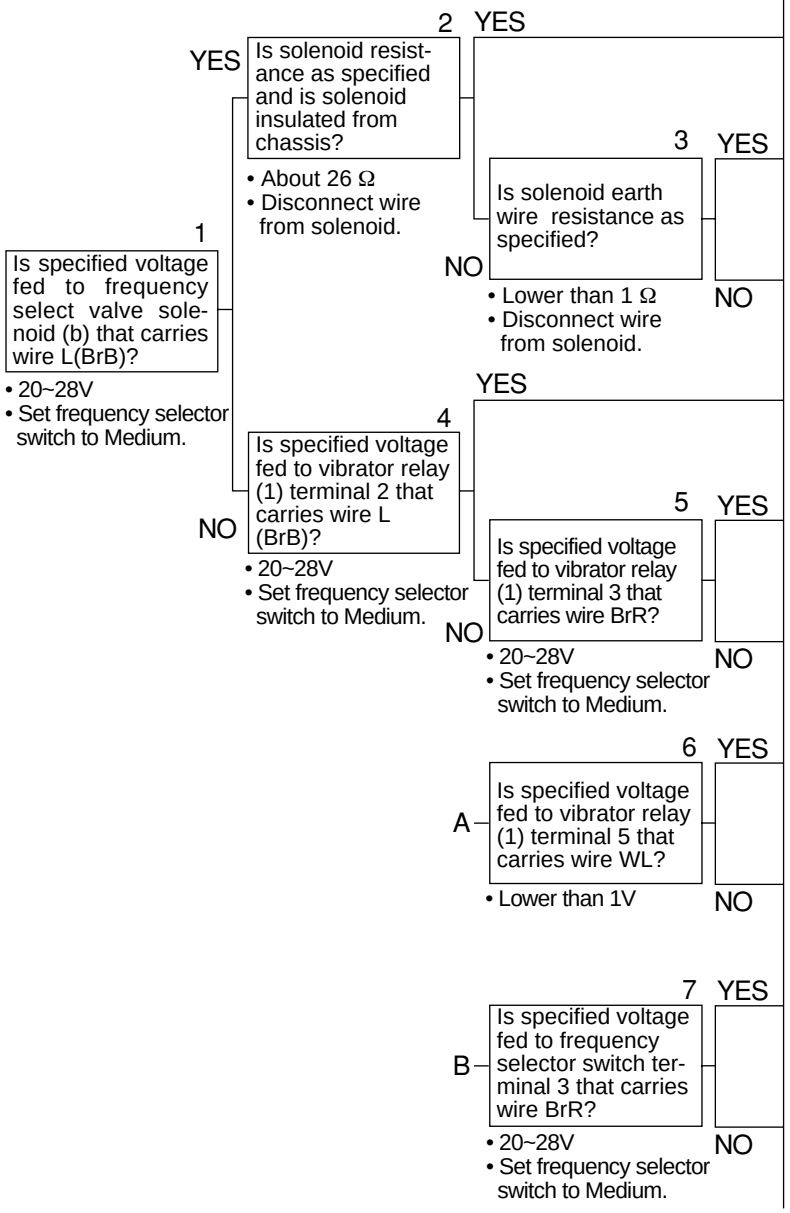


e). Medium frequency (⩘) not selected.

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

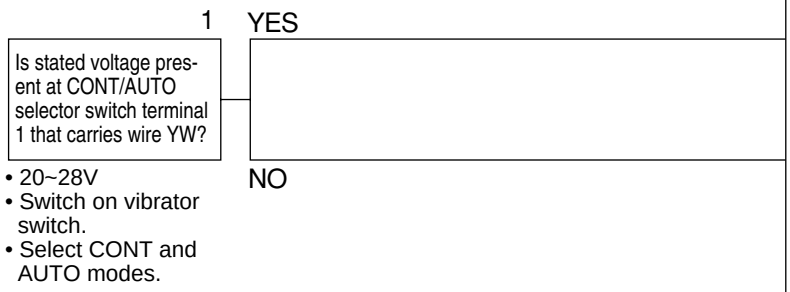
Codes with no parentheses ➡ Common to both models

★Diagnose with amplitude selector switch set to LOW, because this circuit is influenced by signals from amplitude selector switch in the front vibrator circuit.



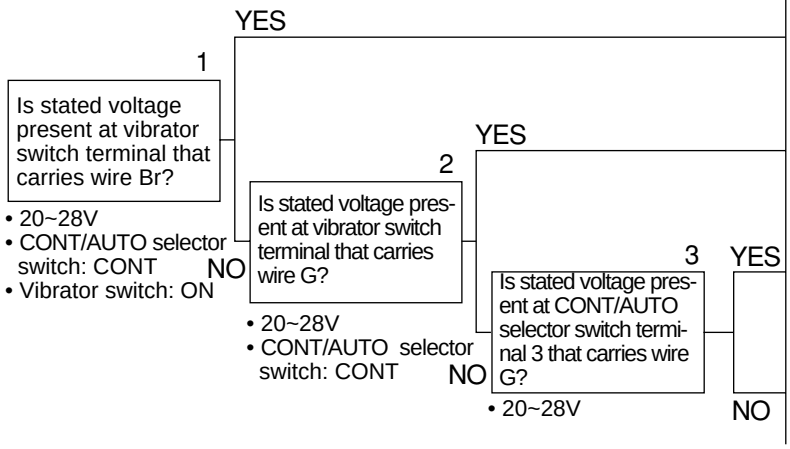
Possible cause	Remedy
Solenoid valve defective. (See H-05.)	
Frequency select valve solenoid defective.	Renew.
Solenoid earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire L(BrB) from terminal 2 of vibrator relay (1) to frequency select solenoid (b) not connected or incorrectly connected.	Repair or renew wire.
To 'A' on this page	
To 'B' on this page	
Vibrator relay (1) defective.	Renew.
Other wire accidentally touches vibrator relay (1) terminal 5.	Repair or renew wire.
Wire BrR from frequency selector switch terminal 3 to vibrator (1) terminal 3 not connected or incorrectly connected.	Repair or renew wire.
Frequency selector switch defective.	Renew.

f). Neither CONT mode nor AUTO mode is inoperative.
(SW800: From Machine No.10123 SW850: From Machine No. 10127).



Possible cause	Remedy
CONT/AUTO selector switch defective.	Renew.
Wire YW from fuse to vibrator switch not connected or incorrectly connected (including fuse).	Repair or renew wire.

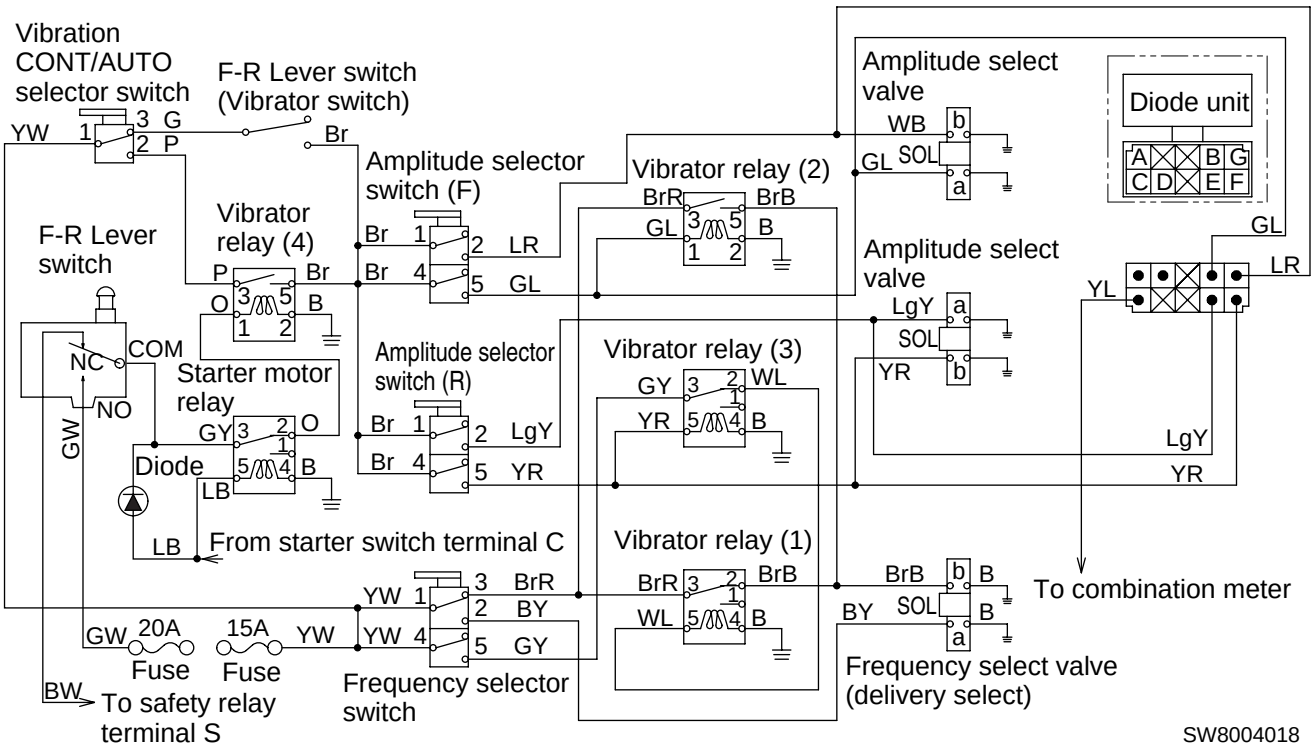
g). CONT mode is not selected in both forward and reverse travel.
(SW800: From Machine No.10123
SW850: From Machine No. 10127)



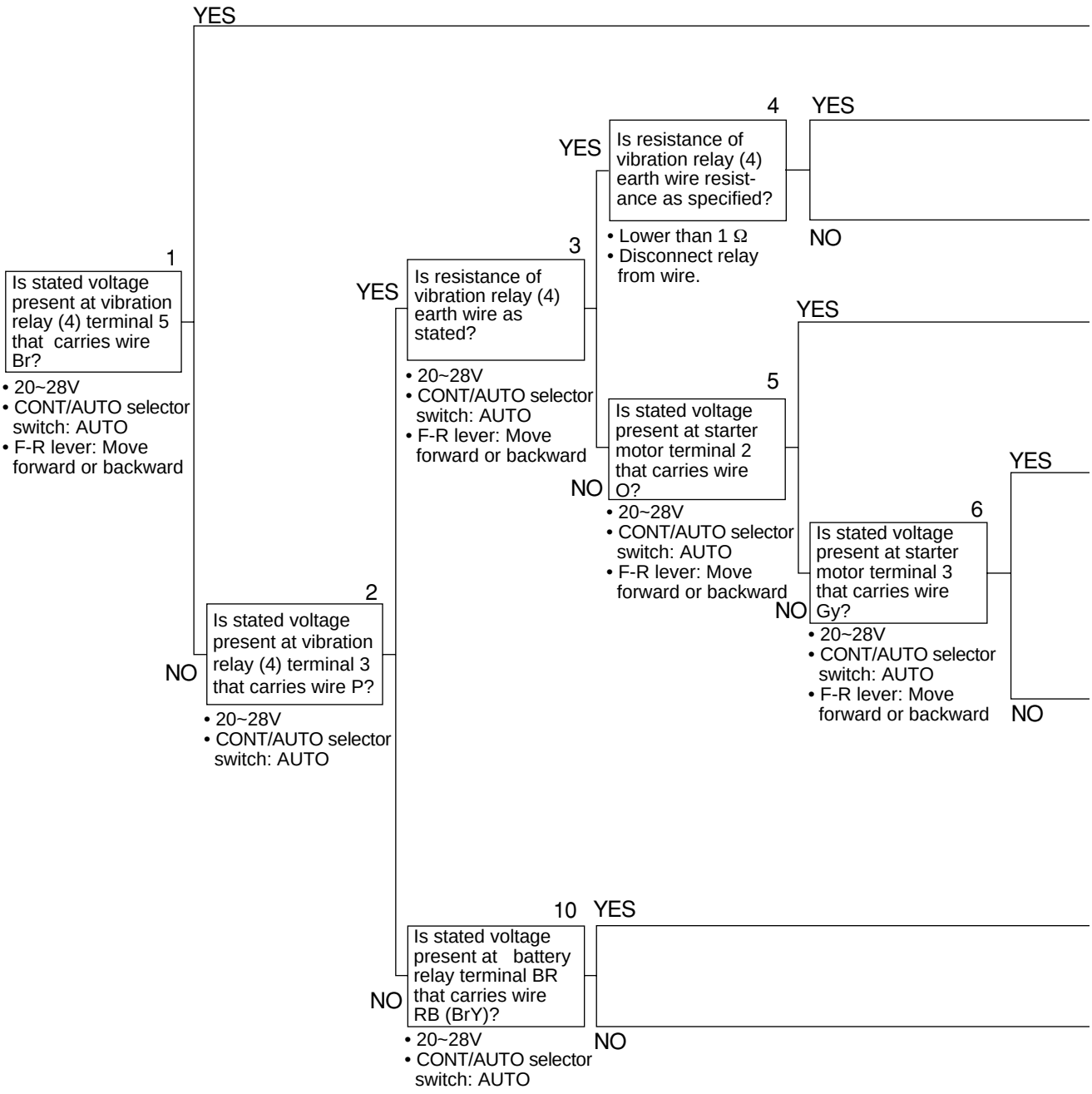
Possible cause	Remedy
Wires Br from vibrator switch to amplitude selector switch terminals 1 and 4 (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Vibrator switch defective.	Renew.
Wire G from CONT/AUTO selector switch to vibrator switch (to branch point) not connected or incorrectly connected.	Repair or renew wire.
CONT/AUTO selector switch defective.	Renew.

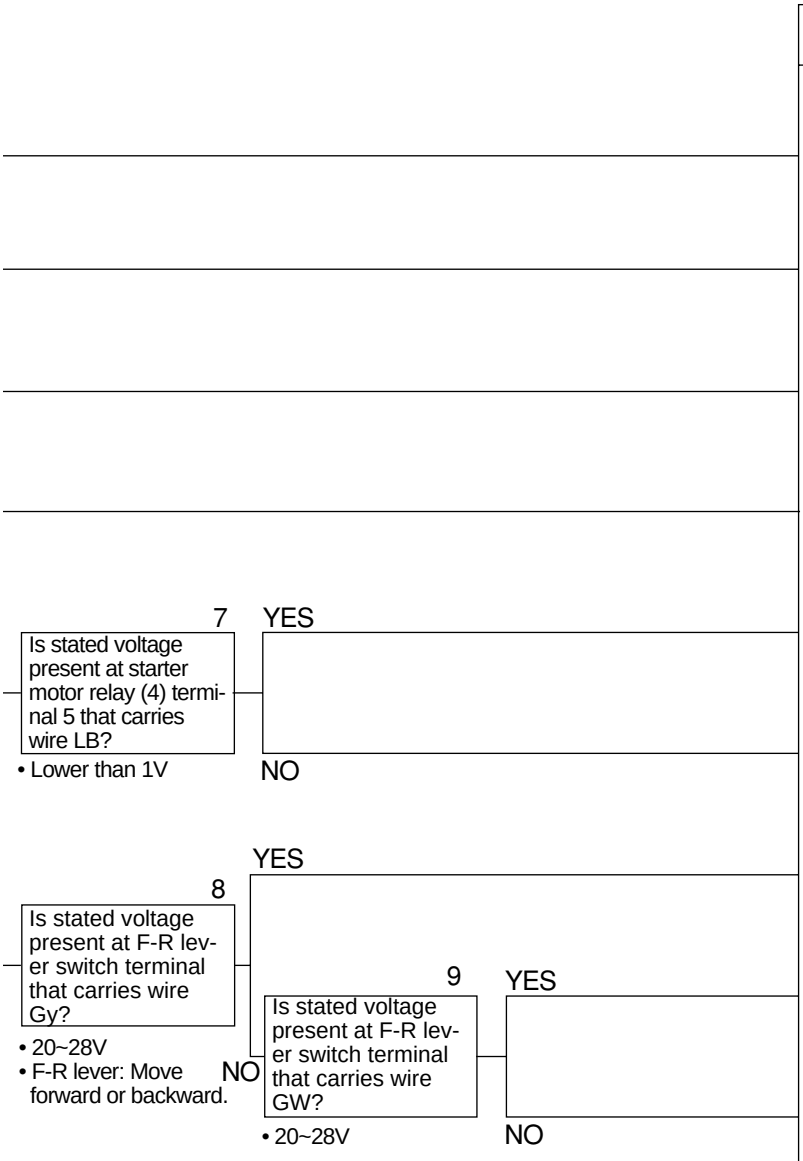
Electric wiring diagram for modes E-09 (f), (g), (h)

(SW800: From Machine No.10123 SW850: From Machine No.10127)



h). AUTO mode is not selected.
(SW800: From Machine No.10123 SW850: From Machine No. 10127).





Possible cause	Remedy
Wire Br from vibration relay (4) terminal 5 to amplitude selector switch terminals 1 and 4 not connected or incorrectly connected.	Repair or renew wire.
Vibration relay (4) defective.	Renew.
Vibration relay (4) earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire O from starter motor relay terminal 2 to vibration relay (4) terminal 2 not connected or incorrectly connected.	Repair or renew wire.
Starter motor relay contact sticking.	Renew.
Diode included in wire LB from starter switch terminal C to F-R lever switch defective.	Repair or renew wire.
Wire Gy from F-R lever switch to starter motor relay terminal 3 not connected or incorrectly connected.	Repair or renew wire.
F-R lever switch defective.	Renew.
Wire GW from fuse to F-R lever switch not connected or incorrectly connected.	Repair or renew wire.
Wire P from CONT/AUTO selector switch terminal 2 to vibration relay (4) terminal 3 not connected or incorrectly connected.	Repair or renew wire.
CONT/ AUTO selector switch defective.	Renew.

E-10 Parking brake not released

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

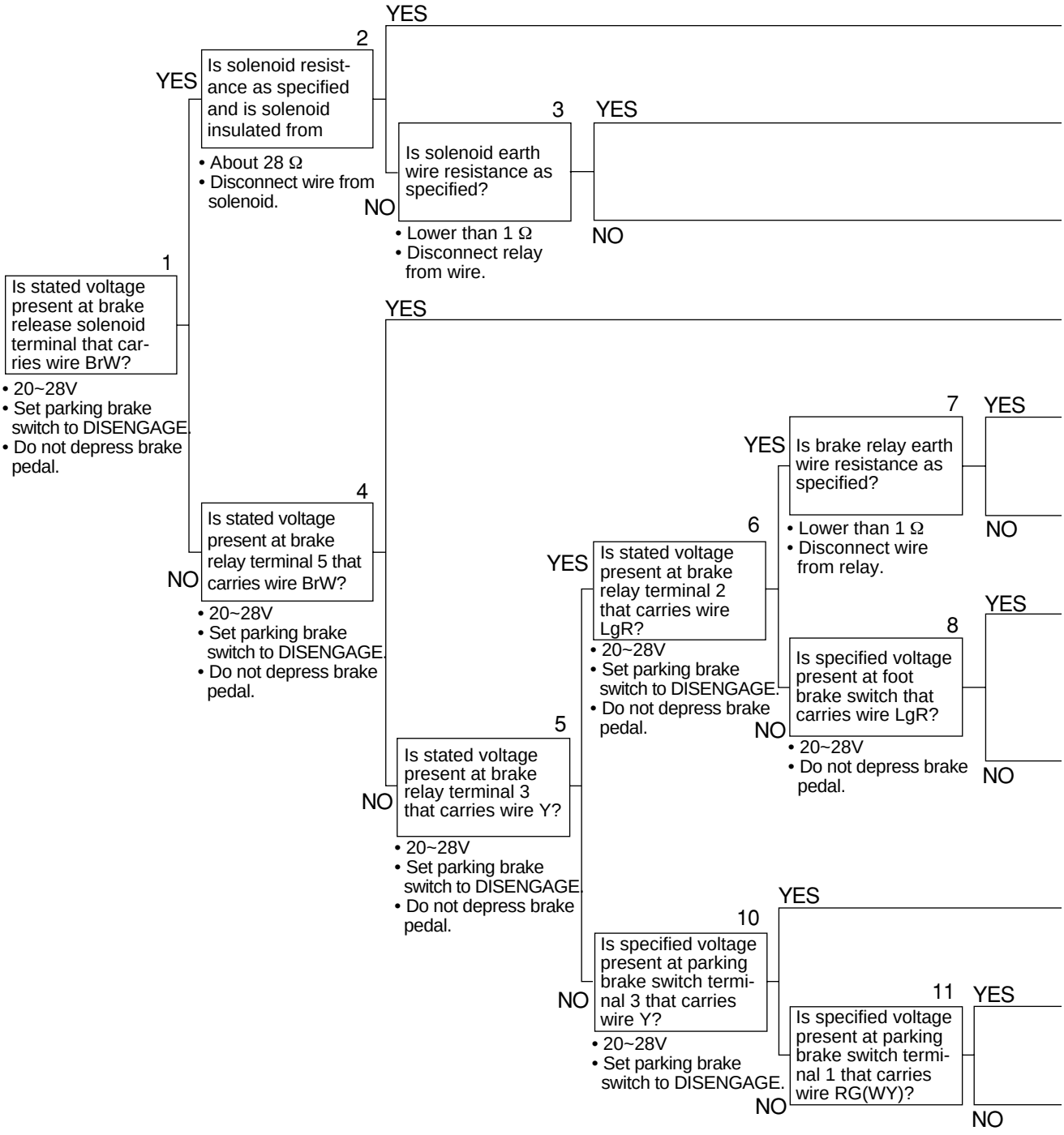
Codes with no parentheses ➡ Common to both models

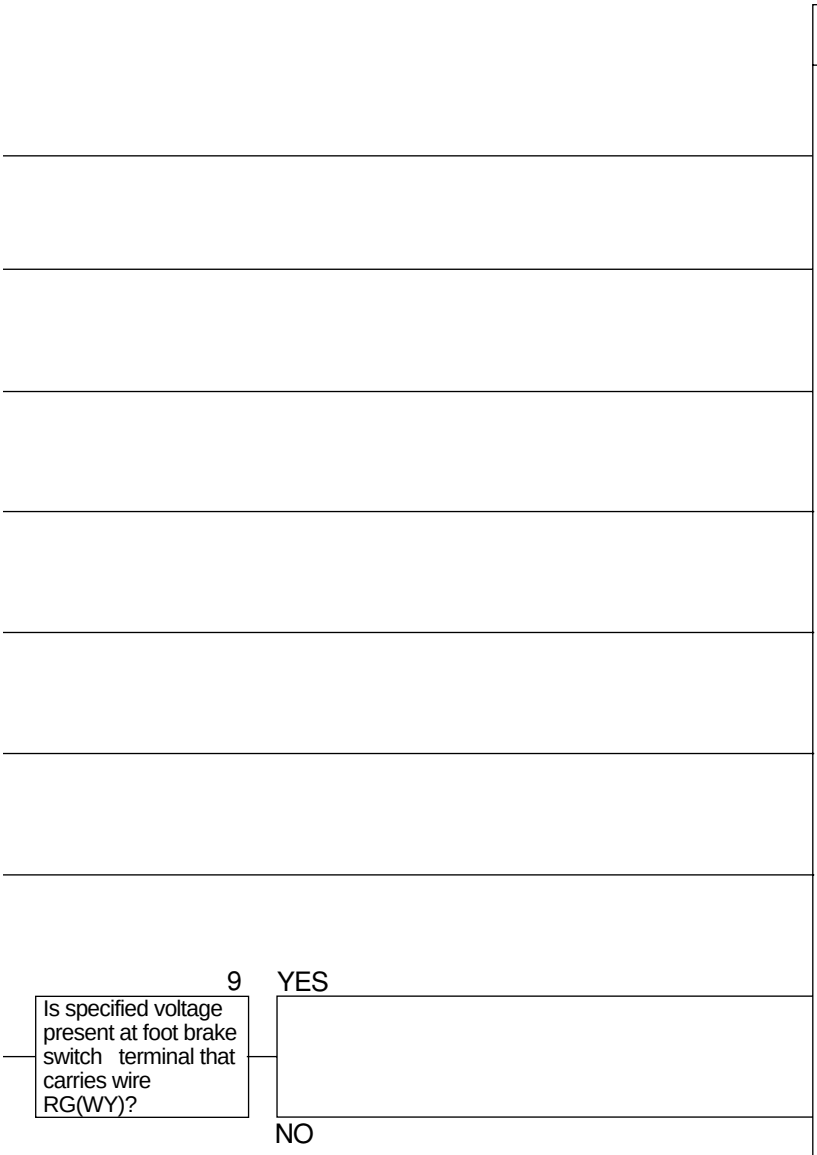
★The foot brake switch normally closes. It opens if the brake pedal is depressed.

★Diagnose with the parking brake switch ON, and the brake pedal not depressed.

★Measure the voltage with the starter switch ON.

★First, check to see if fuse has burnt.



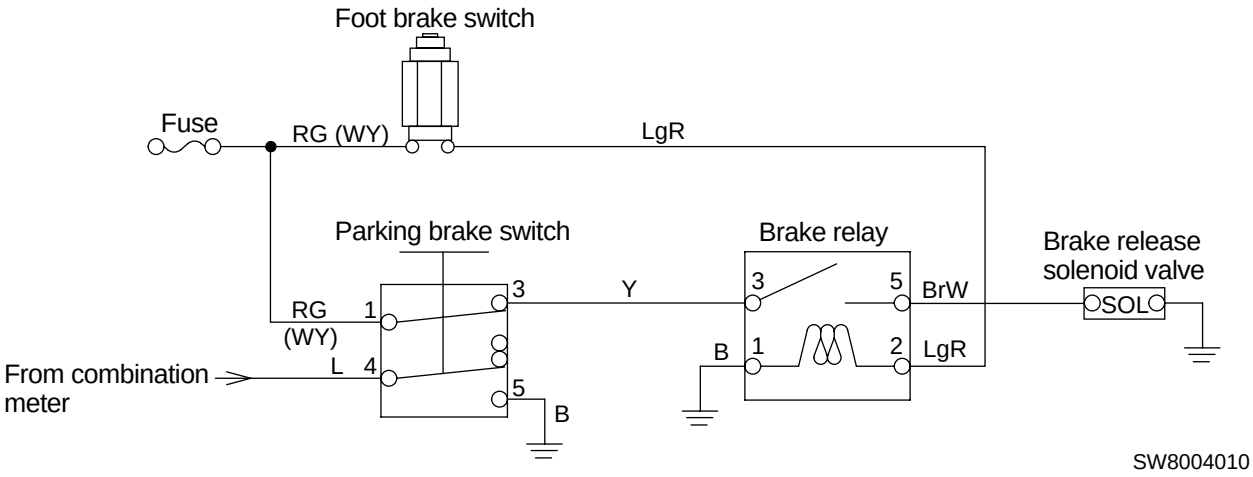


Possible cause	Remedy
Brake release solenoid valve defective. (See mode H-09.)	
Brake release valve solenoid defective.	Renew.
Brake release valve solenoid earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire Br from brake release valve solenoid to brake relay terminal 5 not connected or incorrectly connected.	Repair or renew wire.
Brake relay defective.	Renew.
Brake relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire LgR from foot brake switch terminal to brake relay terminal 2 not connected or incorrectly connected.	Repair or renew wire.
Foot brake switch defective.	Renew.
Wire RG(WY) from fuse to foot brake switch not connected or incorrectly connected.	Repair or renew wire.
Wire Y from parking brake switch terminal 3 to brake relay terminal 3 not connected or incorrectly connected.	Repair or renew wire.
Parking brake switch defective.	Renew.
Wire RG(WY) from fuse to parking brake switch terminal 1 not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-10

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



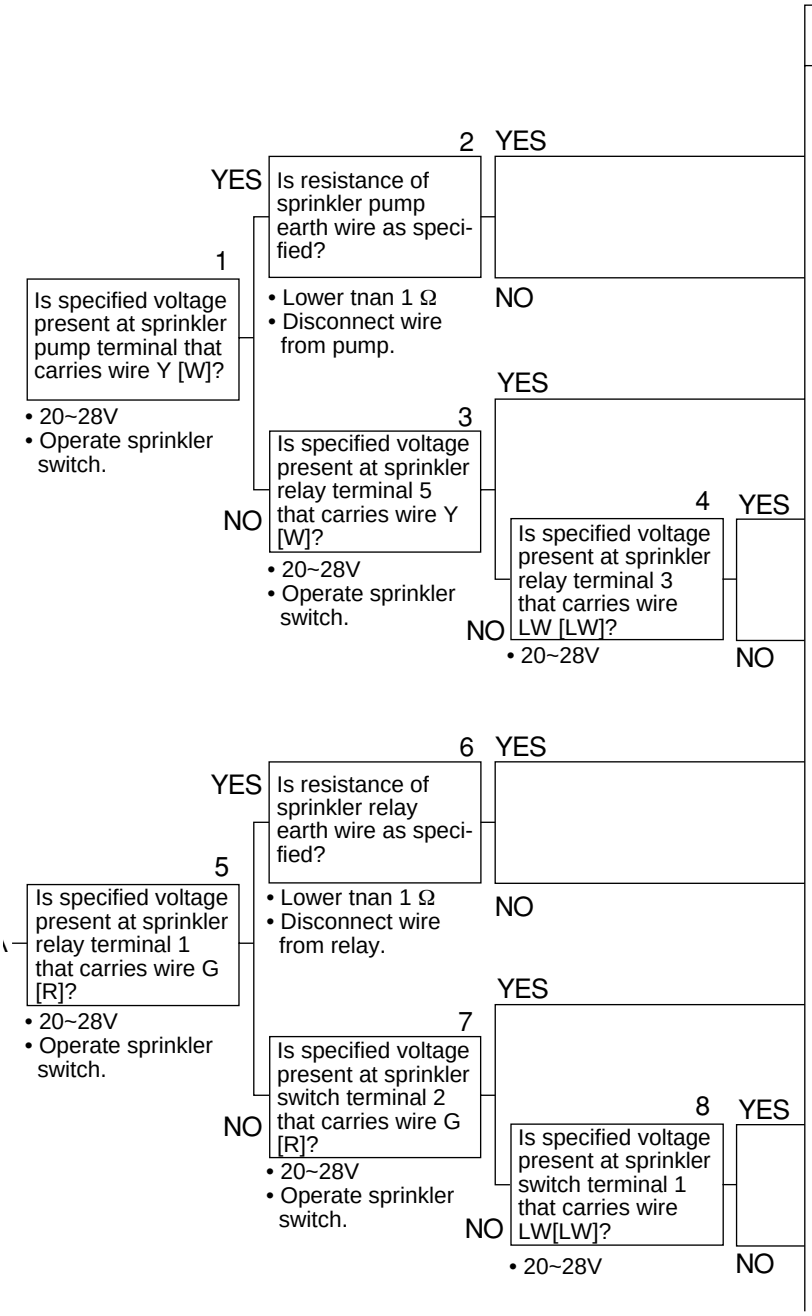
E-11 Sprinkler is inoperative

★Measure the voltage with the starter switch ON.

★Check that the fuse is not damaged.

a). CONT mode is not selected.
(SW800: To Machine No.10122 SW850: To Machine No. 10126).

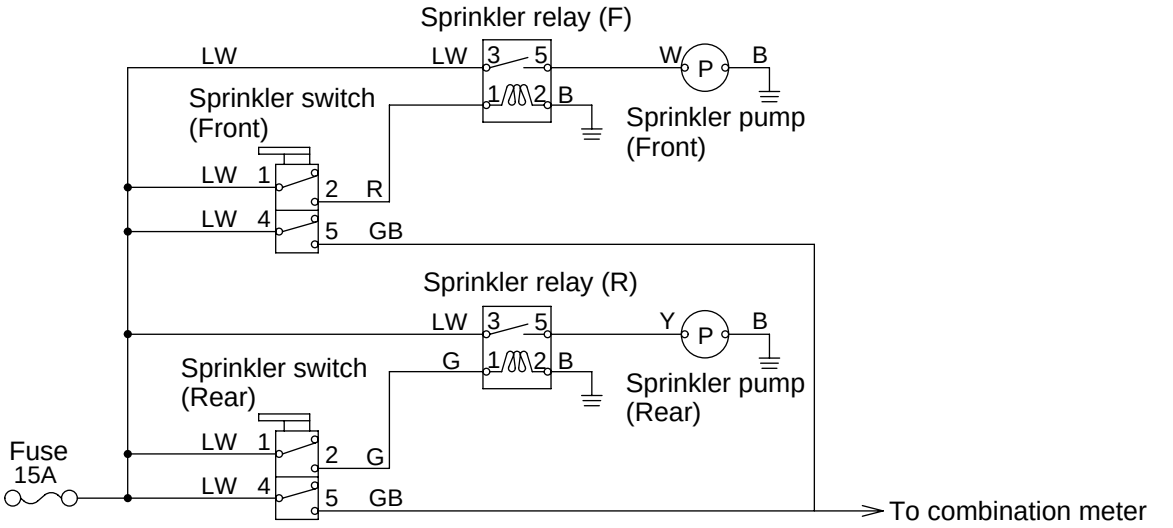
* The diagnosis procedures below are for the rear vibrator. The wire color codes enclosed in brackets [ ] are for the front vibrator.



Possible cause	Remedy
Sprinkler pump faulty.	Renew.
Sprinkler pump earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire Y[W] from sprinkler pump to sprinkler relay terminal 5 not connected or incorrectly connected.	Repair or renew wire.
To 'A' on this page	
Wire LW[LW] from sprinkler relay terminal 3 to fuse (from branch point) not connected or incorrectly connected.	Repair or renew wire.
Sprinkler relay faulty (coil or contact).	Renew.
Sprinkler relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire G[R] from sprinkler switch terminal 2 to sprinkler relay terminal 1 not connected or incorrectly connected.	Repair or renew wire.
Sprinkler switch faulty.	Renew.
Wire LW[LW] from sprinkler relay terminal 3 to fuse (from branch point) not connected or incorrectly connected.	Repair or renew wire.

Electric wiring diagram for mode E-11 a)

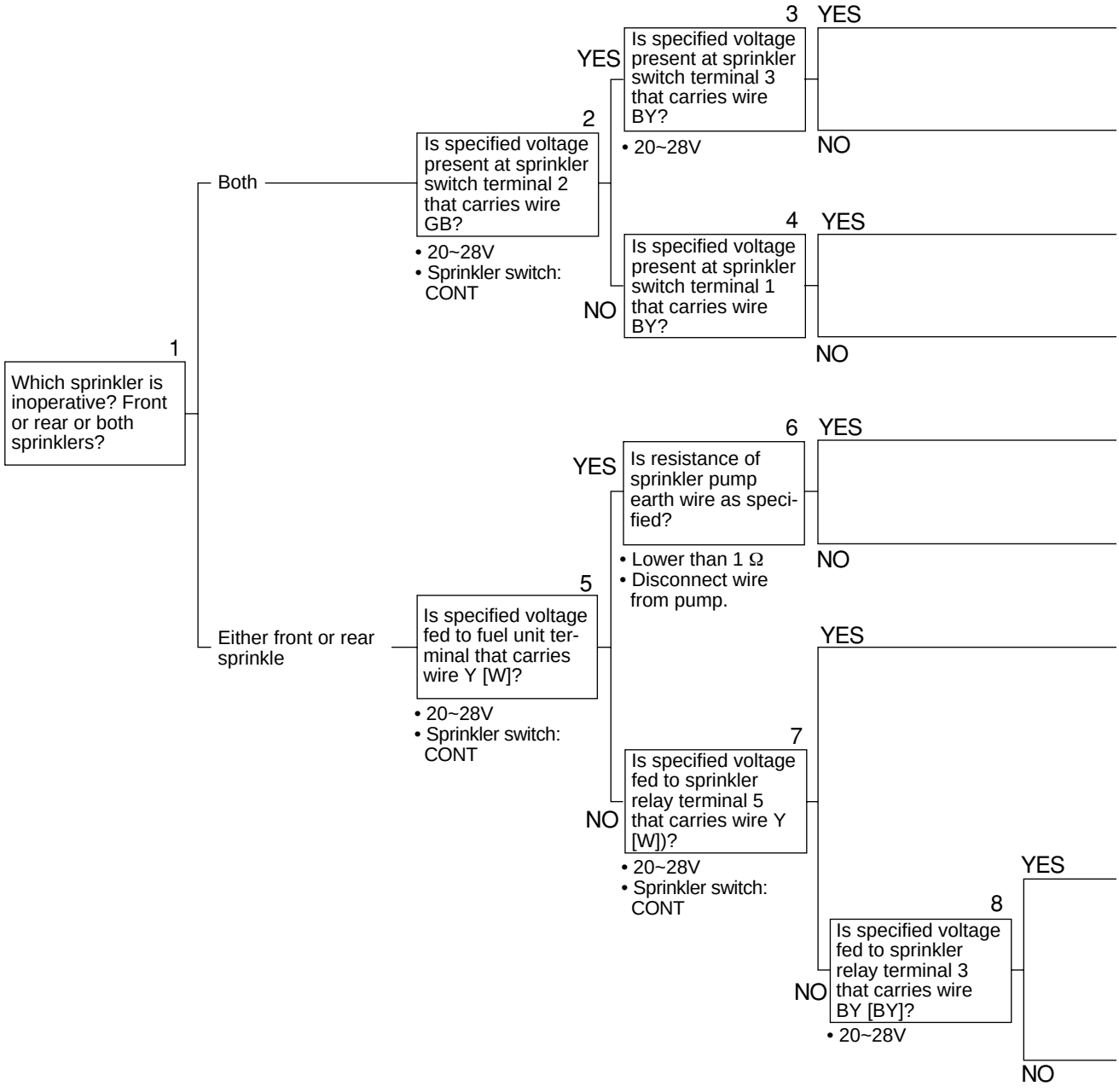
(SW800: To Machine No.10122 SW850: To Machine No.10126)

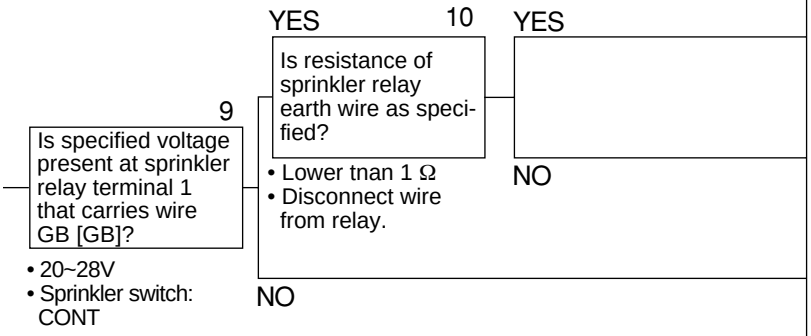


SW8004009

b). CONT mode is not selected (If CONT mode is inoperative, Timer mode is also inoperative).
(SW800: From Machine No.10123 SW850: From Machine No. 10127)

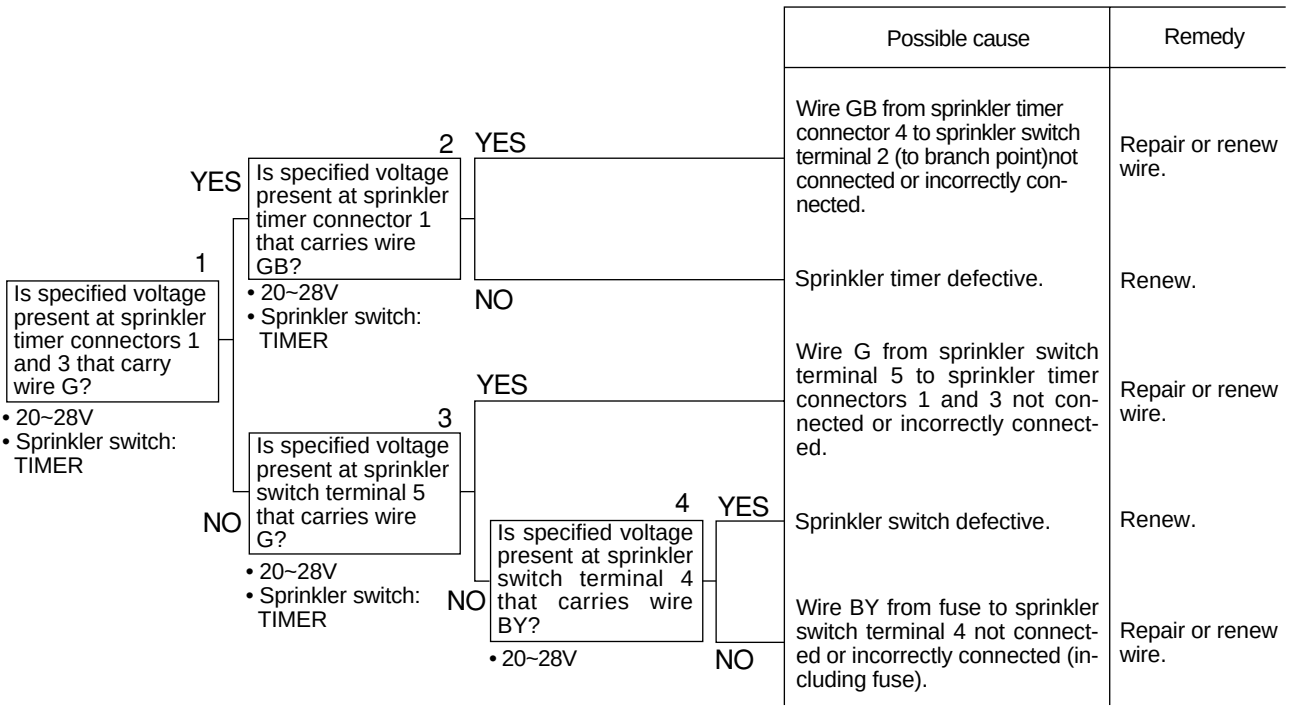
* The diagnosis procedures below are for the rear vibrator. The wire color codes enclosed in brackets [ ] are for the front vibrator.



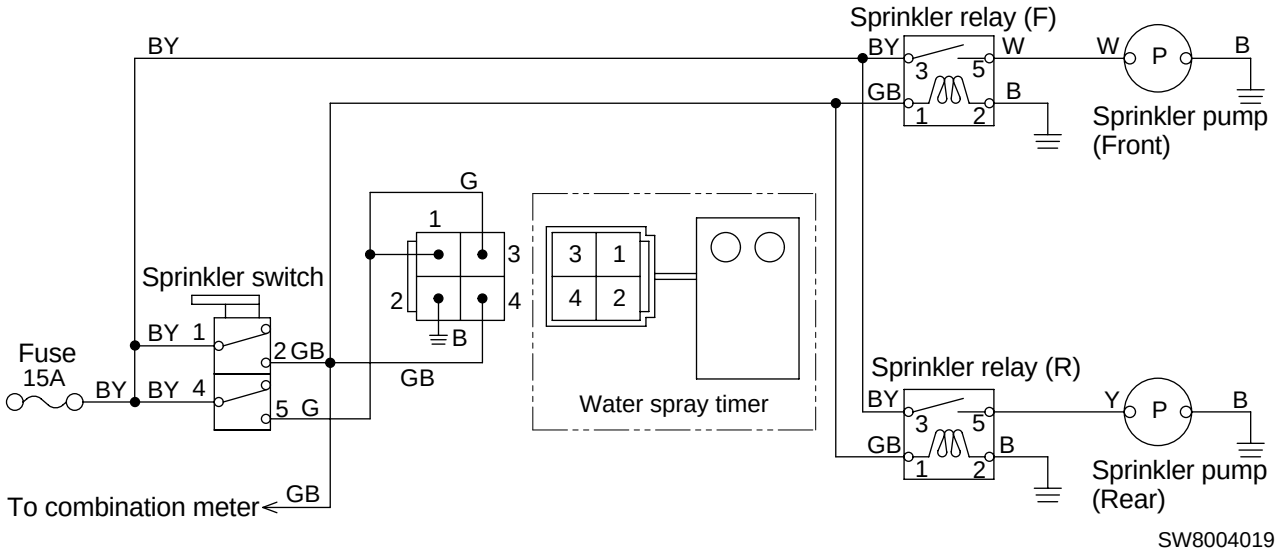


Possible cause	Remedy
Wire GB from sprinkler switch terminal 2 to sprinkler relay terminal 1 (to branch point) not connected or incorrectly connected (including fuse).	Repair or renew wire.
Wire BY from fuse to sprinkler relay terminal 3 (to branch point) not connected or incorrectly connected (including fuse).	Repair or renew wire.
Sprinkler switch defective.	Renew.
Wire BY from fuse to sprinkler switch terminal 1 (to branch point) not connected or incorrectly connected (including fuse).	Repair or renew wire.
Sprinkler pump defective.	Renew.
Sprinkler pump earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire Y [W] from sprinkler relay terminal 5 to sprinkler pump not connected or incorrectly connected.	Repair or renew wire.
Sprinkler relay defective.	Renew.
Sprinkler relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire GB [GB] from fuse to sprinkler relay terminal 3 (to branch point) not connected or incorrectly connected.	Repair or renew wire.
Wire BY[BY] from sprinkler relay terminal 3 to fuse (to branch point) not connected or incorrectly connected.	Repair or renew wire.

c). TIMER mode not selected.
(SW800: From Machine No.10123 SW850: From Machine No. 10127)



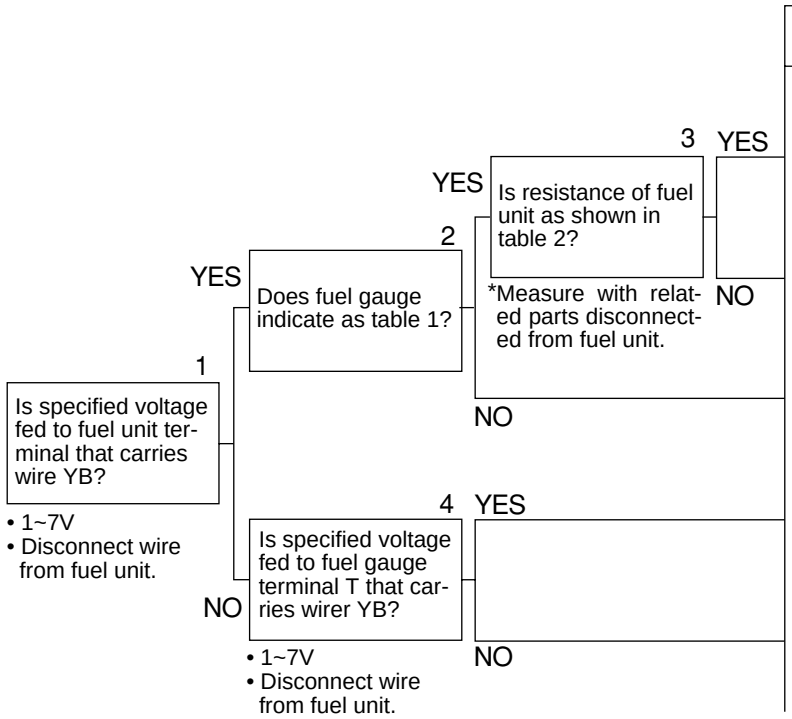
Electric wiring diagram for modes E-11 b), c)
(SW800: From Machine No.10123 SW850: From Machine No.10127)



E-12 Fuel gauge reads wrong

★Other gauges and lamps are normal.

★Measure the voltage with the starter switch ON.



Possible cause	Remedy
Fuel unit earth wire is incorrectly connected or fuel unit malfunctions.	• Repair or renew wire. • Repair or renew fuel unit mounting.
Fuel unit is faulty.	Renew.
Fuel gauge faulty.	Renew.
Wire YB from fuel gauge to fuel unit not connected or incorrectly connected.	Repair or renew wire.
Fuel gauge faulty.	Renew.

Table 1

Fuel unit wire YB	Gauge reading
Disconnected	Empty
Grounded	Full

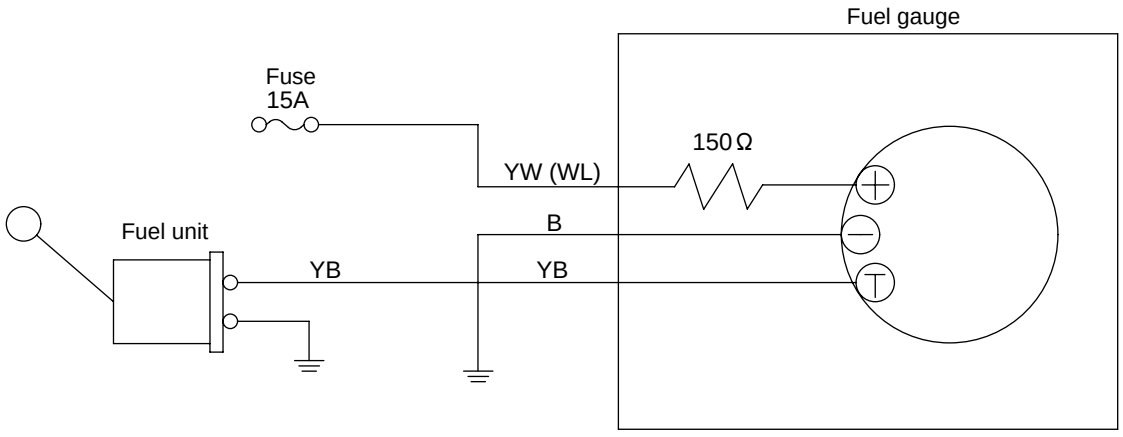
Table 2

Fuel unit float	Resistance (Ω)
Full	10~17.5
Empty	82.5~90

Electric wiring diagram for mode E-12

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



SW8004011

E-13 Coolant temperature gauge reads wrong

★Other gauges and lamps operate correctly.

★Measure the voltage with the starter switch ON.

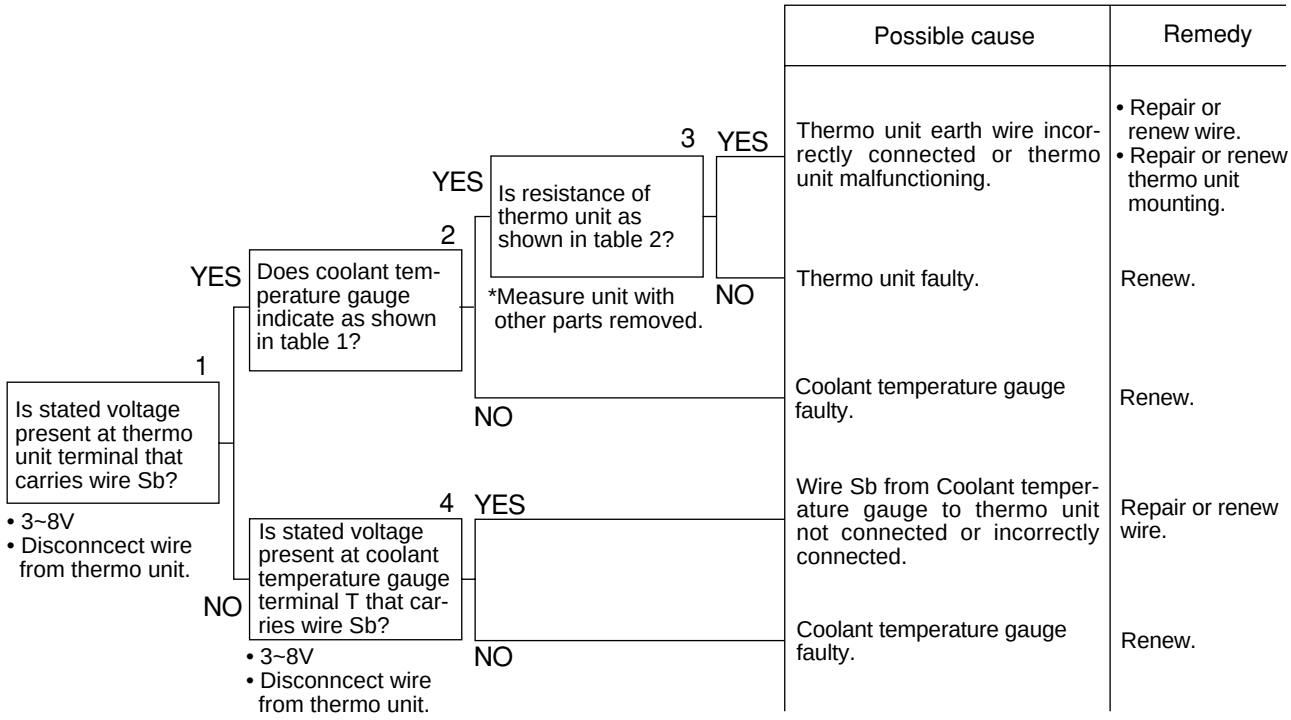


Table 1

Thermo unit terminal wire Sb	Gauge reading
Disconnected	Lowest
Grounded	Highest

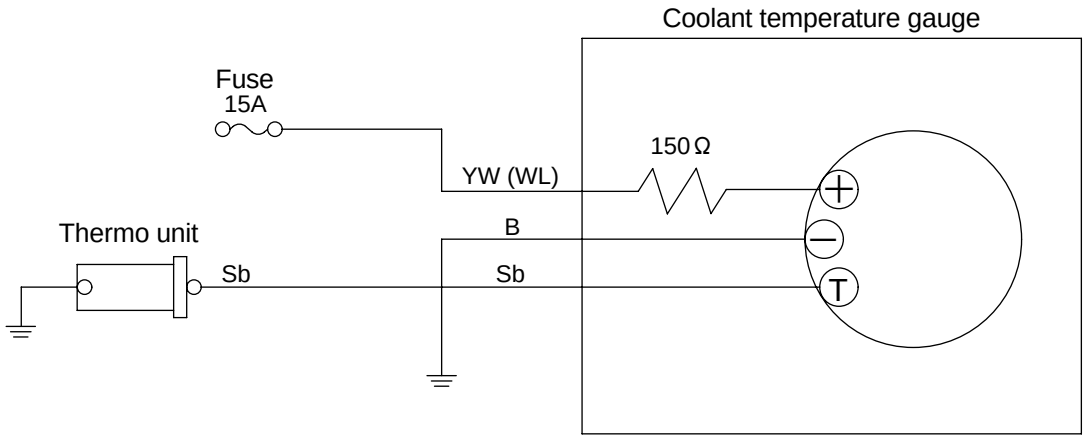
Table 2

Thermo unit temperature	Resistance (Ω)
50°C	150~158
100°C	About 27.4

Electric wiring diagram for mode E-13

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



SW8004012

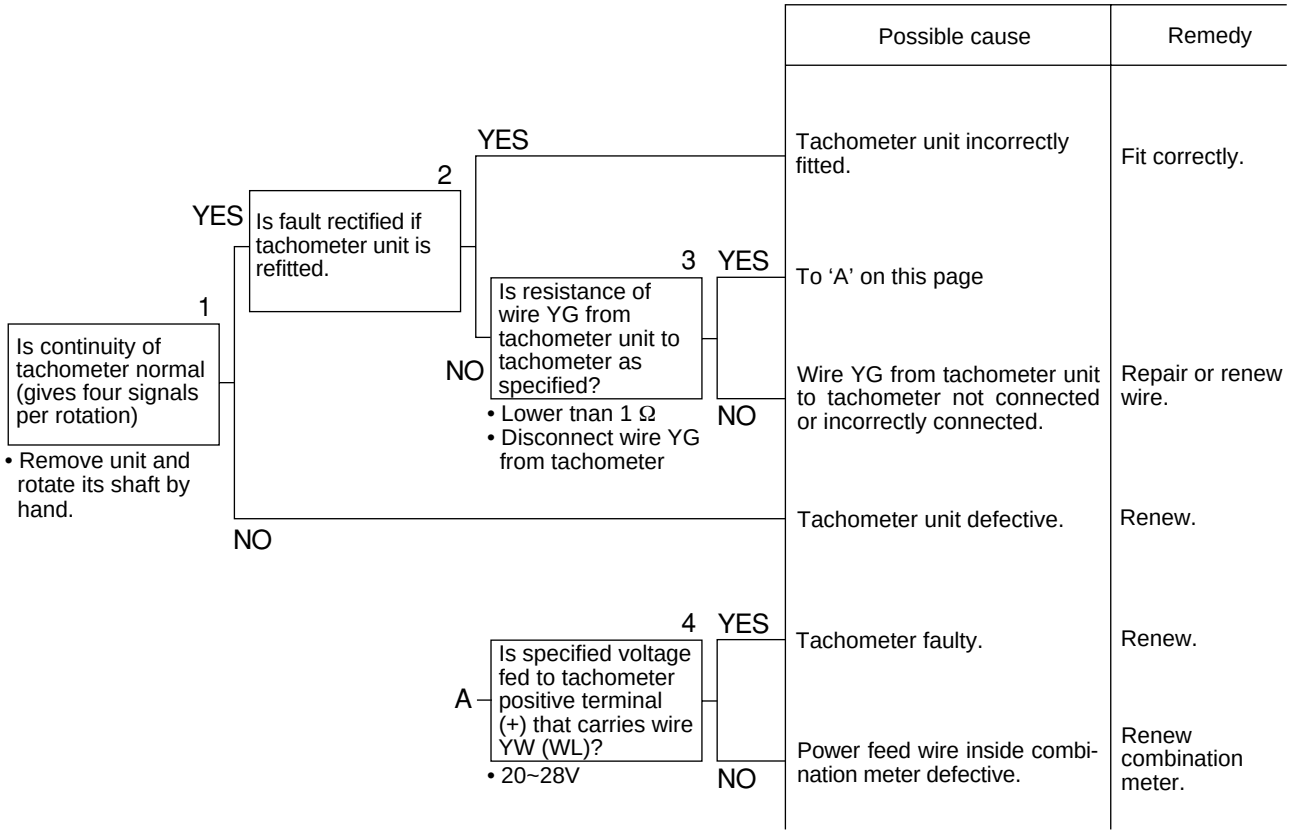
E-14 Tachometer reads wrong

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

★Other gauges and lamps operate correctly.

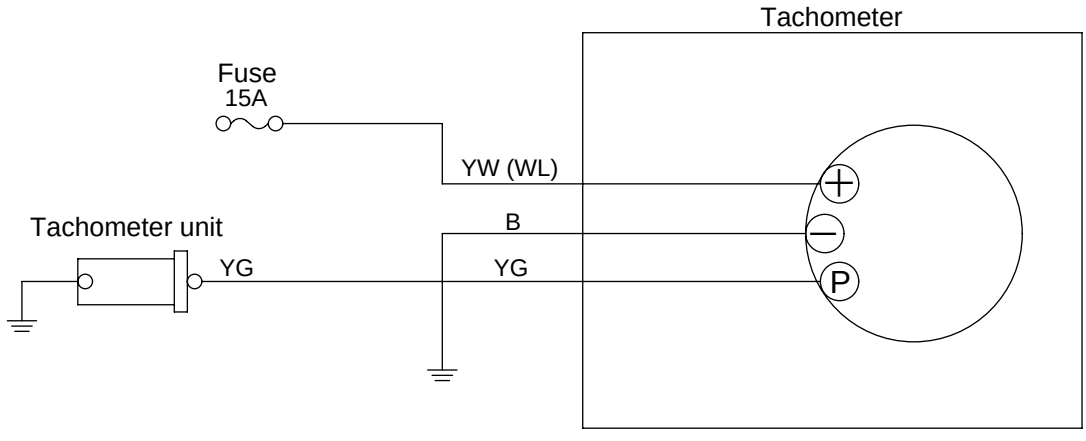
★Measure the voltage with the starter switch ON.



Electric wiring diagram for mode E-14

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



SW8004013

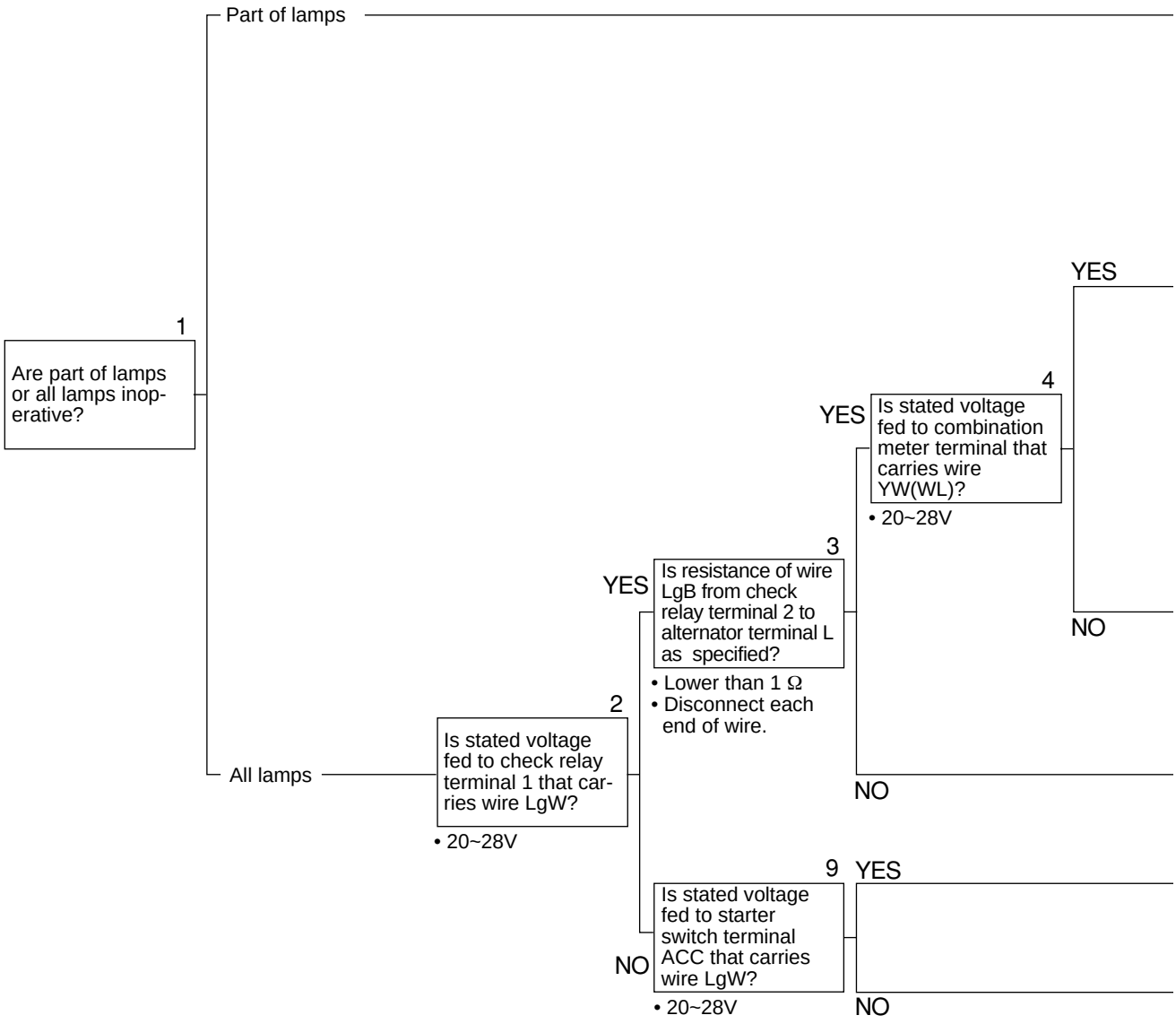
E-15 Charge warning lamp, engine oil pressure warning lamp, hydraulic oil filter warning lamp and parking brake indicator lamp do not come on with starter switch ON.

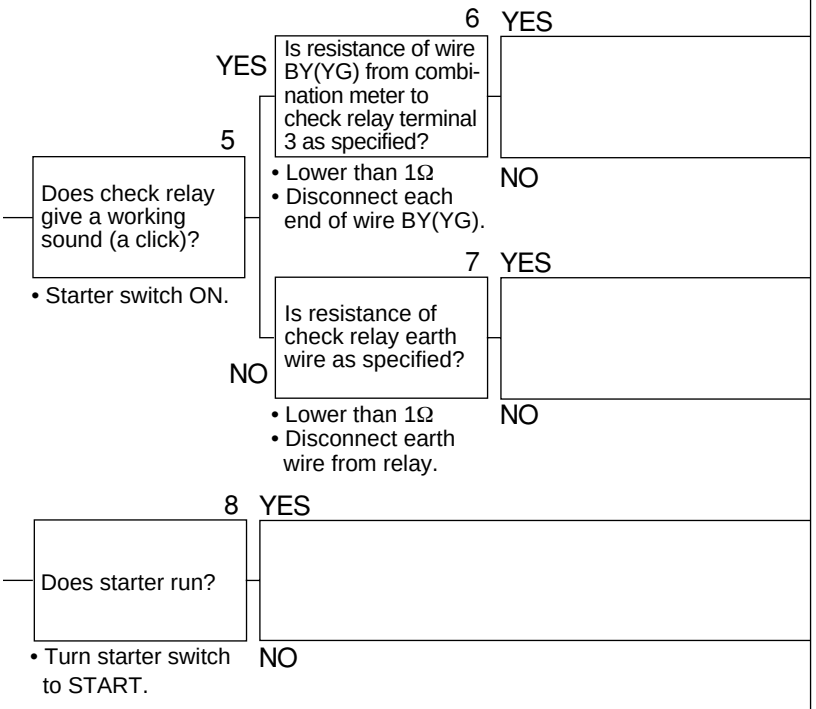
* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models

★These lamps illuminate only when the starter switch is turned to the ON position (for bulb failure check) and when unusual conditions have occurred.

★Measure the voltage with the starter switch ON.



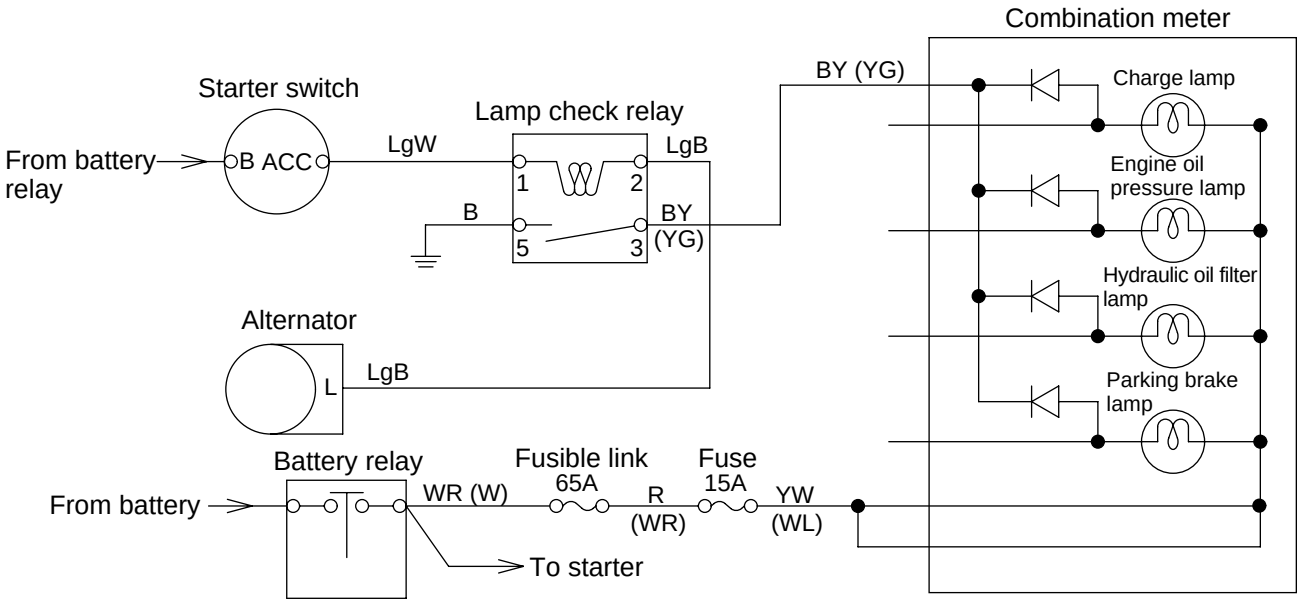


Possible cause	Remedy
Lamp bulb damaged.	Renew.
Combination meter faulty.	Renew combination meter.
Wire BY(YG) from check relay terminal 3 to combination meter not connected or incorrectly connected.	Repair or renew wire.
Check relay faulty.	Renew.
Check relay earth wire not connected or incorrectly connected.	Repair or renew wire.
Wire YW(WL) from fuse to combination meter not connected or incorrectly connected.	Repair or renew wire.
Fuse has burnt.	Renew.
Wire LgB from check relay terminal 2 to alternator terminal L not connected or incorrectly connected.	Repair or renew wire.
Wire LgW from starter switch terminal ACC to check relay terminal 1 not connected or incorrectly connected.	Repair or renew wire.
Starter switch faulty (between terminals B and ACC).	Renew.

Electric wiring diagram for mode E-15

* Wire color codes in parentheses ( ): SW800 ➡ From Machine No.10123
SW850 ➡ From Machine No.10127

Codes with no parentheses ➡ Common to both models



SW8004014

6. Fault Finding for Hydraulic and Mechanical Systems (Mode H)

Fault modes for hydraulic and mechanical systems and possible sources of troubles

Possible source \ Fault mode			Propulsion			
			Not propelled		Speed not gained or low traction	
			a) Forward and reverse	b) Either forward or reverse	a) Forward and reverse	b) Either forward or reverse
Propulsion	Propulsion pump	Pump (including servo device)	●	●	●	
		Servo valve/servo linkage	●	●	●	●
		High pressure relief valve	●	●	●	●
		Charge relief valve	●		●	●
		Cut off valve	●		●	
	Front drive	Inside of Motor	●	●	●	●
		Reduction gear	●		●	
		Parking brake	●		●	
	Rear drive	Inside of motor	●	●	●	●
		Reduction gear	●		●	
		Parking brake	●		●	
		Flushing valve	●		●	
	Brake release solenoid valve					
Vibrator	Frequency select solenoid valve					
	Inside of pump		●		●	
	Frequency select piston					
	Front	Inside of motor				
		Amplitude select valve				
		Main pressure relief valve				
		Port relief valve				
		Vibrator				
	Rear	Motor unit				
		Amplitude select valve				
		Main pressure relief valve				
		Port relief valve				
		Vibrator				
Steering	Steering pump					
	Orbitrol (including pressure relief valve)					
	Steering cylinder					
	Steering mechanism					
	Steering column					
Sprinkler	Sprinkler pump					
	Filter, Sprinkler pipe, Nozzle					
Others	Coupling		●			
	F-R lever linkage		●	●	●	●
Diagnosis code			H-01a	H-01b	H-02a	H-02b

Vibrator				Steering		Parking brake		No sprinkling
Inoperative		Low intensity	Frequency not selected					
Front and rear	Either front or rear	Either front or rear		Not performed	Heavy or slow	Poor braking	Not released	
						●	●	
						●	●	
							●	
			●					
●		●						
			●					
	●	●						
	●	●						
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	●	●						
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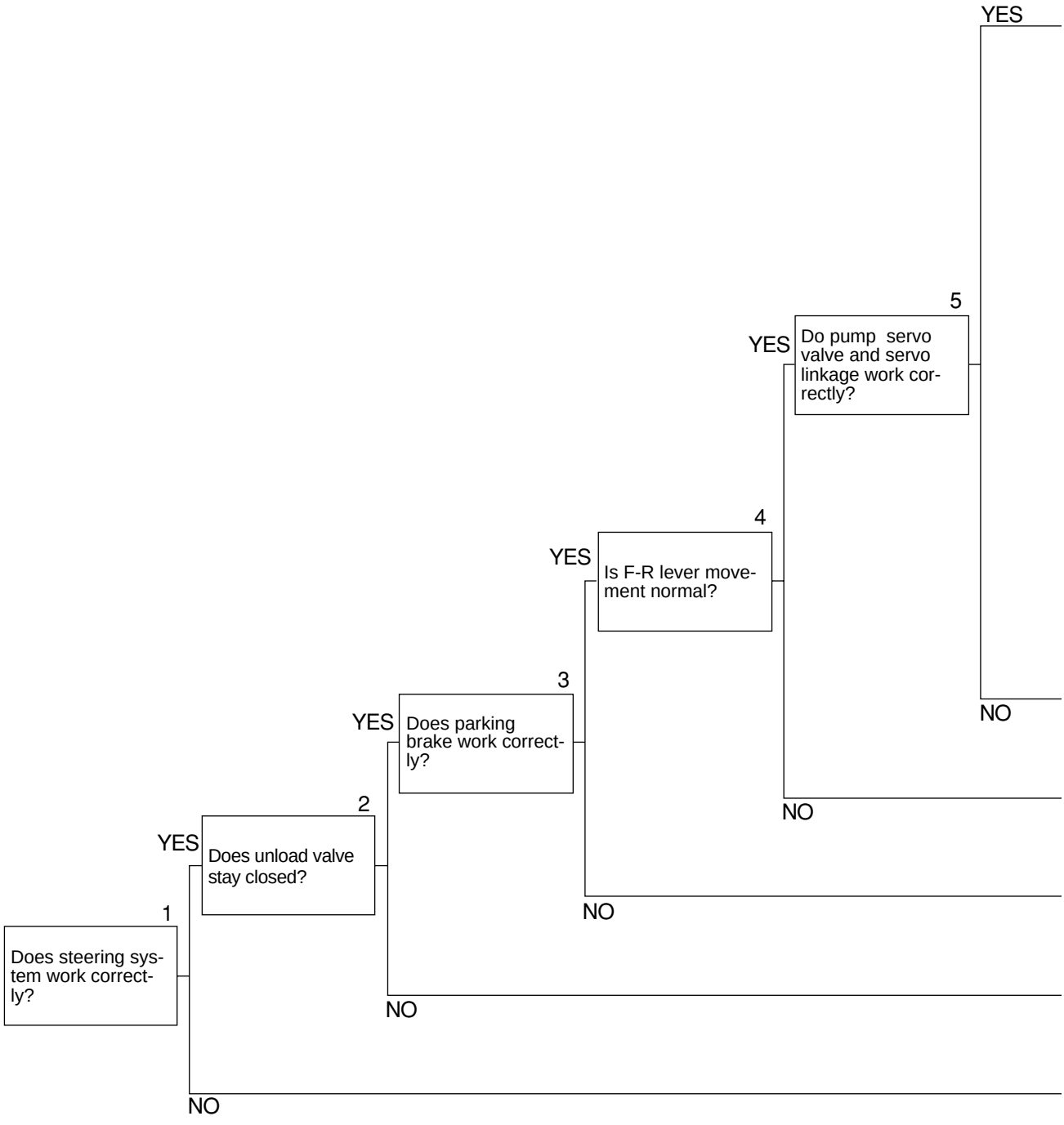
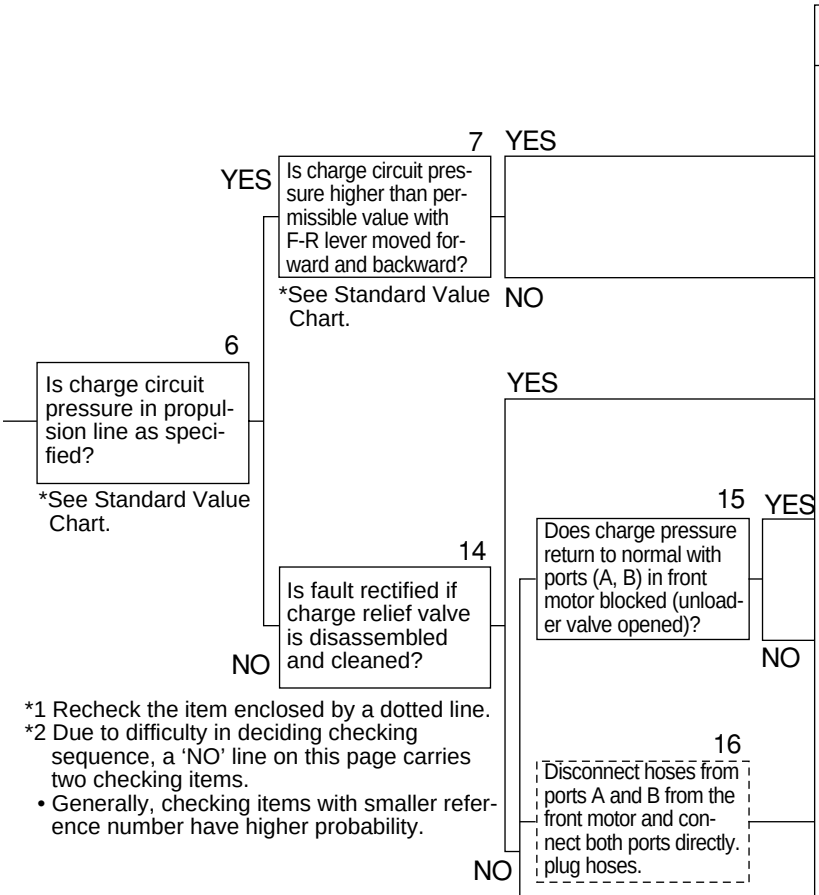
				●	●			
				●	●			
					●			
				●	●			
					●			
								●
								●
H-03a	H-03b	H-04	H-05	H-06	H-07	H-08	H-09	H-10

H-01 Not propelled

★Diagnose electric systems first. If they are normal, then use the following procedures.
★Start with checking the oil level in the hydraulic tank.

a) Not propelled in both directions (forward and backward).
(1/2)

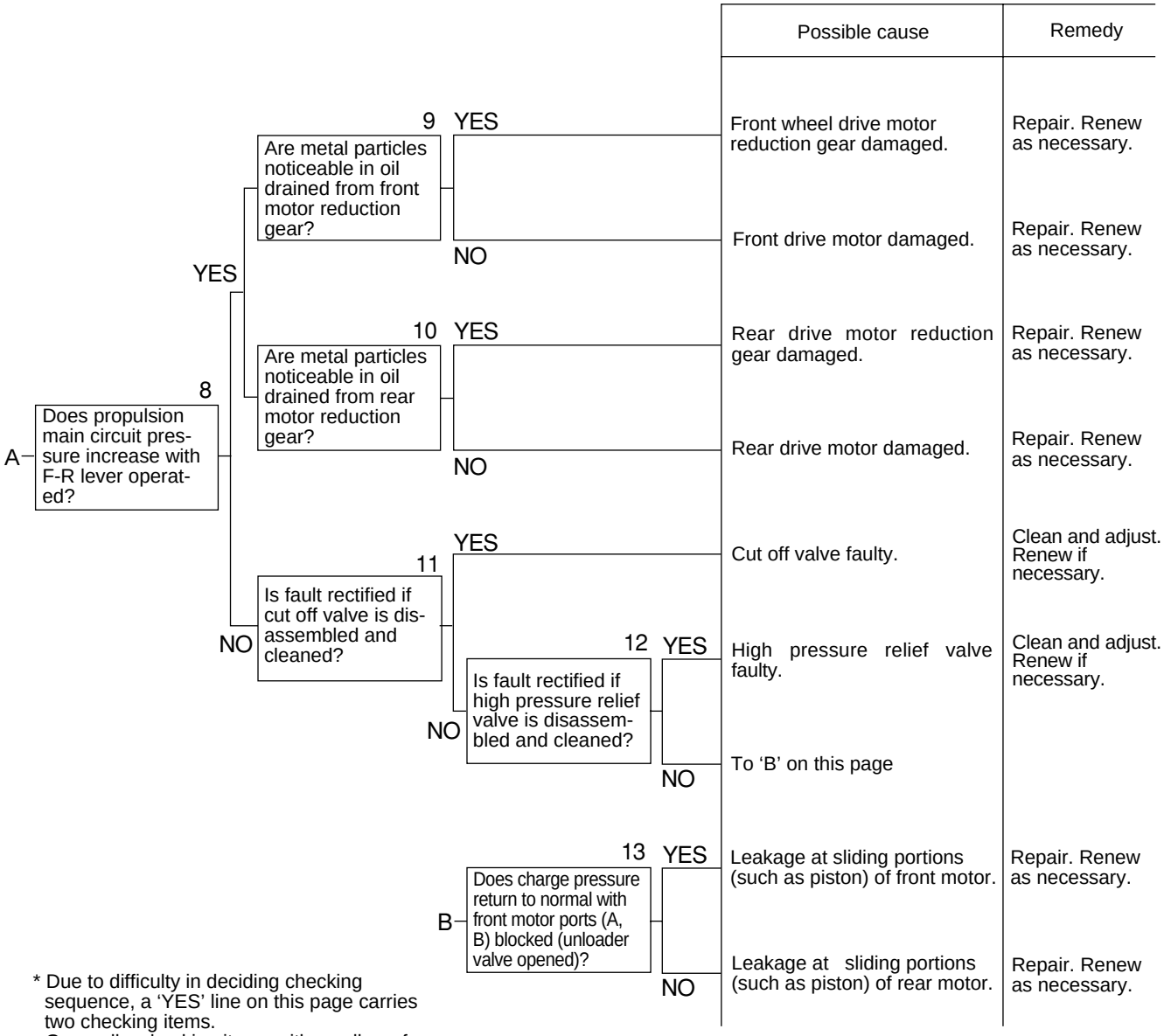




*1 Recheck the item enclosed by a dotted line.
*2 Due to difficulty in deciding checking sequence, a 'NO' line on this page carries two checking items.
• Generally, checking items with smaller reference number have higher probability.

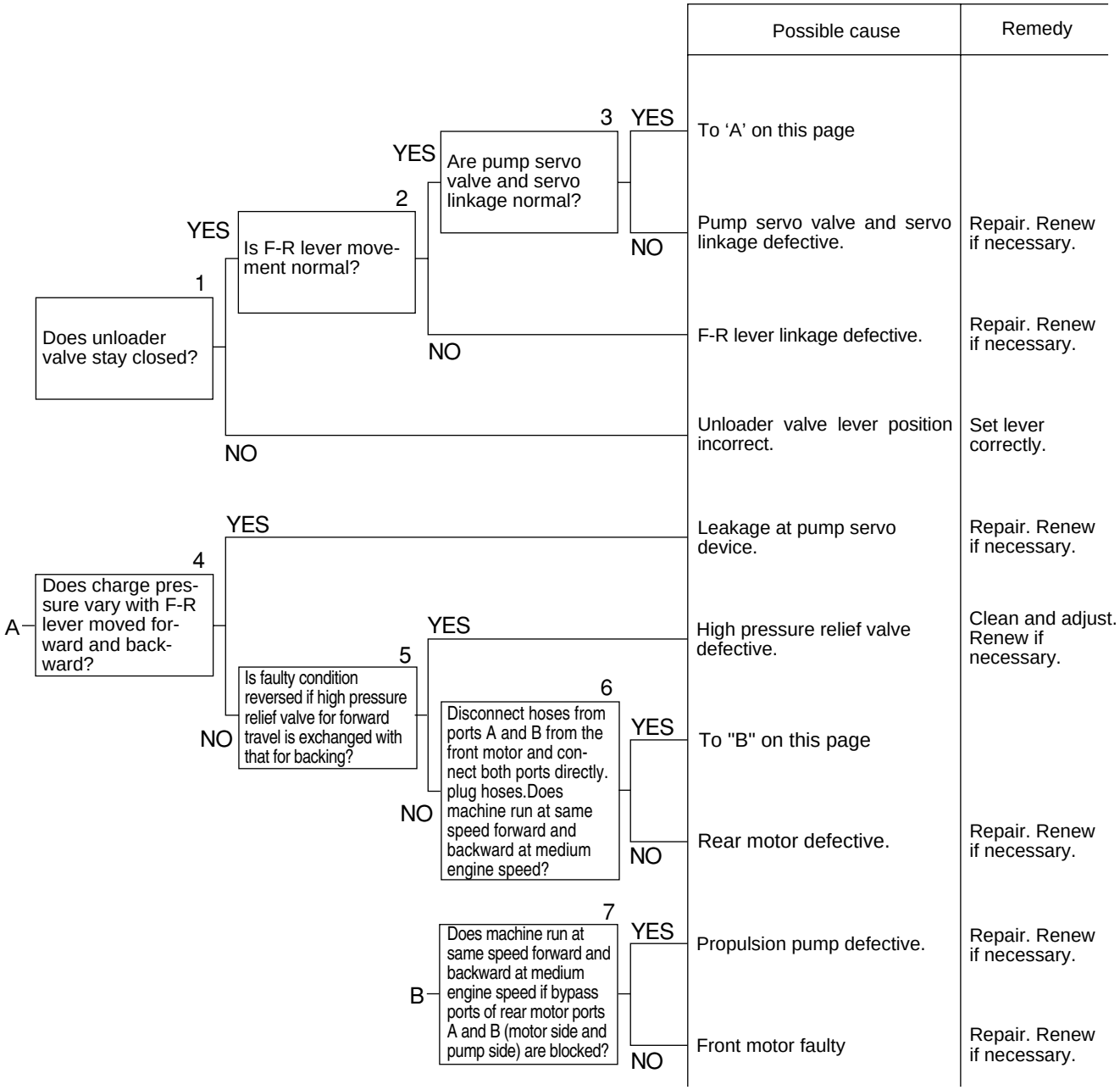
Possible cause	Remedy
To 'A' on page	
Rear wheel flushing valve faulty.	• Clean and adjust. • Renew if necessary.
Charge relief valve faulty.	• Clean and adjust. • Renew if necessary.
Oil leakage at sliding portions (such as piston) of front wheel motor.	Repair. Renew if necessary.
Oil leakage at sliding portions (such as piston) of rear wheel motor.	Repair. Renew if necessary.
Internal leakage of brake cylinder.	Repair. Renew if necessary.
Steering pump faulty.	Renew.
Leakage at sliding portions (pistons of propulsion pump or vibrator pump etc.).	Repair or renew wire.
Pump servo valve or servo linkage defective.	Repair or renew wire.
F-R lever linkage defective.	Repair or renew wire.
Unloader valve lever in incorrect position.	Set correctly.
Damaged splined portions in coupling or pump shaft.	Repair or renew wire.

a) Not propelled in both directions (forward and backward).
(2/2)



* Due to difficulty in deciding checking sequence, a 'YES' line on this page carries two checking items.
• Generally, checking items with smaller reference number have higher probability.

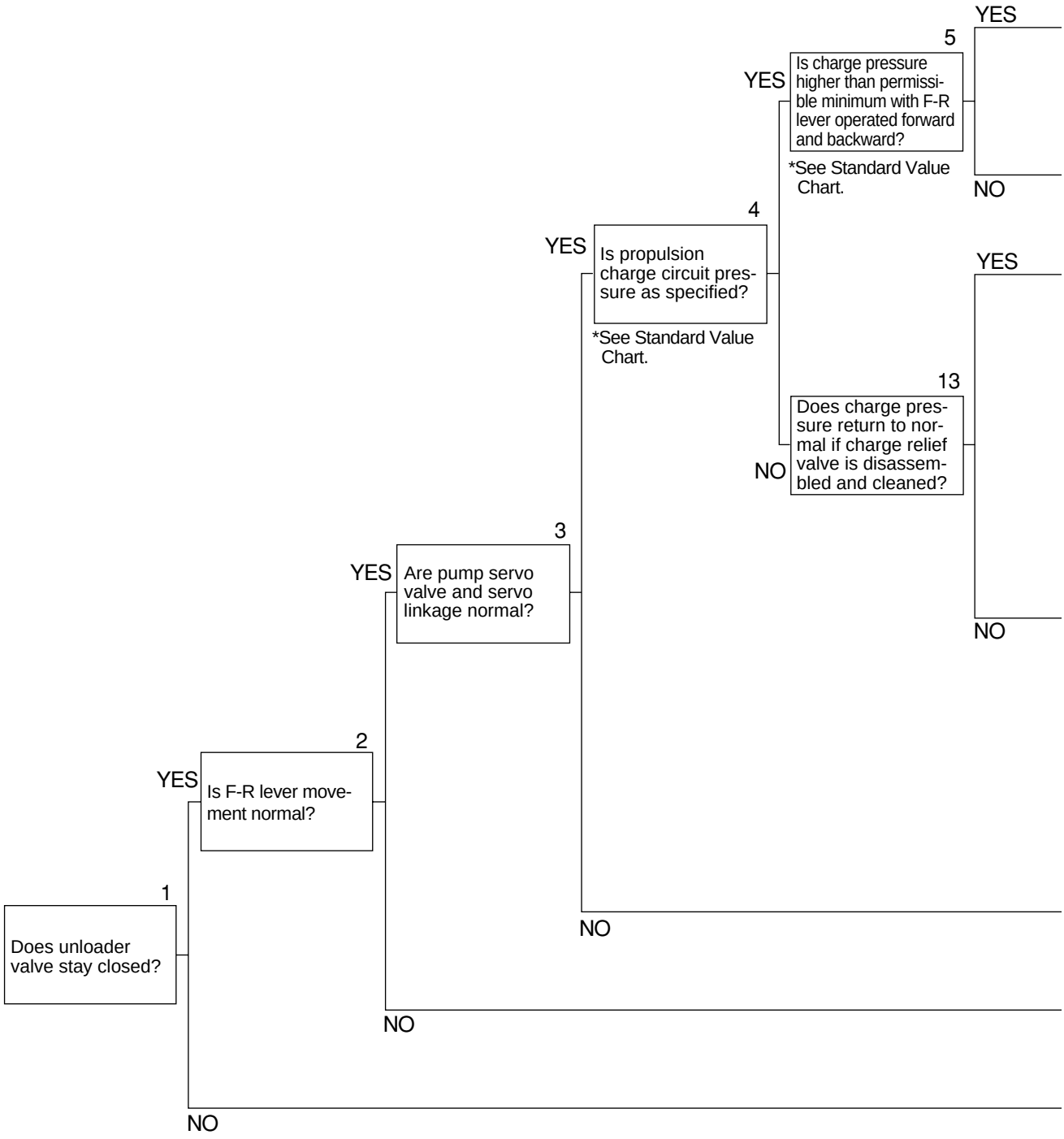
b) Machine is propelled in one direction only.

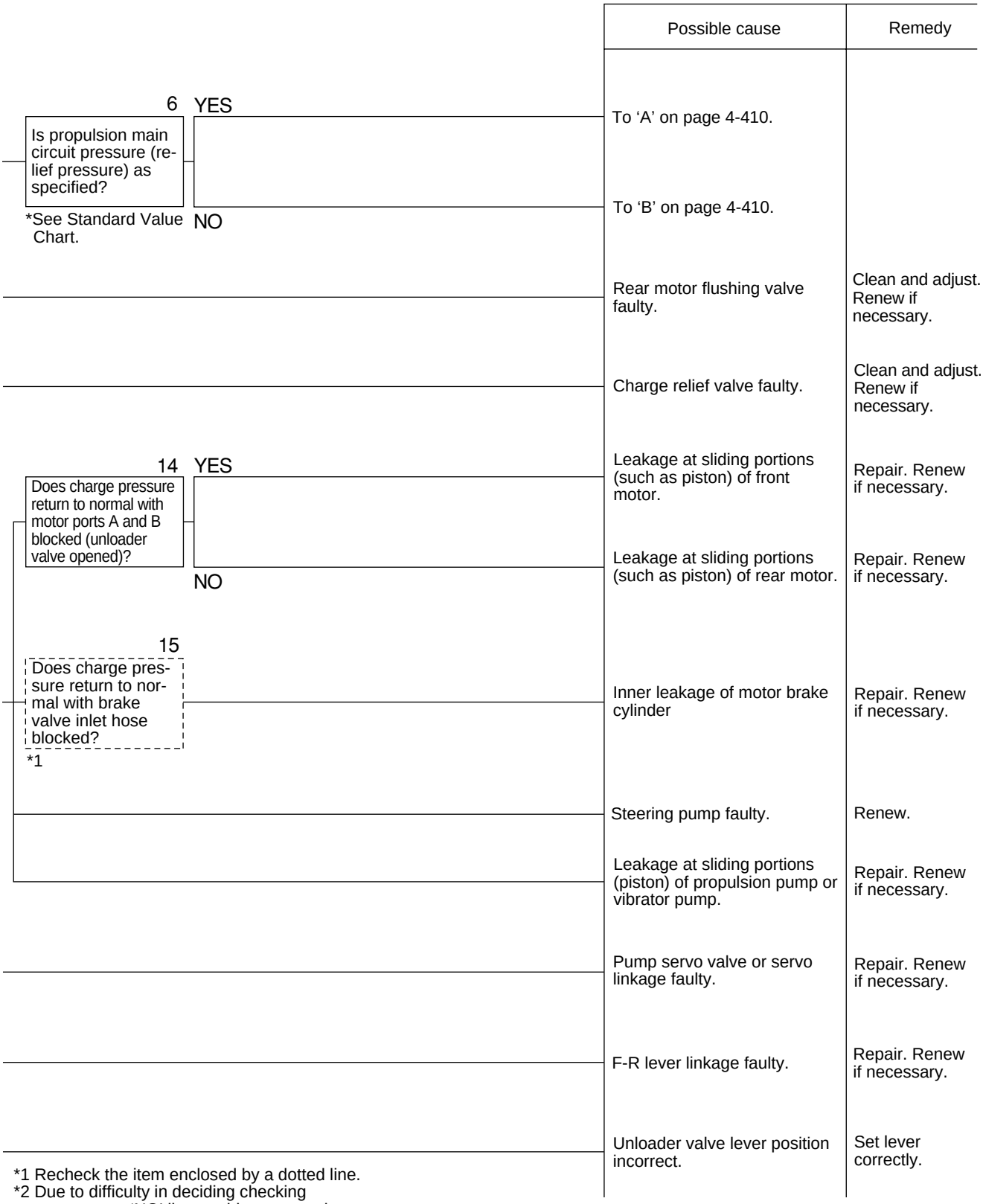


H-02 Travel speed not gained or low traction

★Start diagnosis with electric systems. If they are normal, use the procedures below:
★Check oil level in the hydraulic tank before proceeding to the following procedures.

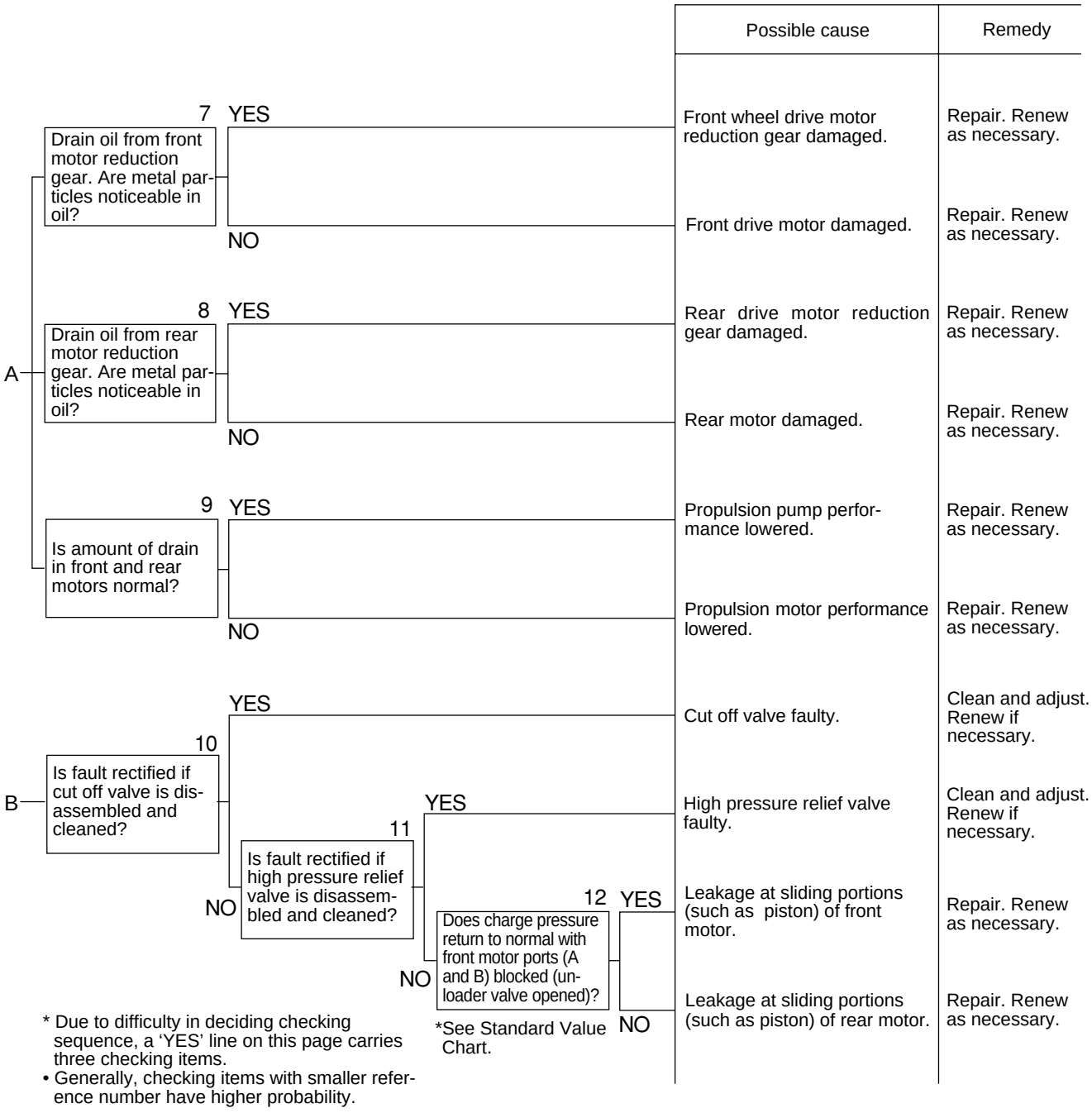
a) Speed not gained in both travel directions.
(1/2)





*1 Recheck the item enclosed by a dotted line.
*2 Due to difficulty in deciding checking sequence, a 'NO' line on this page carries two checking items.
• Generally, checking items with smaller reference number have higher probability.

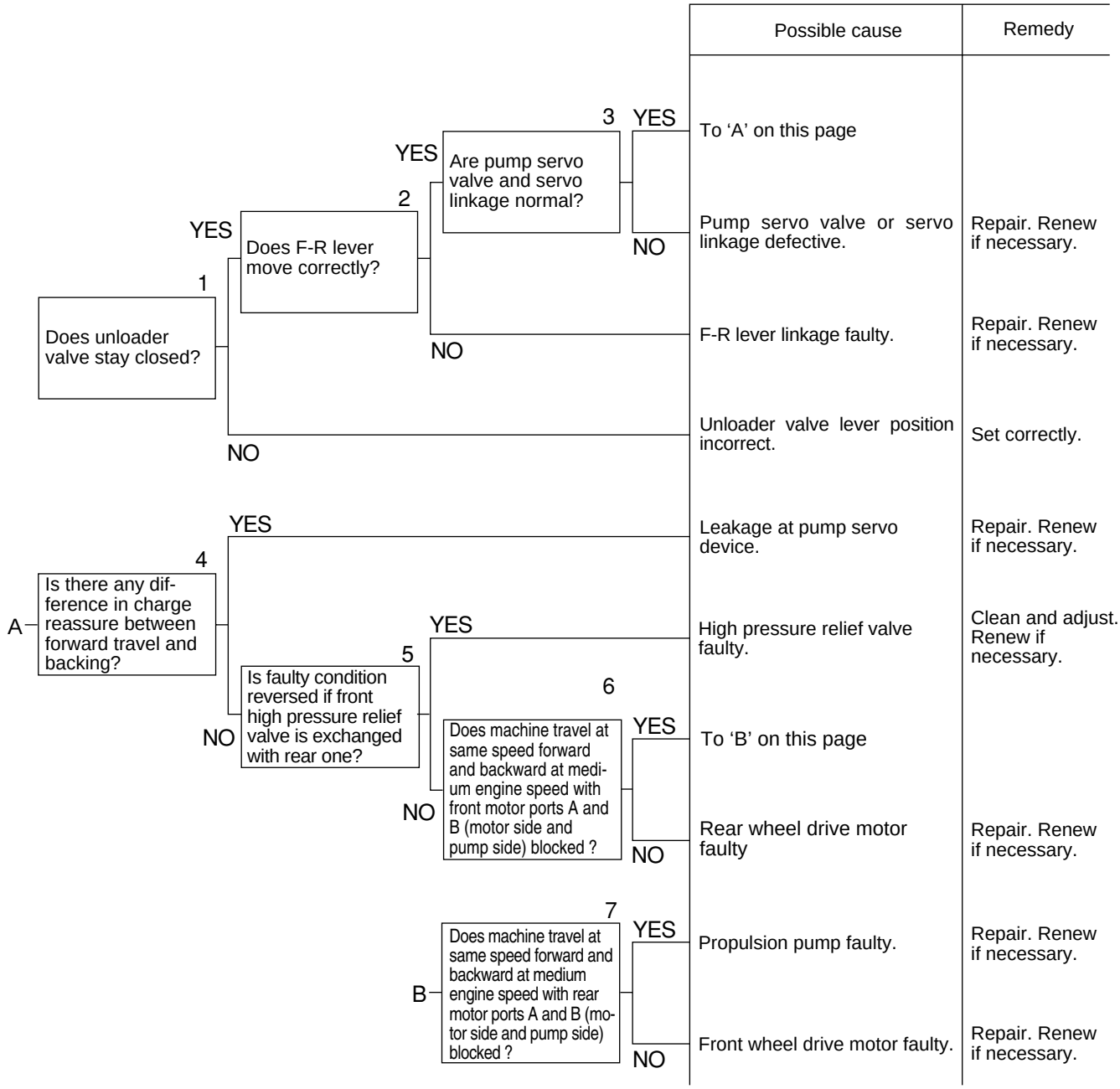
a) Speed not gained in both travel directions.
(2/2)



* Due to difficulty in deciding checking sequence, a 'YES' line on this page carries three checking items.
• Generally, checking items with smaller reference number have higher probability.

*See Standard Value Chart.

b) Speed not gained or low traction in either forward or backward travel direction.

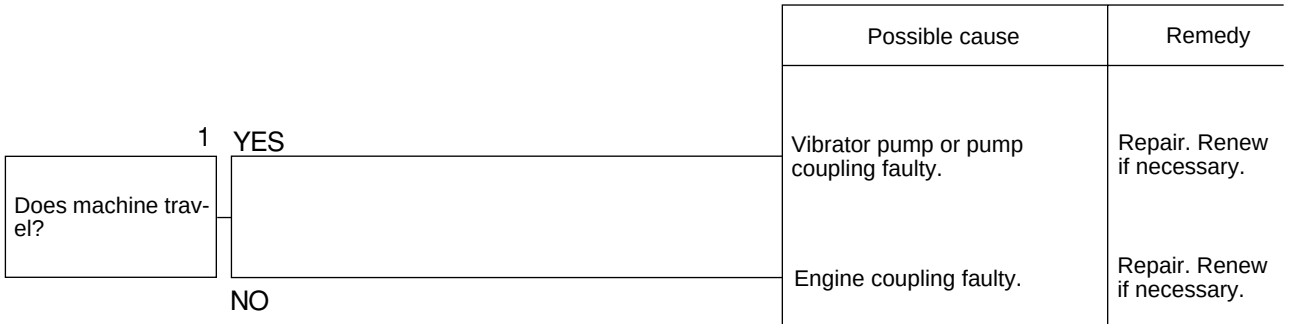


H-03 Vibrator does not work

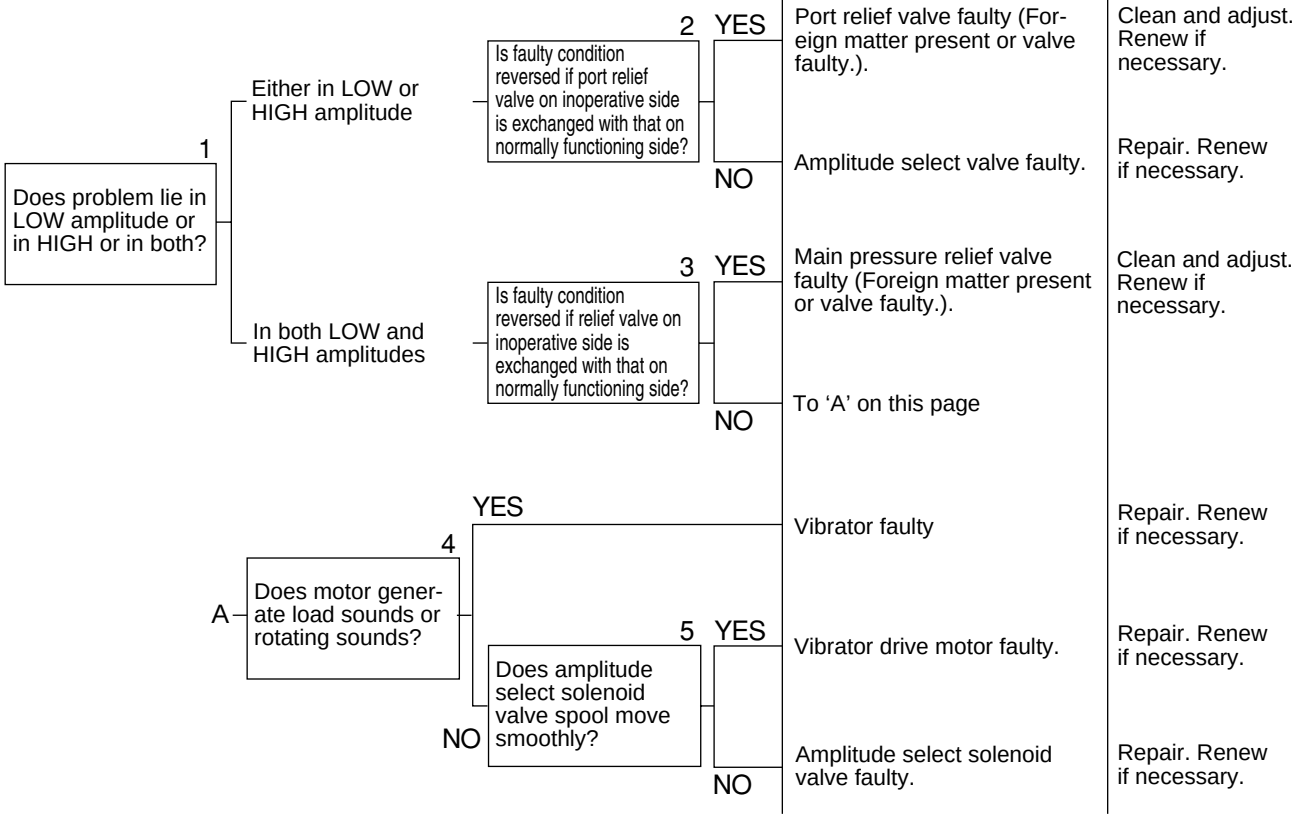
★Diagnose electric systems first. If they are normal, then use procedures as instructed bellow:

★Check the oil level in the hydraulic tank before proceeding to the following procedures.

a) Both front and rear vibrators are inoperative.



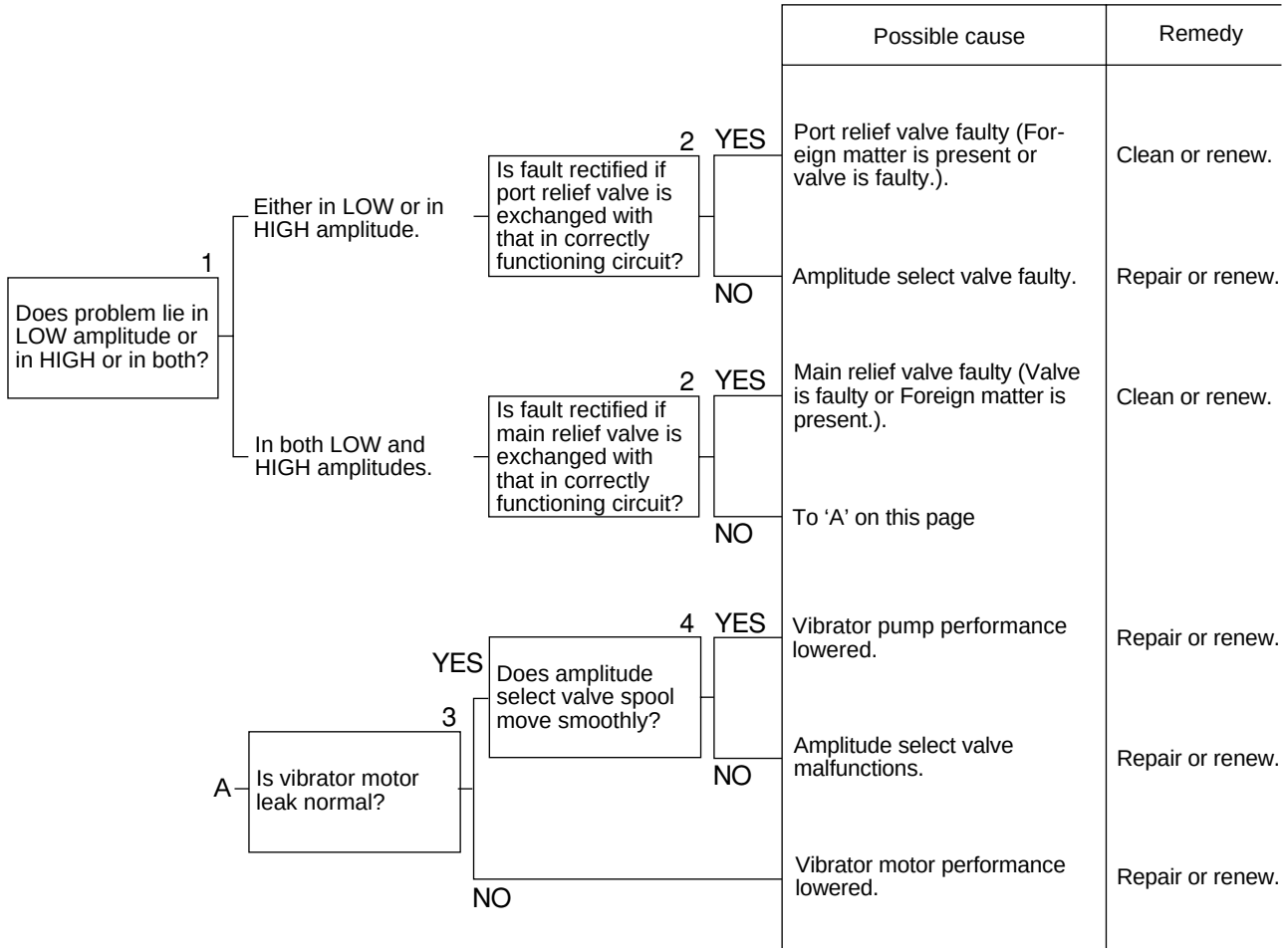
b) Either front or rear vibrator is inoperative.



H-04 Weak vibratory force

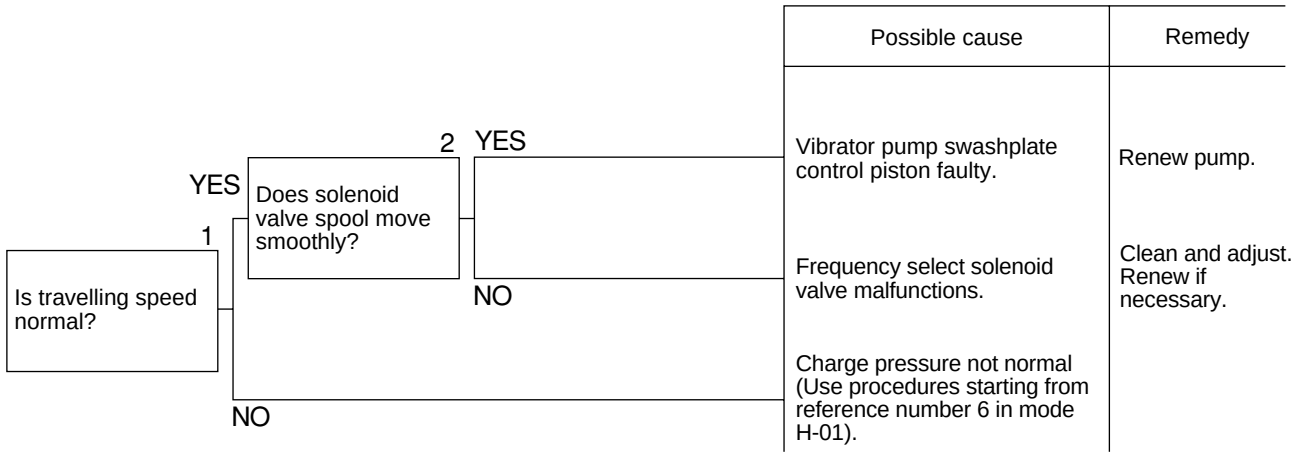
★Diagnose the electric systems first. If they are normal, use procedures as follows.
★Check the oil level in the hydraulic tank before proceeding to the following procedures.

*Vibratory force is weak in either front or rear vibrator.



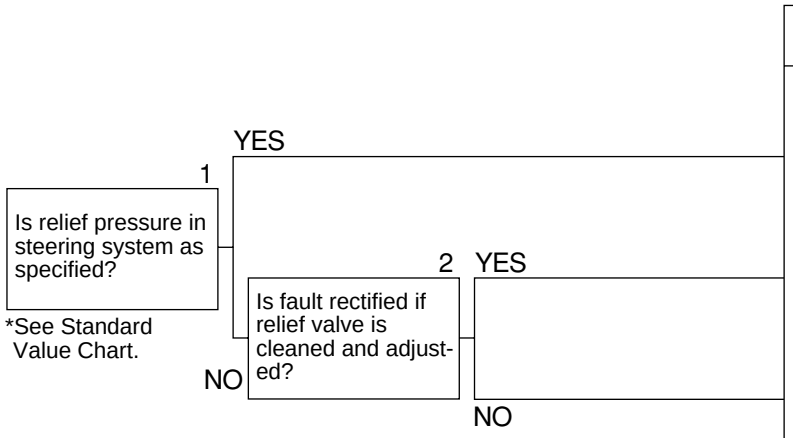
H-05 Frequency is not selected

★Diagnose electric systems first. If they are normal, then use the following procedures.



H-06 Steering not performed

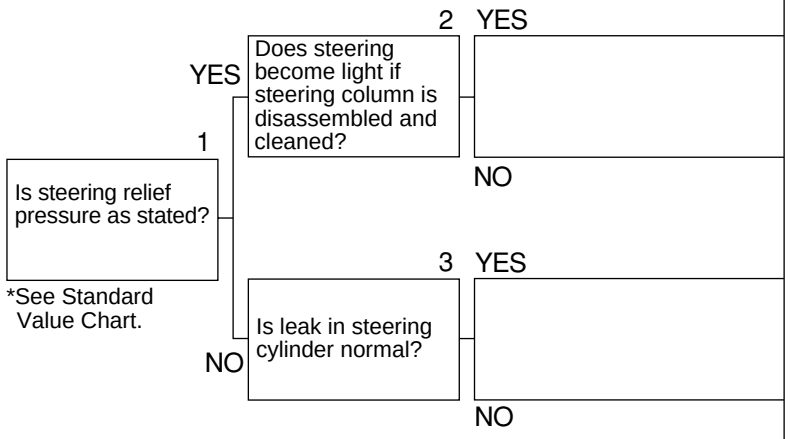
★Start with checking the oil level in the hydraulic tank.



Possible cause	Remedy
Steering mechanism faulty.	Repair.
Orbitrol relief valve setting lowered or foreign matter present.	Clean and adjust. Renew if necessary.
Steering pump performance lowered.	Renew.

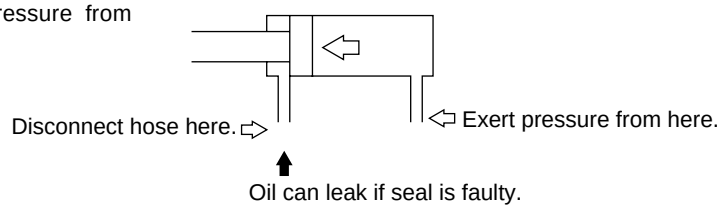
H-07 Heavy or slow steering

★Start with checking the oil level in the hydraulic tank.



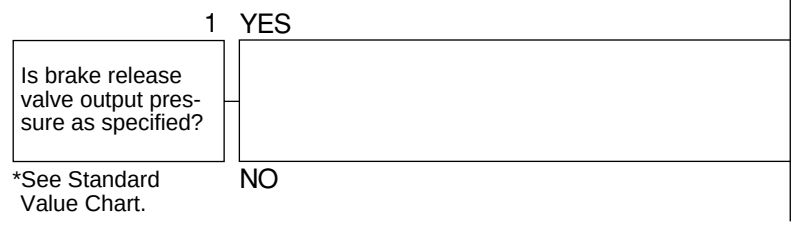
Possible cause	Remedy
Steering column faulty.	Disassemble and clean. Renew if necessary.
Steering mechanism in chassis malfunctions.	Repair.
Orbitrol relief valve setting lowered or foreign matter present.	Clean. Renew if necessary.
Steering cylinder faulty.	Repair. Renew if necessary.

*Fully extend the steering piston rod, disconnect hose from piston rod side. Exert pressure from cylinder head side.



H-08 Parking brake not applied sufficiently

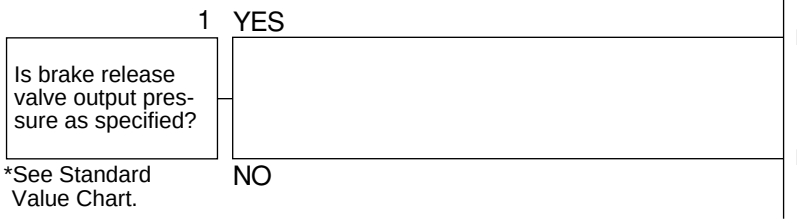
★Diagnose electric systems first. If they are normal, then use procedures stated as below.



Possible cause	Remedy
Parking brake (multi-disc brake) inner parts worn.	Repair. Renew as necessary.
Charge circuit pressure not normal (Use procedures starting from reference number 6 in H-01.).	

H-09 Parking brake not released

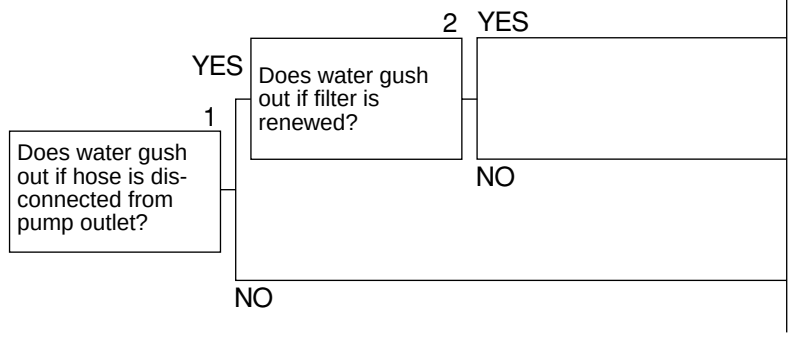
★Diagnose electric systems first. If they are normal, use procedures described as below.



Possible cause	Remedy
Parking brake piston seized.	Renew motor.
Brake release valve faulty.	Clean and adjust. Renew if necessary.

H-10 No sprinkling

★Diagnose electric systems first. If they are normal, then use procedures described below.



Possible cause	Remedy
Filter clogged.	Renew.
Pipes or nozzles clogged.	Adjust. Renew if necessary.
Sprinkler pump faulty.	Renew.

SAKAI HEAVY INDUSTRIES, LTD.

Head office: 1-4-8, Shiba-Daimon, Minato-ku
Tokyo, Japan
Telephone: Tokyo(03) 3431-9971
Facsimile: (03) 3431-6212

Printed in Japan 2000.3.100 ⓪ C.D