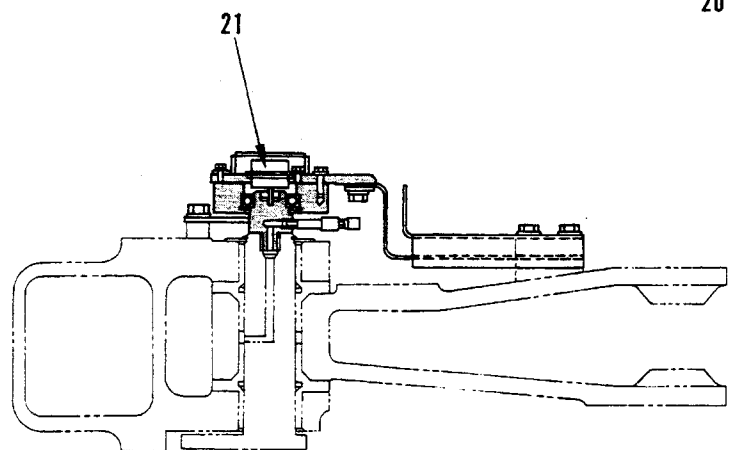
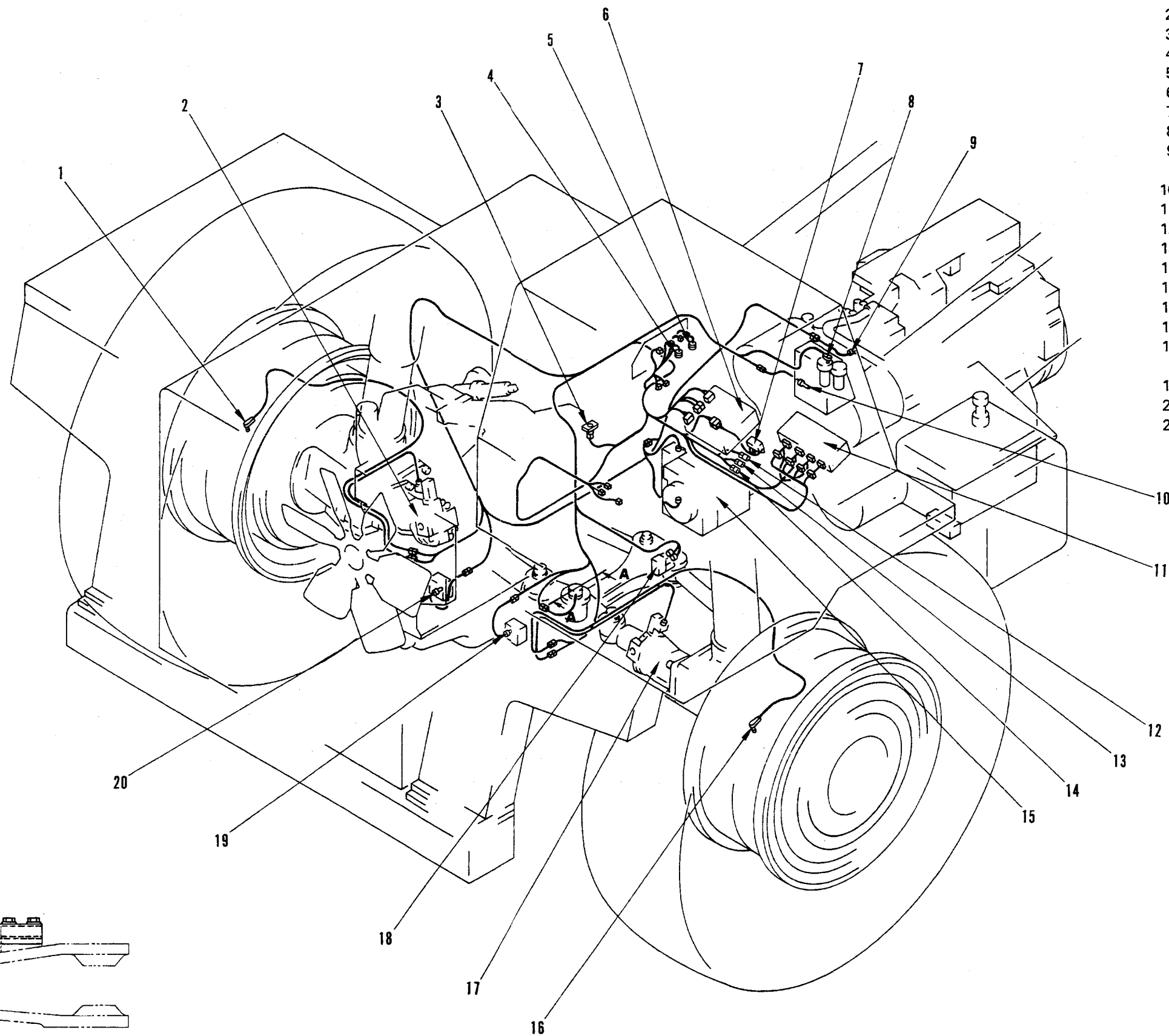


GENERAL LOCATIONS FOR ELECTRICAL COMPONENTS

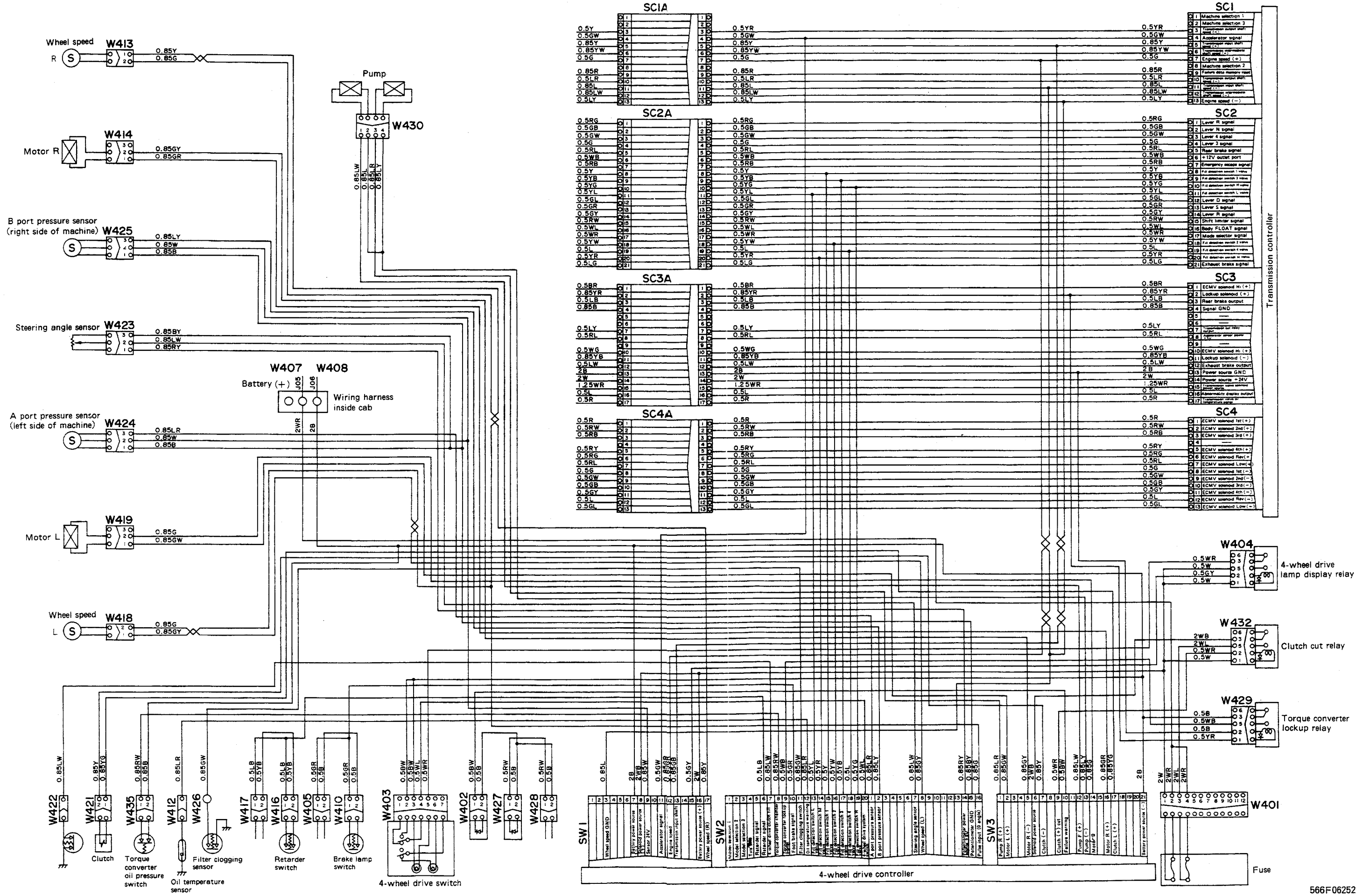
- 1. Wheel speed sensor
- 2. Piston motor
- 3. 4-wheel drive switch
- 4. Brake lamp switch
- 5. Retarder switch
- 6. 4-wheel drive controller
- 7. Fuse box
- 8. Filter clogging switch
- 9. Torque converter oil temperature sensor
- 10. Oil temperature sensor
- 11. Transmission controller
- 12. 4-wheel drive lamp display relay
- 13. Clutch cut relay
- 14. Torque converter lockup relay
- 15. Piston pump
- 16. Wheel speed sensor
- 17. Piston motor
- 18. Front drive selector clutch solenoid valve (ECMV)
- 19. A port pressure sensor
- 20. B port pressure sensor
- 21. Steering angle sensor



056606

566F06251

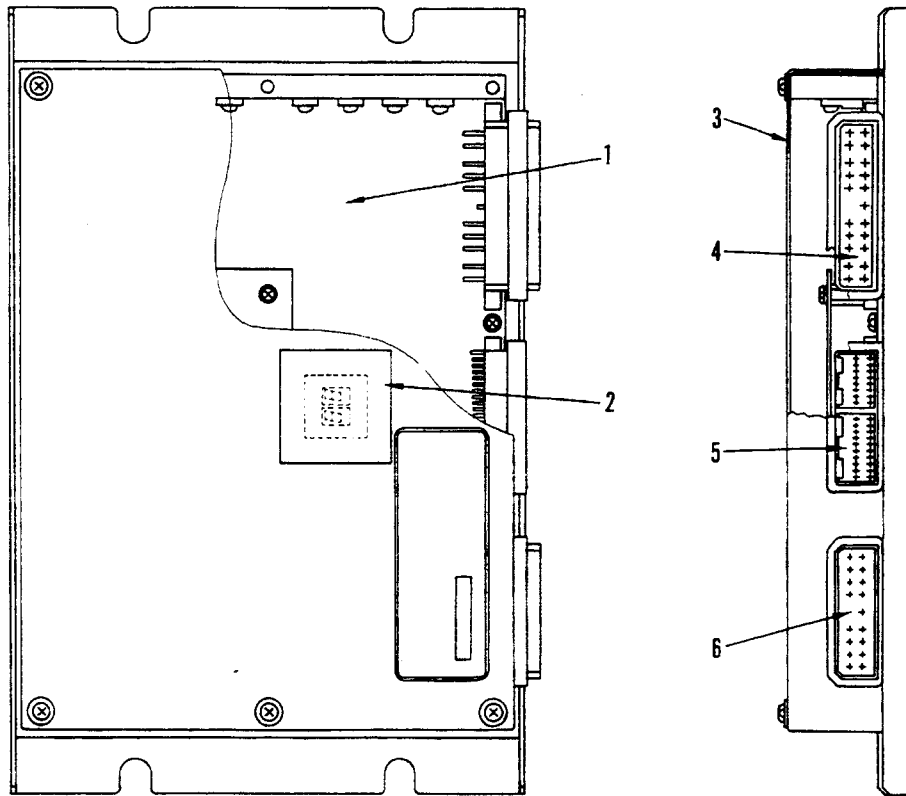
ELECTRICAL CIRCUIT DIAGRAM



056606

4-WHEEL DRIVE CONTROLLER

056606



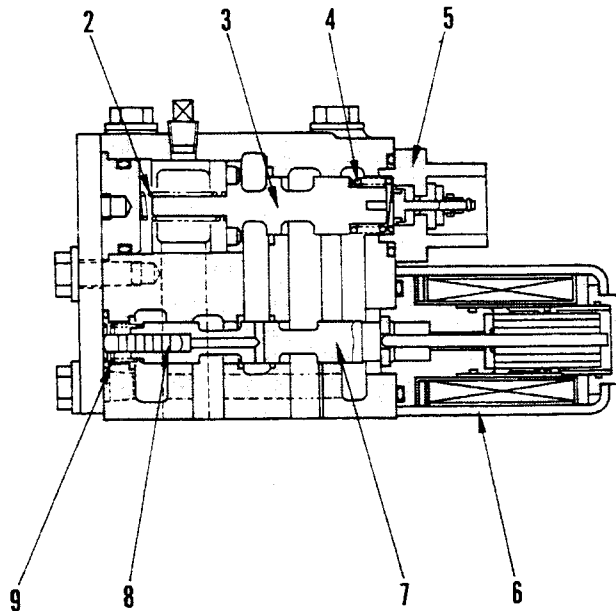
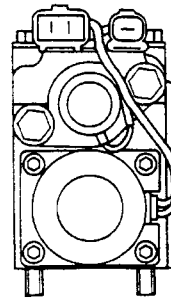
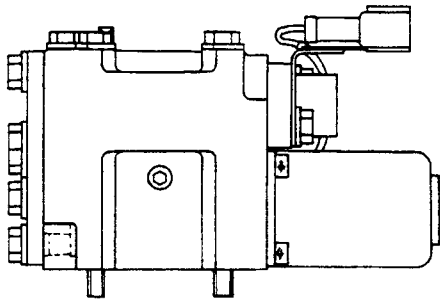
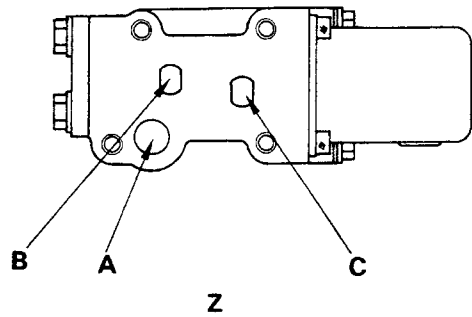
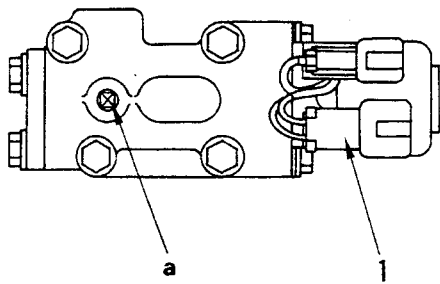
566F06253

1. Printboard
2. Self-diagnosis display window
3. Case
4. Connector
5. Connector
6. Connector

FUNCTION

- The controller detects the signals from the sensors and switches mounted on the machine, turns the ECMV (clutch control valve) ON/OFF, and controls the front drive pump and motor.

ECMV (Electronic Control Modulation Valve)



- 1. Connector
- 2. Spring
- 3. Flow detection valve spool
- 4. Spring
- 5. Fill switch
- 6. Proportional solenoid
- 7. Pressure control valve spool
- 8. Load piston
- 9. Spring

056606

566F03023

- A. To clutch
- B. Drain
- C. From pump
- a. Plug for measuring clutch pressure

FUNCTION

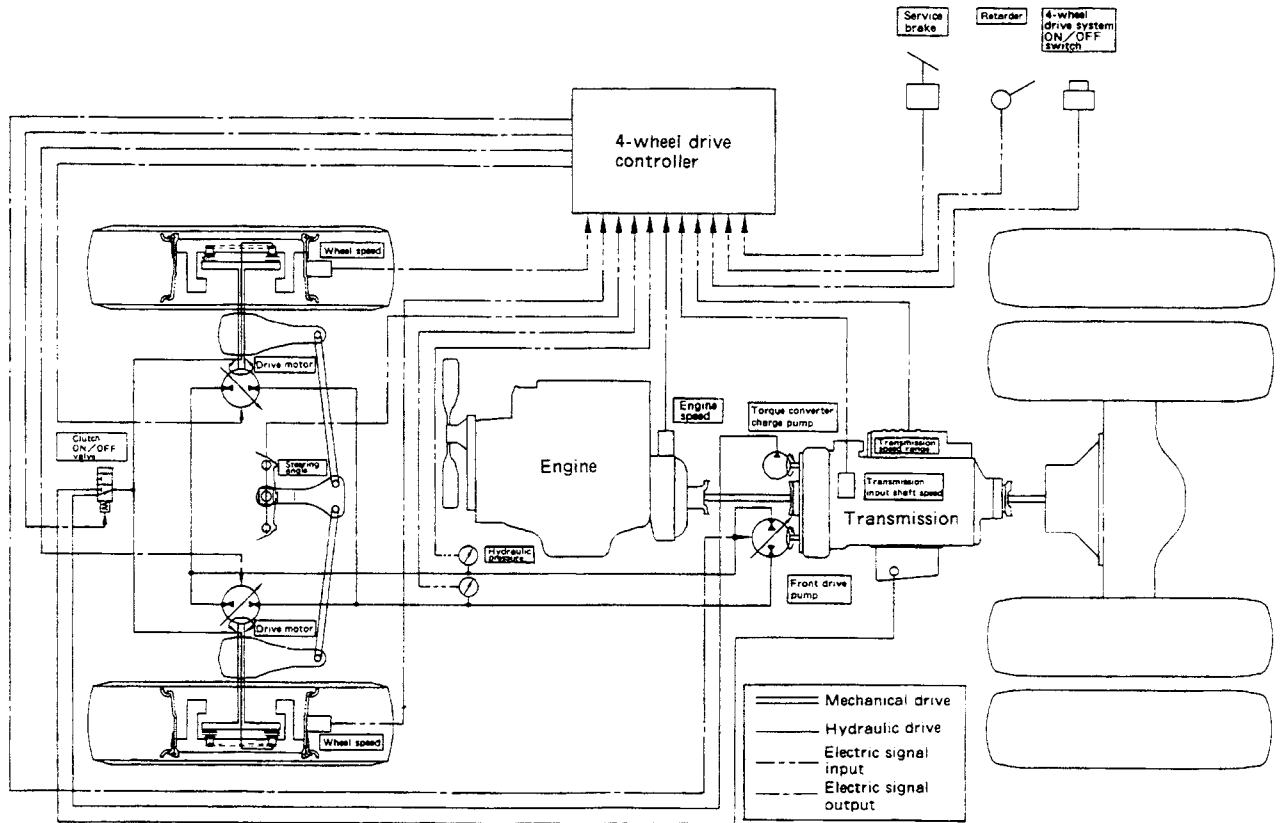
- This valve receives the signals from the 4-wheel drive controller, and switches the clutch ON/OFF. It is provided with a modulation function to reduce the shock when engaging the clutch.
- ★ This part is common with the ECMV for the transmission. For details of its operation, see TRANSMISSION ECMV.

FRONT DRIVE SYSTEM

HD325-6W

SYSTEM DIAGRAM

056606



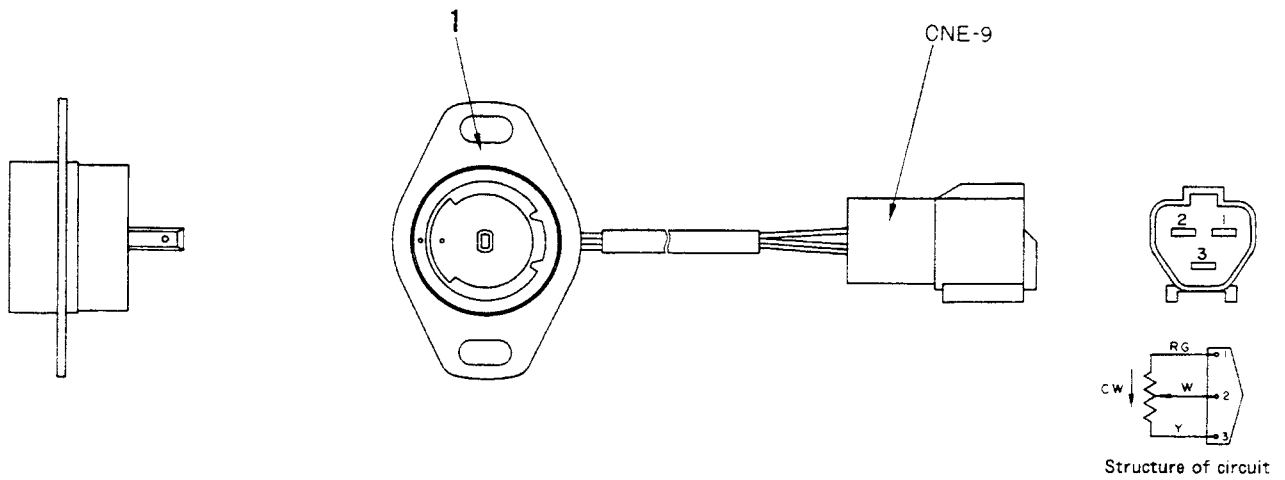
566F06250

FUNCTION

- The front drive system receives the transmission speed range signal, front and rear wheel speed signals, and the signals from the other switches and sensors. The 4-wheel drive controller automatically controls the drive force for the front wheels to the optimum value.
- When there is any abnormality in the front drive system, the central warning lamp lights up and the alarm buzzer sounds. In addition, the 4-wheel drive switch lamps flash and the error code is displayed on the top surface of the controller. (For details of the error codes, see TROUBLESHOOTING.)

SENSORS, SWITCHES

STEERING ANGLE SENSOR (Potentiometer)

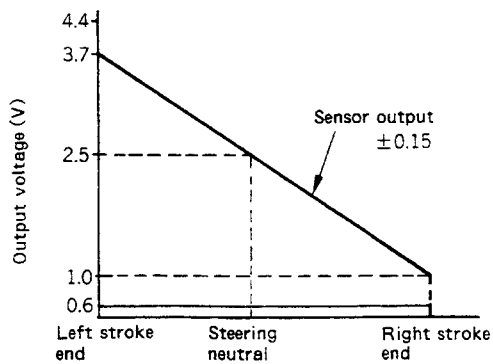


Structure of circuit

209F05112

1. Potentiometer (variable resistor)
2. Connector

056606



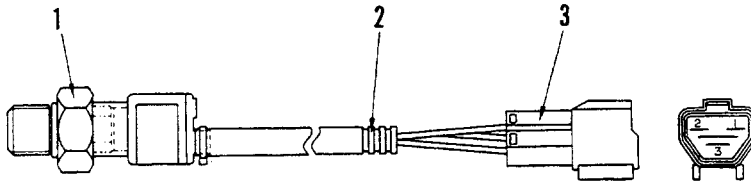
Output characteristics

566F06254

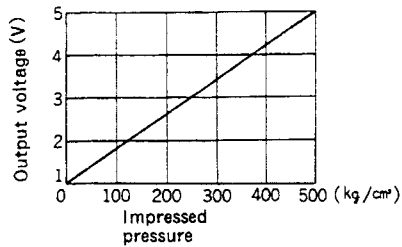
FUNCTION

- This is installed to the steering center lever and detects the angle to which the steering has been turned.

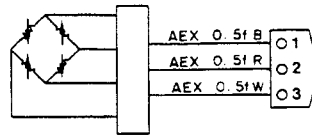
HIGH-PRESSURE OIL PRESSURE SENSOR



- 1. Sensor
- 2. Tube
- 3. Connector



Output characteristics



Structure of circuit

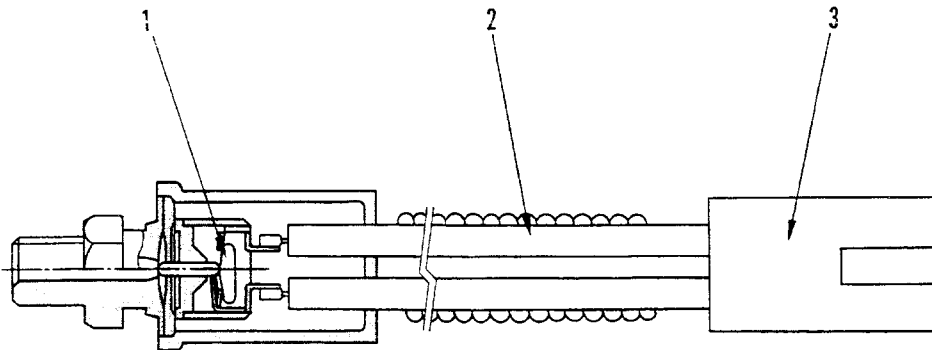
566F06255

FUNCTION

- This sensor detects the inlet and outlet port pressures of the front drive pump and motor.

056606

CLUTCH OIL PRESSURE SENSOR



566F06256

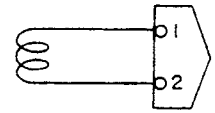
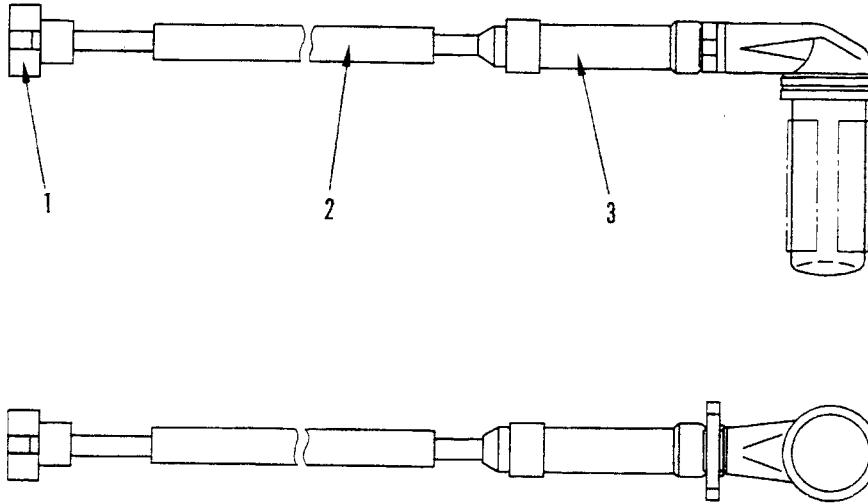
- 1. Switch
- 2. Tube
- 3. Connector

FUNCTION

- This sensor detects the clutch oil pressure (torque converter oil pressure) and opens the circuit if the oil pressure is below the specified pressure.

Actuating pressure : $29 \pm 2.9 \text{ kg/cm}^2$
 Resetting pressure : $22 \pm 2.9 \text{ kg/cm}^2$

WHEEL SPEED SENSOR



Structure of circuit

056606

566F06257

1. Connector
2. Tube
3. Sensor

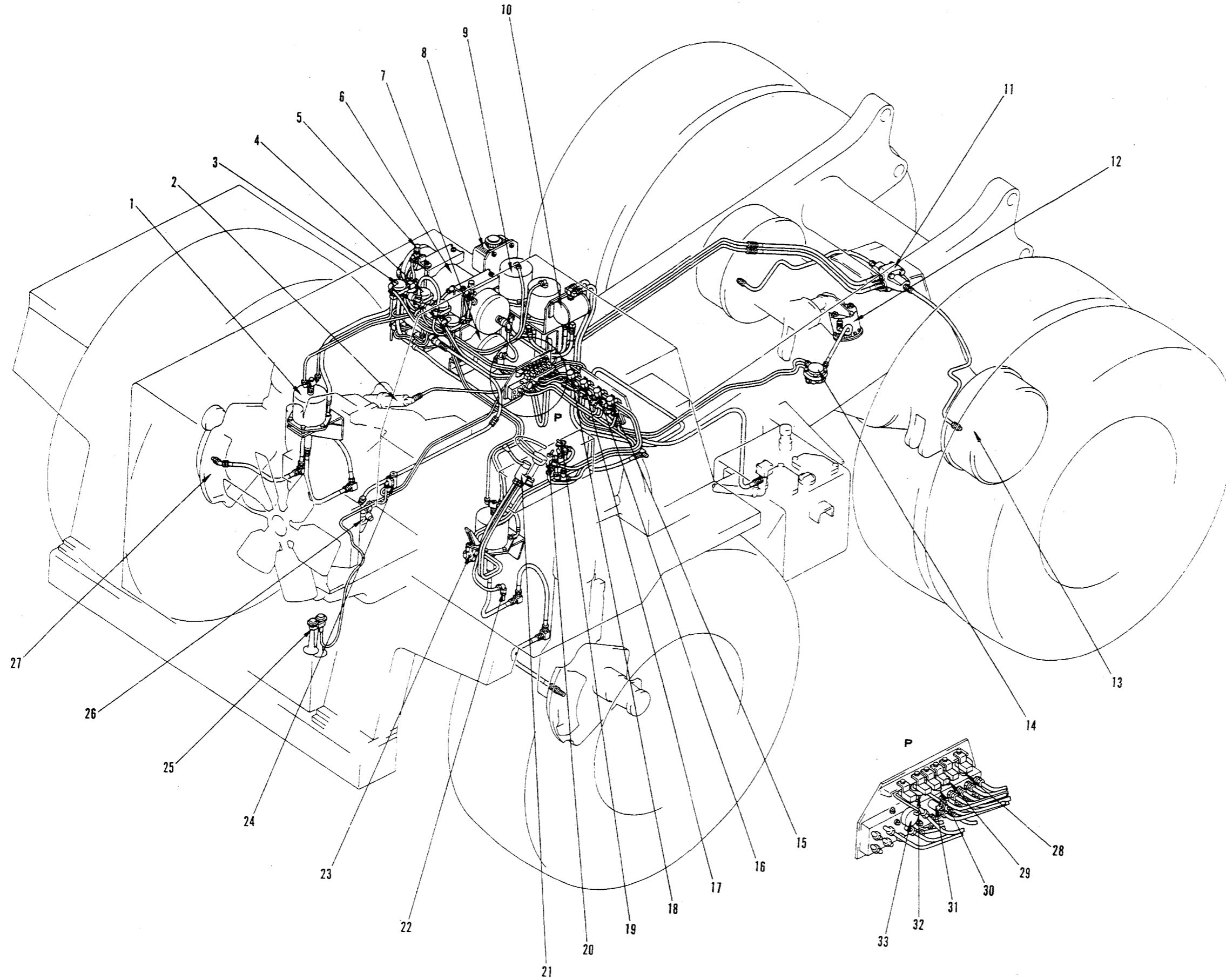
FUNCTION

- This sensor is installed to the front axle and detects the actual speed of rotation of the wheel.

AIR PIPING

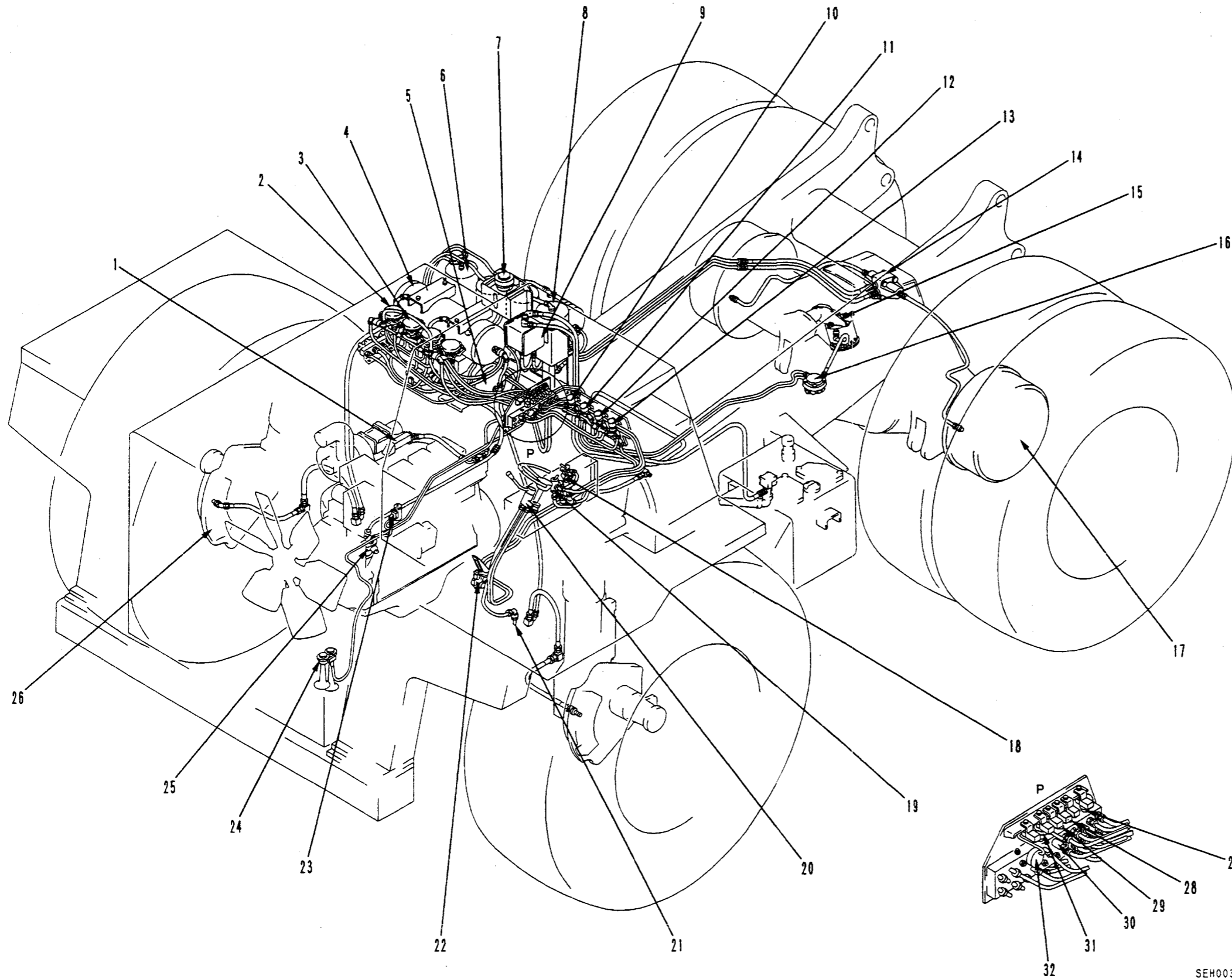
HD325-6: Serial No.: 5001 - 5484

056606



1. Front brake chamber
2. Exhaust brake cylinder
3. Front brake relay valve
4. Rear brake relay valve
5. Protection valve
6. Air tank (dry)
7. Air tank (wet)
8. Brake oil tank (front)
9. Rear brake chamber
10. Brake oil tank (rear)
11. Slack adjuster
12. Parking brake chamber
13. Rear brake
14. Parking brake relay valve
15. Auto retarder solenoid valve
16. Exhaust brake solenoid valve
17. Front brake cut-off solenoid valve (2)
18. Front brake cut-off solenoid valve (1)
19. Emergency brake valve
20. Parking brake valve
21. Hand brake (retarder)
22. Muffler
23. Brake valve
24. Air governor
25. Horn
26. Air compressor
27. Front brake
28. Retarder lamp switch
29. Parking brake switch
30. Brake lamp switch
31. Emergency brake switch
32. Exhaust brake switch
33. Air pressure sensor

HD325-6: Serial No.: 5485 and up
 HD405-6: Serial No.: 1001 and up

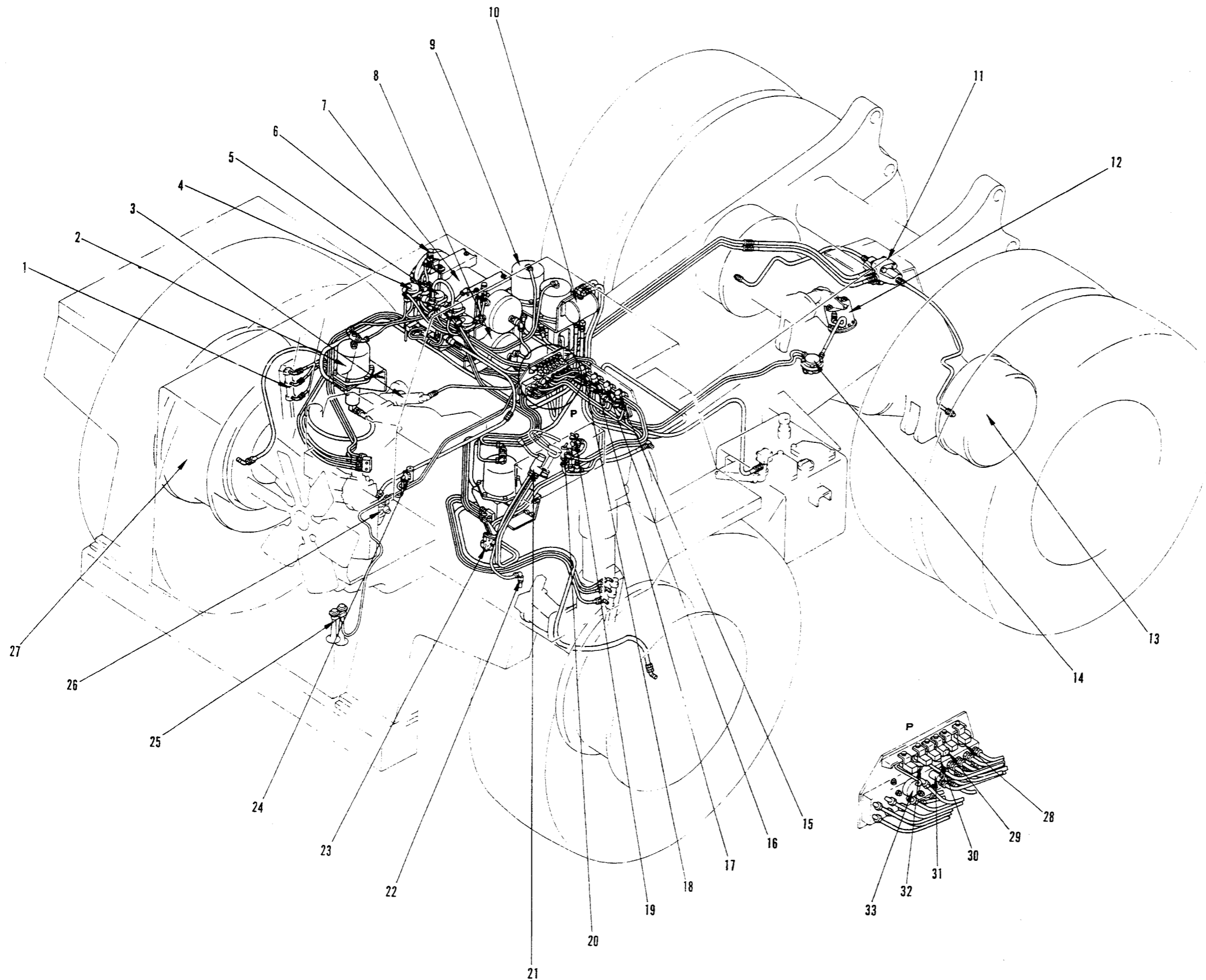


1. Front brake chamber
2. Exhaust brake cylinder
3. Front brake relay valve
4. Rear brake relay valve
5. Air tank (dry)
6. Air tank (wet)
7. Brake oil tank (front)
8. Rear brake chamber
9. Brake oil tank (rear)
10. Slack adjuster
11. Parking brake chamber
12. Rear brake
13. Parking brake relay valve
14. Auto retarder solenoid valve
15. Exhaust brake solenoid valve
16. Front brake cut-off solenoid valve (2)
17. Front brake cut-off solenoid valve (1)
18. Emergency brake valve
19. Parking brake valve
20. Hand brake (retarder)
21. Muffler
22. Brake valve
23. Air governor
24. Horn
25. Air compressor
26. Front brake
27. Retarder lamp switch
28. Parking brake switch
29. Brake lamp switch
30. Emergency brake switch
31. Exhaust brake switch
32. Air pressure sensor

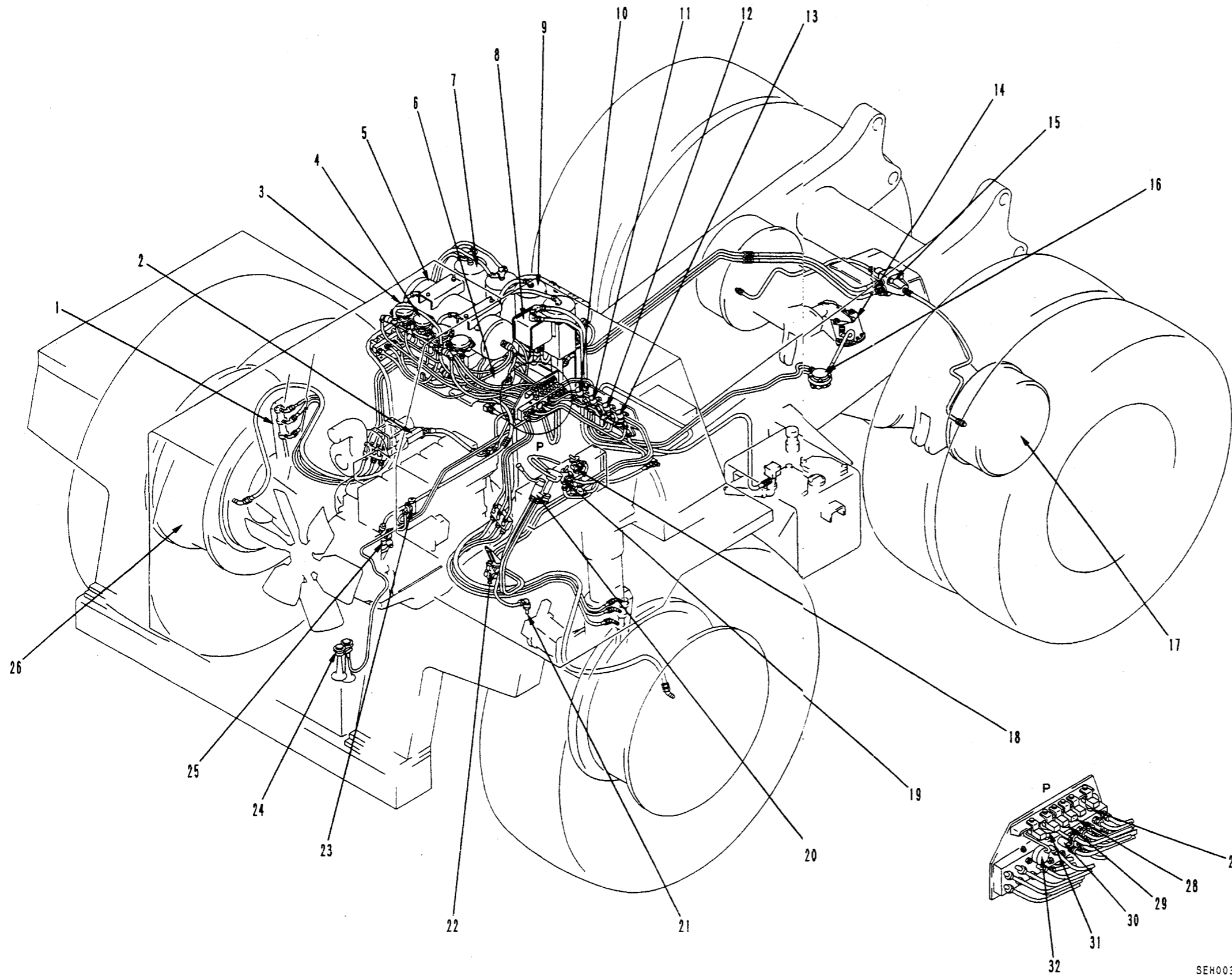
SEH00320

056606

056606



1. Air cylinder (for suspension)
2. Front brake chamber
3. Exhaust brake cylinder
4. Front brake relay valve
5. Rear brake relay valve
6. Protection valve
7. Air tank (dry)
8. Air tank (wet)
9. Rear brake chamber
10. Brake oil tank (rear)
11. Slack adjuster
12. Parking brake chamber
13. Rear brake
14. Parking brake relay valve
15. Auto retarder solenoid valve
16. Exhaust brake solenoid valve
17. Front brake cut-off solenoid valve (2)
18. Front brake cut-off solenoid valve (1)
19. Emergency brake valve
20. Parking brake valve
21. Hand brake (retarder)
22. Muffler
23. Brake valve
24. Air governor
25. Horn
26. Air compressor
27. Front brake
28. Retarder lamp switch
29. Parking brake switch
30. Brake lamp switch
31. Emergency brake switch
32. Exhaust brake switch
33. Air pressure sensor



1. Air cylinder (for suspension)
2. Front brake chamber
3. Exhaust brake cylinder
4. Front brake relay valve
5. Rear brake relay valve
6. Air tank (dry)
7. Air tank (wet)
8. Rear brake chamber
9. Brake oil tank (rear)
10. Slack adjuster
11. Parking brake chamber
12. Rear brake
13. Parking brake relay valve
14. Auto retarder solenoid valve
15. Exhaust brake solenoid valve
16. Front brake cut-off solenoid valve (2)
17. Front brake cut-off solenoid valve (1)
18. Emergency brake valve
19. Parking brake valve
20. Hand brake (retarder)
21. Muffler
22. Brake valve
23. Air governor
24. Horn
25. Air compressor
26. Front brake
27. Retarder lamp switch
28. Parking brake switch
29. Brake lamp switch
30. Emergency brake switch
31. Exhaust brake switch
32. Air pressure sensor

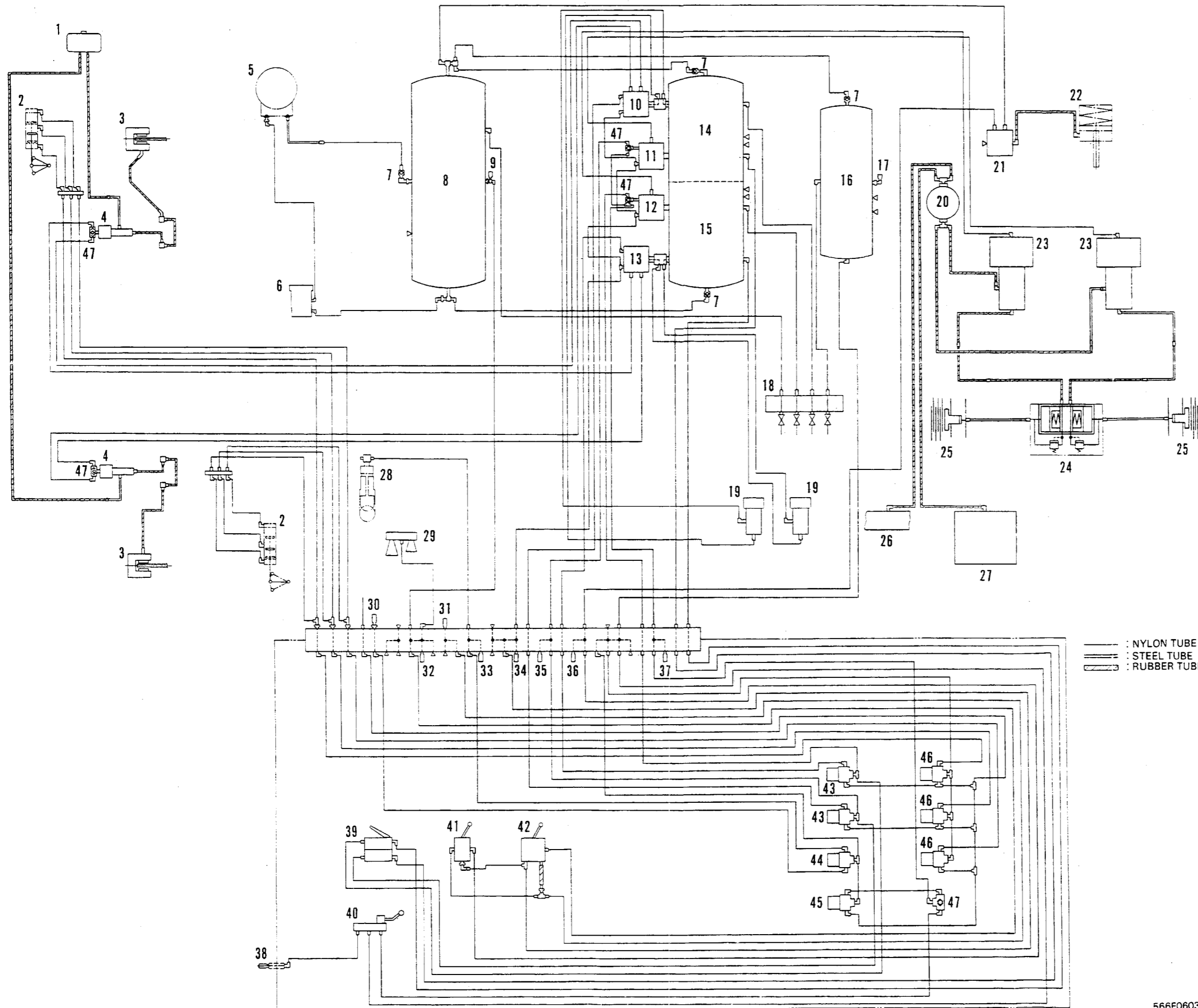
056606

SEH00321

AIR CIRCUIT DIAGRAM

HD325-6: Serial No.: 5001 - 5484

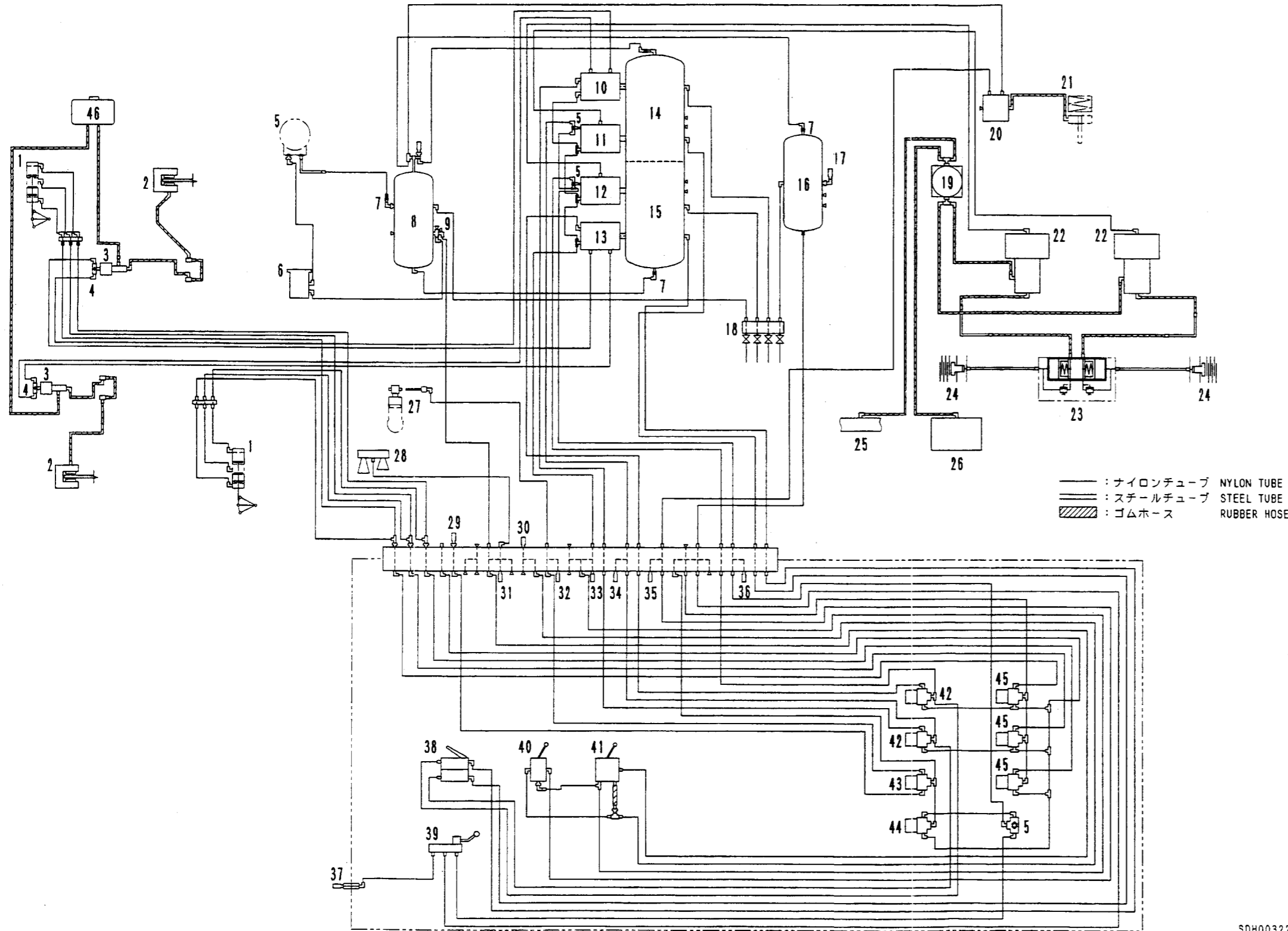
056606



1. Brake oil tank (front)
2. Air cylinder (for suspension control)
3. Front brake
4. Front brake chamber
5. Air compressor
6. Air governor
7. Check valve
8. Air tank (dry)
9. Safety valve
10. Front brake relay valve (with emergency)
11. Rear brake relay valve (with emergency)
12. Rear brake relay valve (with emergency)
13. Front brake relay valve (with emergency)
14. Air tank (dry)
15. Air tank (dry)
16. Air tank (pilot)
17. Air charge socket
18. Drain valve
19. Protection valve
20. Brake oil tank (rear)
21. Parking brake relay valve
22. Parking brake chamber
23. Rear brake chamber
24. Slack adjuster
25. Rear brake
26. Brake cooling circuit
27. Transmission oil tank
28. Exhaust brake cylinder
29. Horn
30. Muffler
31. Muffler
32. Air pressure sensor
33. Exhaust brake switch
34. Emergency brake switch
35. Brake lamp switch
36. Parking brake switch
37. Retarder lamp switch
38. Muffler
39. Brake valve
40. Retarder valve
41. Parking brake valve
42. Emergency brake valve
43. Front brake cut-off solenoid valve
44. Exhaust brake solenoid valve
45. Auto-retarder solenoid valve
46. Suspension control solenoid valve
47. Double check valve

— : NYLON TUBE
 = = : STEEL TUBE
 - - - : RUBBER TUBE

HD325-6: Serial No.: 5485 and up
 HD405-6: Serial No.: 1001 and up

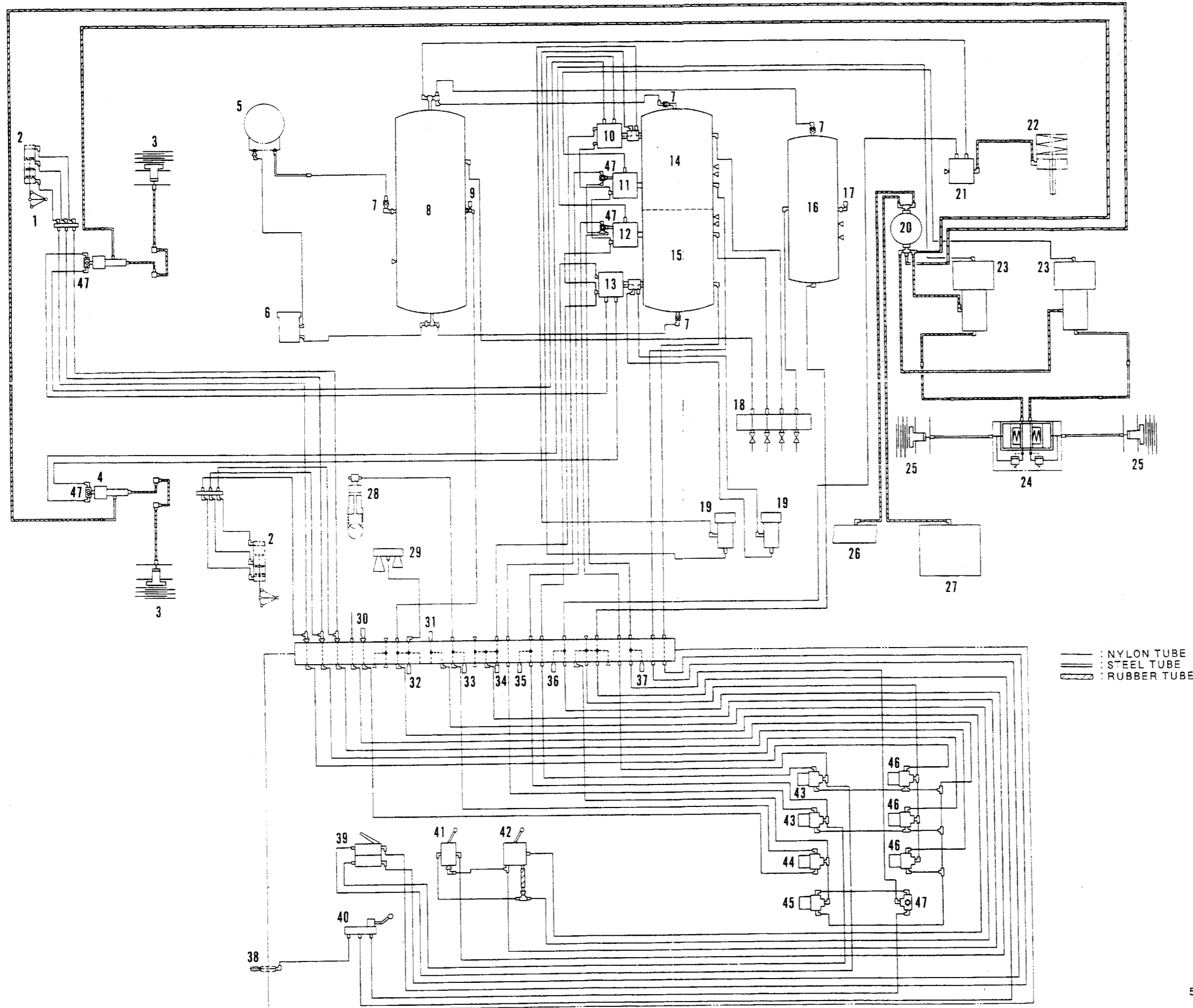


1. Air cylinder (for suspension control)
2. Front brake
3. Front brake chamber
4. Double check valve
5. Air compressor
6. Air governor
7. Check valve
8. Air tank (dry)
9. Safety valve
10. Front brake relay valve (with emergency)
11. Rear brake relay valve (with emergency)
12. Rear brake relay valve (with emergency)
13. Front brake relay valve (with emergency)
14. Air tank (dry)
15. Air tank (dry)
16. Air tank (pilot)
17. Air charge socket
18. Drain valve
19. Brake oil tank (rear)
20. Parking brake relay valve
21. Parking brake chamber
22. Rear brake chamber
23. Slack adjuster
24. Rear brake
25. Brake cooling circuit
26. Transmission oil tank
27. Exhaust brake cylinder
28. Horn
29. Muffler
30. Muffler
31. Air pressure sensor
32. Exhaust brake switch
33. Emergency brake switch
34. Brake lamp switch
35. Parking brake switch
36. Retarder lamp switch
37. Muffler
38. Brake valve
39. Retarder valve
40. Parking brake valve
41. Emergency brake valve
42. Front brake cut-off solenoid valve
43. Exhaust brake solenoid valve
44. Auto-retarder solenoid valve
45. Suspension control solenoid valve
46. Brake oil tank (front)

SDH00322

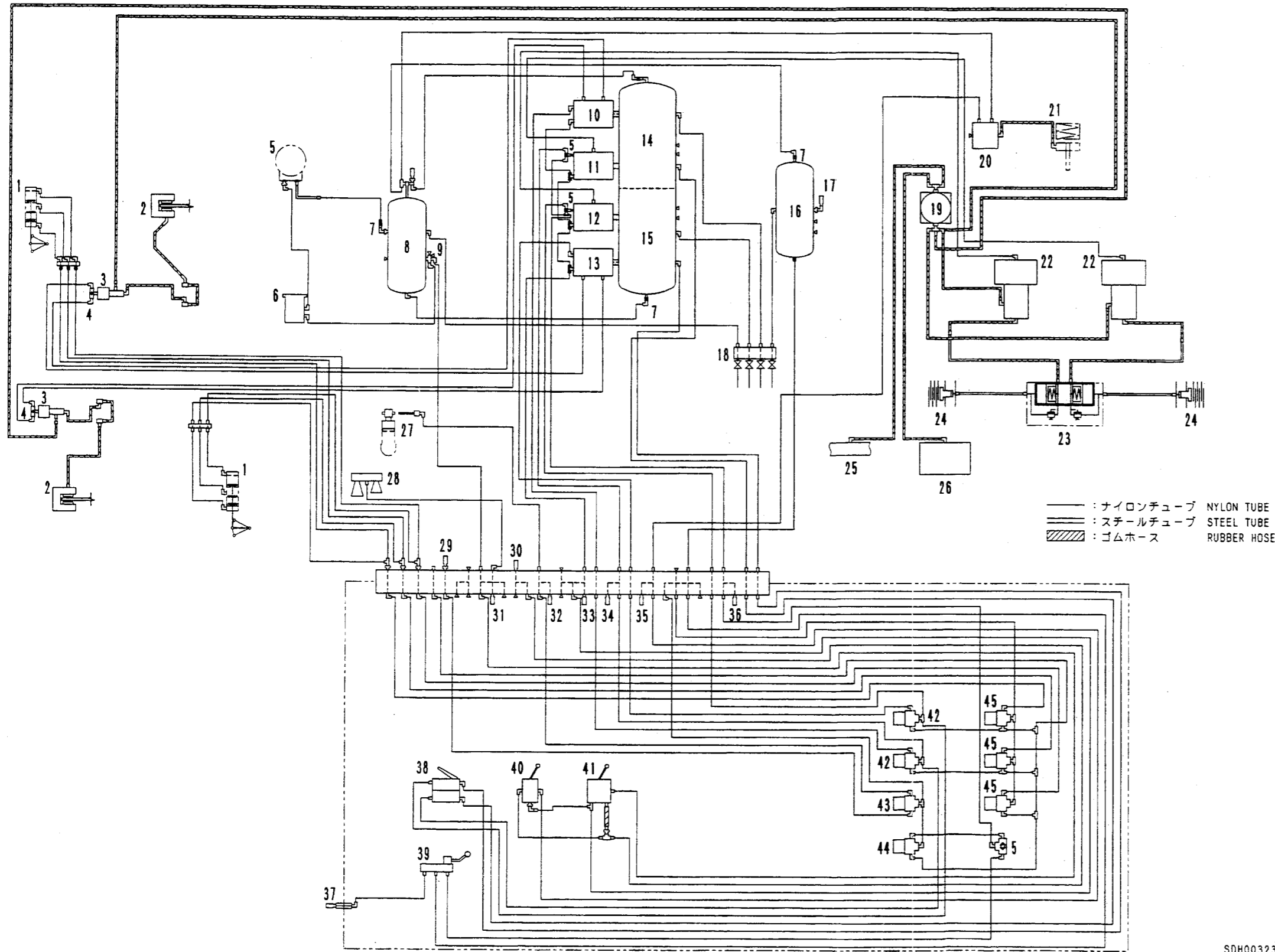
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— : NYLON TUBE
 = : STEEL TUBE
 - - - : RUBBER TUBE

1. Block
2. Air cylinder (for suspension control)
3. Front brake
4. Front brake chamber
5. Air compressor
6. Air governor
7. Check valve
8. Air tank (dry)
9. Safety valve
10. Front brake relay valve (with emergency)
11. Rear brake relay valve (with emergency)
12. Rear brake relay valve (with emergency)
13. Front brake relay valve (with emergency)
14. Air tank (dry)
15. Air tank (dry)
16. Air tank (pilot)
17. Air charge socket
18. Drain valve
19. Protection valve
20. Brake oil tank (rear)
21. Parking brake relay valve
22. Parking brake chamber
23. Rear brake chamber
24. Slack adjuster
25. Rear brake
26. Brake cooling circuit
27. Transmission oil tank
28. Exhaust brake cylinder
29. Horn
30. Muffler
31. Muffler
32. Air pressure sensor
33. Exhaust brake switch
34. Emergency brake switch
35. Brake lamp switch
36. Parking brake switch
37. Retarder lamp switch
38. Muffler
39. Brake valve
40. Retarder valve
41. Parking brake valve
42. Emergency brake valve
43. Front brake cut-off solenoid valve
44. Exhaust brake solenoid valve
45. Auto-retarder solenoid valve
46. Suspension control solenoid valve
47. Double check valve



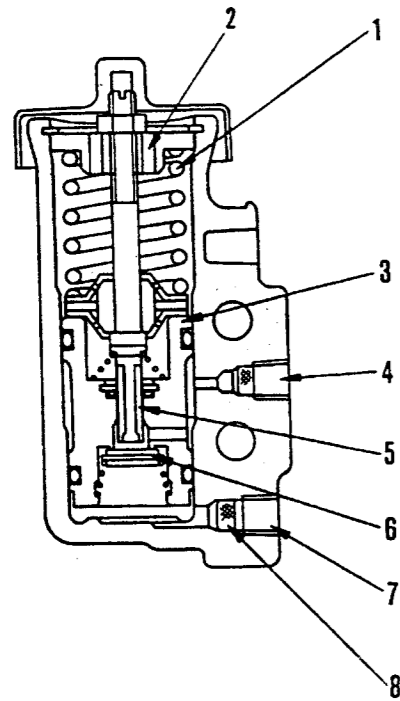
1. Air cylinder (for suspension control)
2. Front brake
3. Front brake chamber
4. Double check valve
5. Air compressor
6. Air governor
7. Check valve
8. Air tank (dry)
9. Safety valve
10. Front brake relay valve (with emergency)
11. Rear brake relay valve (with emergency)
12. Rear brake relay valve (with emergency)
13. Front brake relay valve (with emergency)
14. Air tank (dry)
15. Air tank (dry)
16. Air tank (pilot)
17. Air charge socket
18. Drain valve
19. Brake oil tank (rear)
20. Parking brake relay valve
21. Parking brake chamber
22. Rear brake chamber
23. Slack adjuster
24. Rear brake
25. Brake cooling circuit
26. Transmission oil tank
27. Exhaust brake cylinder
28. Horn
29. Muffler
30. Muffler
31. Air pressure sensor
32. Exhaust brake switch
33. Emergency brake switch
34. Brake lamp switch
35. Parking brake switch
36. Retarder lamp switch
37. Muffler
38. Brake valve
39. Retarder valve
40. Parking brake valve
41. Emergency brake valve
42. Front brake cut-off solenoid valve
43. Exhaust brake solenoid valve
44. Auto-retarder solenoid valve
45. Suspension control solenoid valve

— : ナイロンチューブ NYLON TUBE
 - - : スチールチューブ STEEL TUBE
 ▨ : ゴムホース RUBBER HOSE

SDH00323

056606

AIR GOVERNOR



423F091A

1. Spring
2. Exhaust port
3. Piston
4. Unloader port
5. Exhaust stem
6. Inlet valve
7. Tank port
8. Filter

Specifications

- Cut-out pressure: $8.3 \pm 0.3 \text{ kg/cm}^2$
- Cut-in pressure: $7.0 \pm 0.3 \text{ kg/cm}^2$

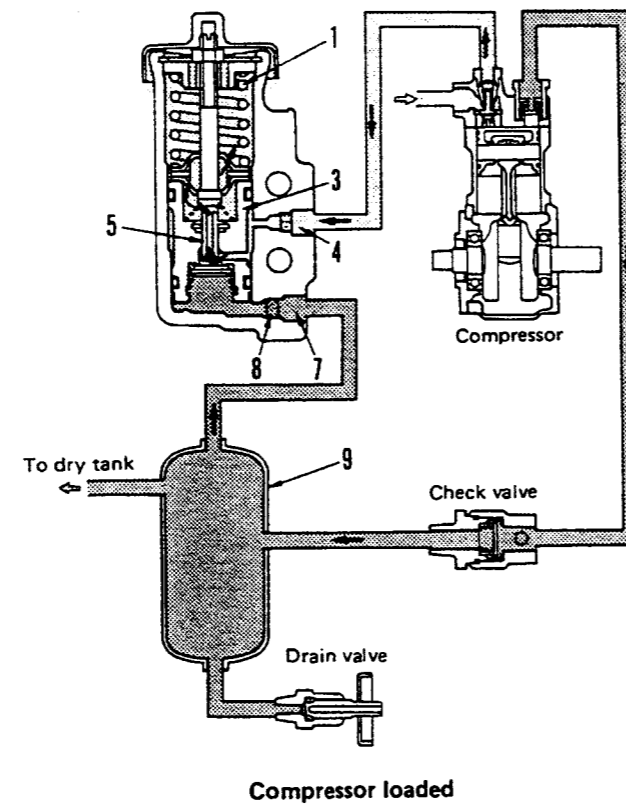
FUNCTION

- The air governor maintains the pressure in the air circuit to the specified range.

OPERATION

Compressor working

- The air pressure in the wet tank (9) passes from the tank port (7) through the filter (8) and acts on the bottom of the piston (3).
- When the air pressure in the tank (9) is below the specified pressure (cut-out pressure) the piston (3) pushed down by the spring (1).
- When this happens, the air at the unloader port (4) passes through the exhaust stem (5) to the atmosphere and the compressor is actuated.



421F057A

DISASSEMBLY OF AIR GOVERNOR ASSEMBLY

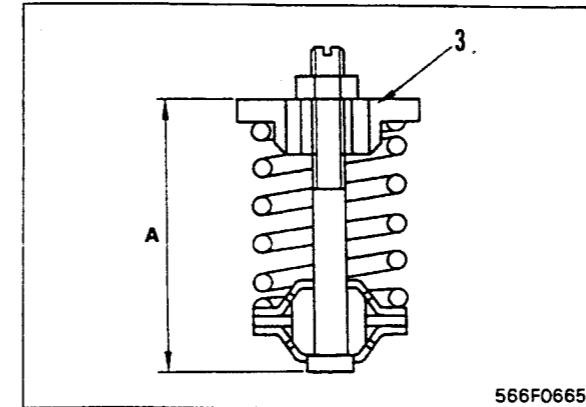
1. Remove cover (1).
2. Remove snap ring (2), then remove adjustment screw and spring assembly (3).
3. Pull out piston assembly (4), and remove stem (5) and spring (6).

ASSEMBLY OF AIR GOVERNOR ASSEMBLY

★ Clean all parts, and check for dirt or damage, then coat all parts with grease before installing.

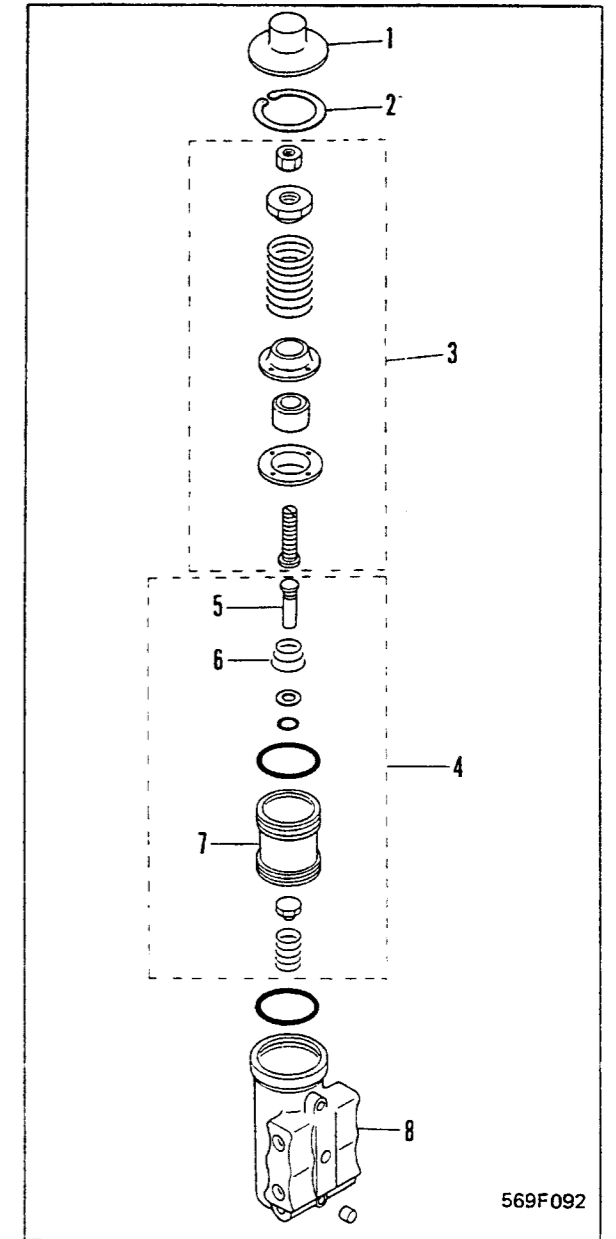
1. Fit O-ring and install spring (6) and stem (5) to piston (7).
 2. Fit O-ring and install piston assembly (4) to body (8).
 3. Fit adjustment screw and spring assembly (3) to body (8), then install snap ring (2).
- ★ Measure adjustment screw dimension A.

A dimension: 50 mm

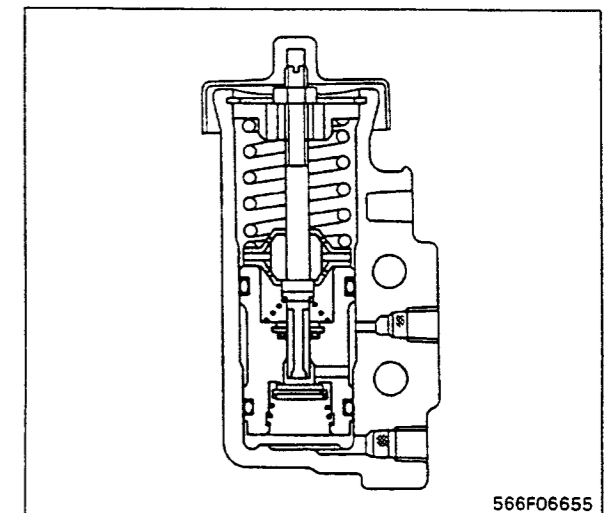


566F06656

4. Install cover (1).
- ★ After installing to the machine, measure the air pressure. For details, see TESTING AND ADJUSTING, Measuring air pressure.



569F092



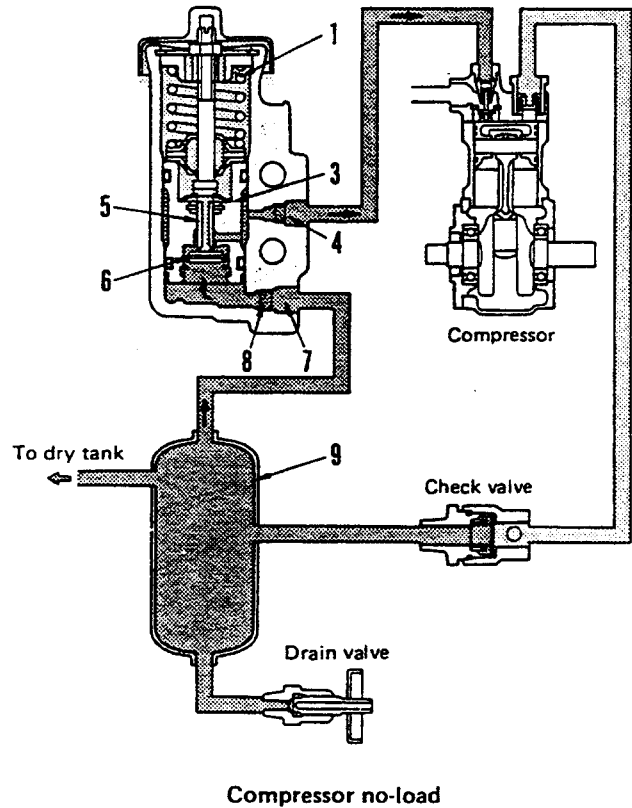
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Compressor stopped

- When the pressure in the wet tank (9) rises, and reaches the set pressure (cut-out pressure), the piston (3) is pushed up against the spring (1).
- When the piston (3) is pushed up, the exhaust stem (5) is closed and the inlet valve (6) opens.
- The pressure from the tank passes through the inlet valve (6) and unloader port (4), and acts on the unloader valve of the compressor. This puts the compressor in a no-load condition.
- When the air pressure inside the tank drops, the piston (3) is pushed down by the spring (1).
- When the pressure drops below the specified pressure (cut-in pressure), the inlet valve (6) closes and the exhaust stem (5) opens. The pressure at the unloader port (4) passes through the exhaust stem (5) and is released in the atmosphere, so the compressor starts to work again.



421F058A

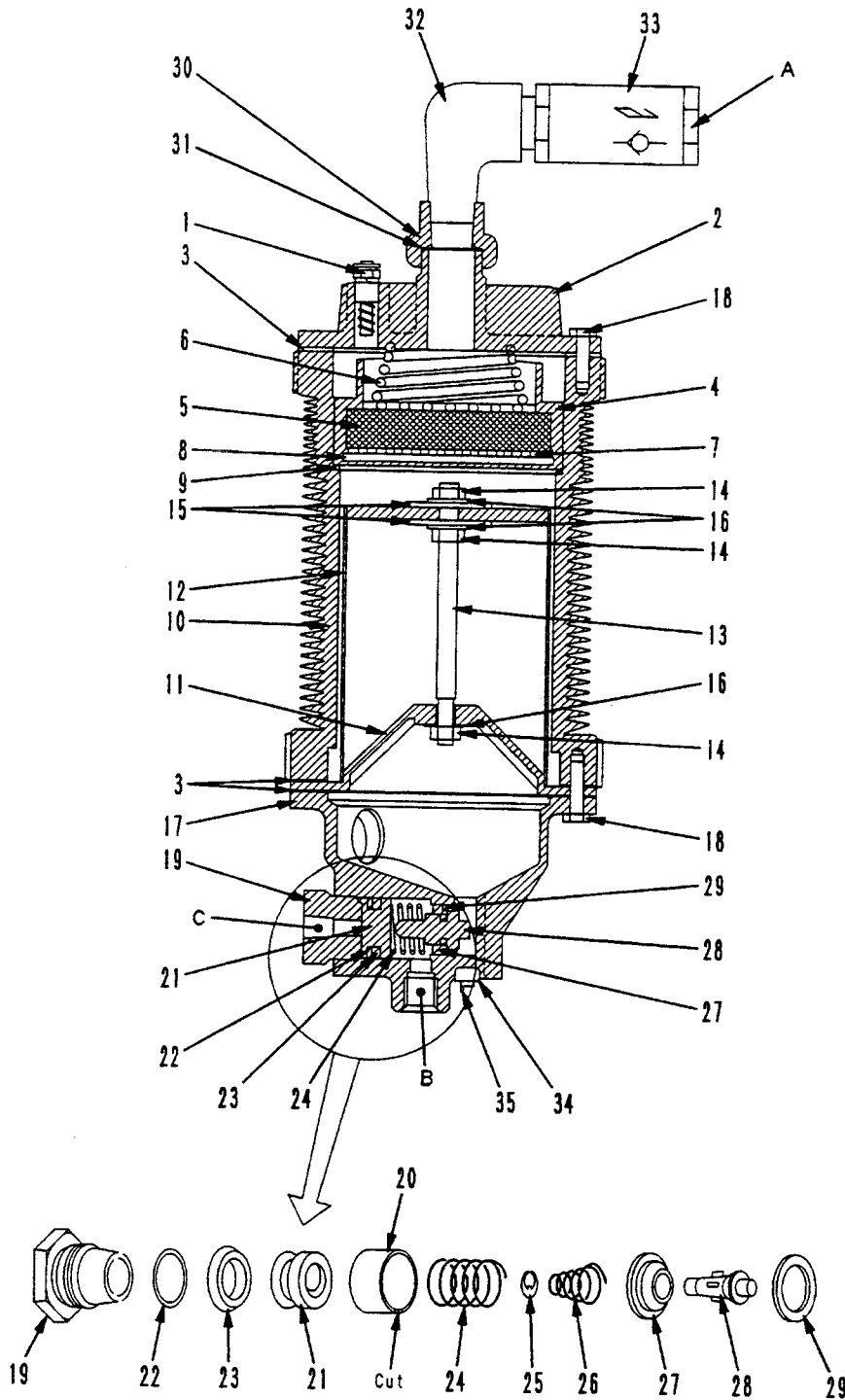
056606

AIR DRIER

The air drier is used to remove water, oil, carbon, dust, etc. from the compressed air supplied by the air compressor and send clean dry air to the air tank.

The removed water, etc. is automatically discharged out of the system each time the air compressor is unloaded.

056606



1. Safety valve
 2. Top cap
 3. Gasket
 4. Filter cap
 5. Filter
 6. Spring
 7. Strainer
 8. V-spring
 9. Packing
 10. Body
 11. Support plate
 12. Deflector
 13. Rod
 14. Nut
 15. Washer
 16. Washer
 17. End cap
 18. Bolt
 19. Unloader nut
 20. Sleeve
 21. Piston
 22. O-ring
 23. U-cap
 24. Spring
 25. Retainer ring
 26. Spring
 27. Seat ring
 28. Spindle
 29. Gasket
 30. Nut
 31. Gasket
 32. Elbow
 33. Check valve
 34. Heater
 35. Thermostat
- A. Outlet port
 B. Exhaust port
 C. Governor unload port

SDH00338

Operation

Air compressed and heated in the compressor flows in the bottom of the air drier, then it expands adiabatically and cools itself, then the moisture in it is condensed into water and accumulated in end cap ⑰.

Since the body ⑩ of the air drier is made of aluminum and has many fins on its outer cylinder and is cooled while the dumptruck is running, it is not heated by the air from the compressor.

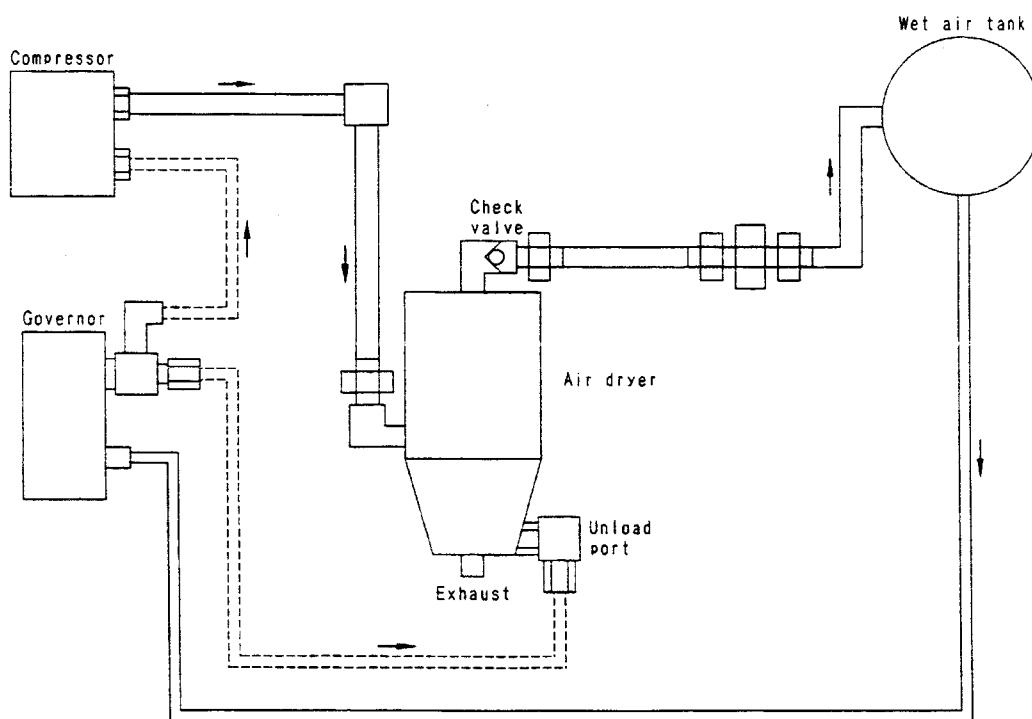
The dried air is filtrated by filter ⑤ to remove oil, carbon, and dust.

The air dried and cleaned in this way is sent through check valve ⑳ to the air tank.

If the pressure in the air tank reaches the specified level, the governor works to unload the air compressor.

The unloading pipe is connected to the unload port of the air drier, and air in the air drier flows out each time the compressor is unloaded. At this time, the water, oil, etc. accumulated in end cap ⑰ are discharged.

Air circuit diagram



SDH00339

566F06234

056606