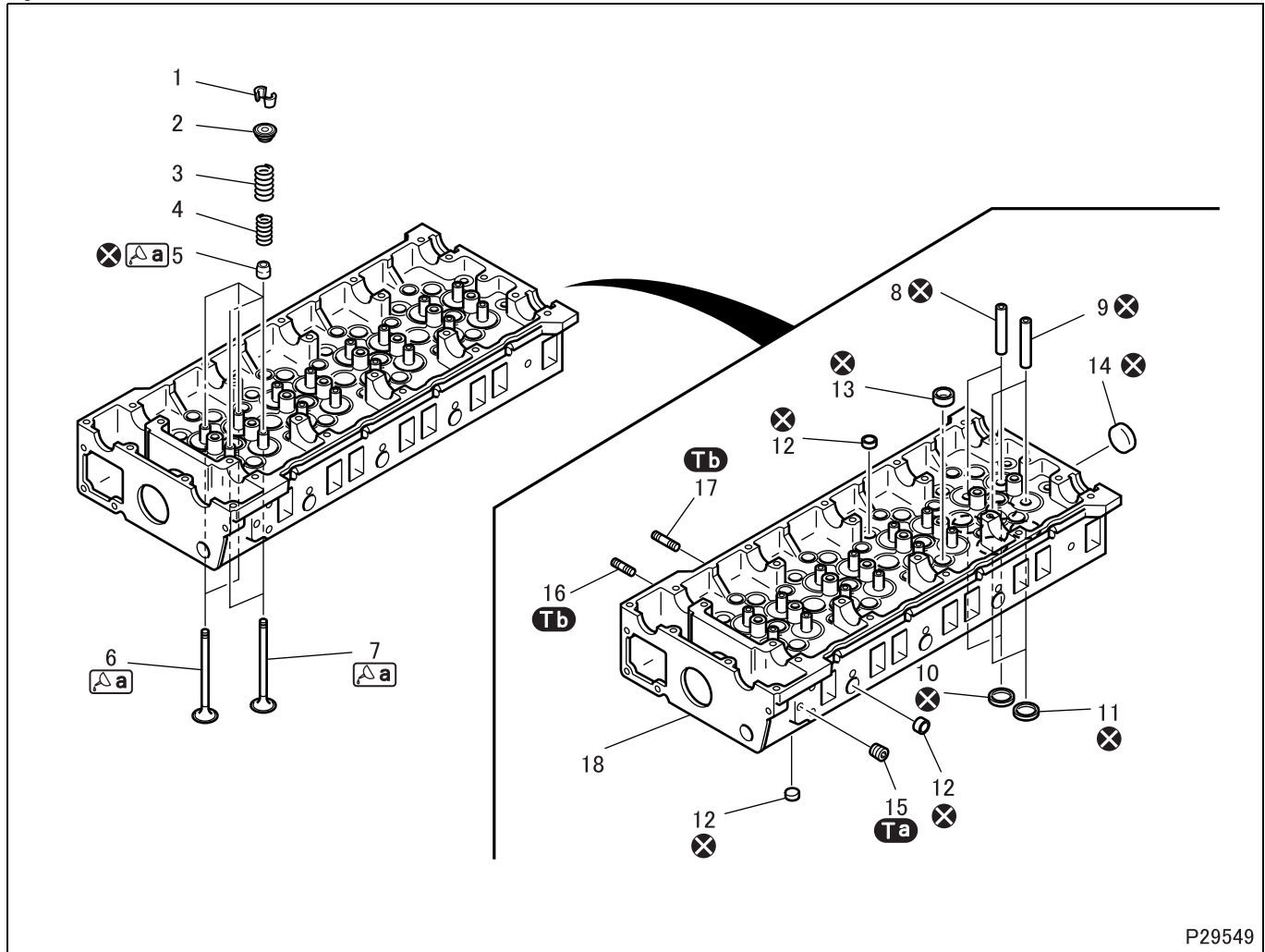


EQUIPMENT TYPE CODES LIST

Component	Name plate marking	Code description
Engine		
4M50-T	4 M 5 0 T	
		Turbocharged Order of development within same series Order of development among different series Diesel engine No. of cylinders (4)
Clutch		
C5W33	C 5 W 33	
		Disc OD Facing material (W: Woven) Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the clutch
Transmission		
M036S5W	M 036 S 5 W	
		Variation (W: With directly-mounted transfer) Forward speeds Type of mesh (S: Synchromesh) Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the transmission
Propeller shaft		
P3	P 3	
		Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the propeller shaft
Front axle		
F200T	F 200 T	
		Vehicle type (T: Truck) Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the front axle
Rear axle		
R033T	R 03 3 T	
		Vehicle type (T: Truck) Order of development within same series Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the rear axle
Reduction and differential		
D033H	D 03 3 H	
		Tooth profile (H: Hypoid gear) Order of development within same series Load carrying capacity of truck class (tonnage) on which the clutch is primarily used Initial letter of the reduction & differential

CYLINDER HEAD AND VALVE MECHANISM

Cylinder Head



P29549

● Disassembly sequence

- | | | |
|-----------------------|--|-----------------------|
| 1 Valve cotter | 10 Exhaust valve seat | 16 Stud (short) |
| 2 Upper retainer | 11 Intake valve seat | 17 Stud (long) |
| 3 Outer valve spring | 12 Sealing cap
(diameter: 22 mm {0.87 in.}) | 18 Cylinder head |
| 4 Inner valve spring | 13 Sealing cap
(diameter: 30 mm {1.18 in.}) | ⊗: Non-reusable parts |
| 5 Valve stem seal | 14 Sealing cap
(diameter: 40 mm {1.57 in.}) | |
| 6 Exhaust valve | 15 Taper plug | |
| 7 Intake valve | | |
| 8 Exhaust valve guide | | |
| 9 Intake valve guide | | |

● Assembly sequence

Follow the disassembly sequence in reverse.

CAUTION

- When an intake valve or exhaust valve have been removed, make sure to replace the valve stem seal.

ON-VEHICLE INSPECTION AND ADJUSTMENT

3. Fuel Filter Replacement


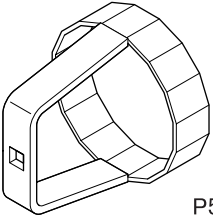
Tightening torque (Unit: N·m {ft.lbs, kgf·m})

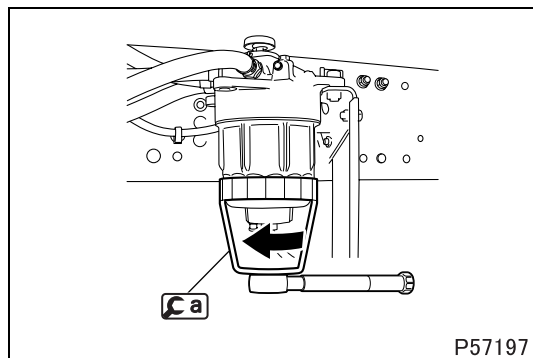
Mark	Parts to be tightened	Tightening torque	Remarks
-	Water separator sensor	5 ± 1 { 3.7 ± 0.7 , 0.5 ± 0.1 }	-
-	Case	30 ± 2 { 22 ± 1.5 , 3.1 ± 0.2 }	-

Lubricant and/or sealant


Mark	Points of application	Specified lubricant and/or sealant	Quantity
-	Fuel filter gasket	Engine oil	As required

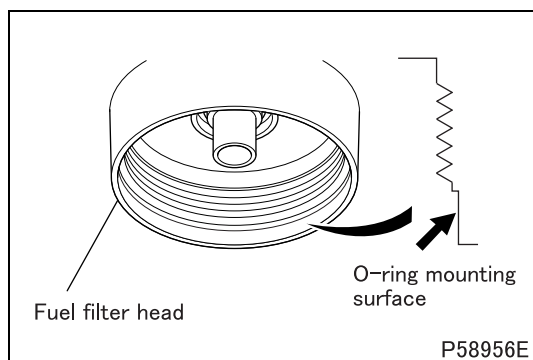
Special tools

Mark	Tool name and shape	Part No.	Application
 a	Filter wrench  P57179	MH063203	Removal and installation of case



[Removal]

- Loosen the water separator sensor and drain fuel from the case.
- Remove the case using .

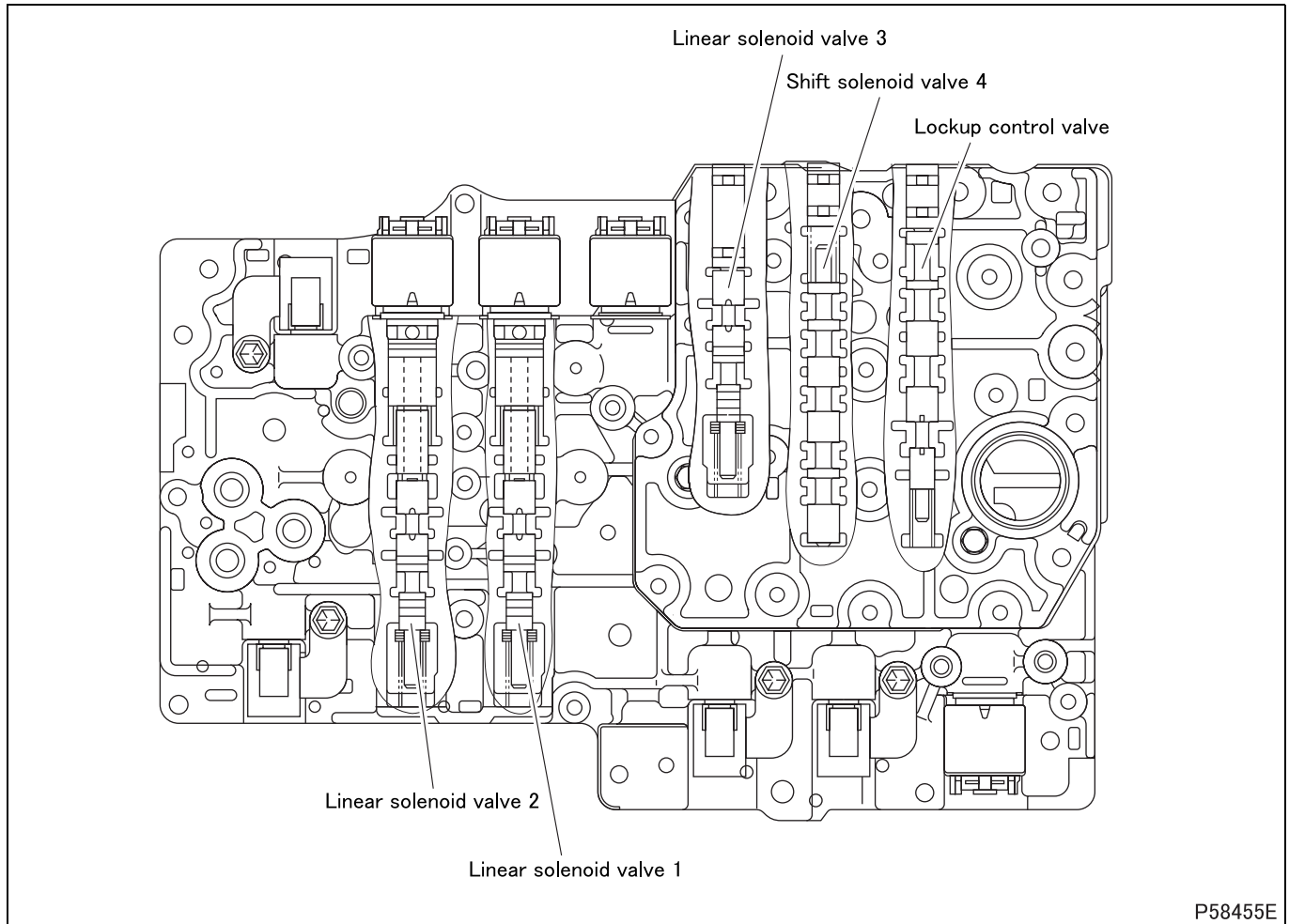


[Installation]

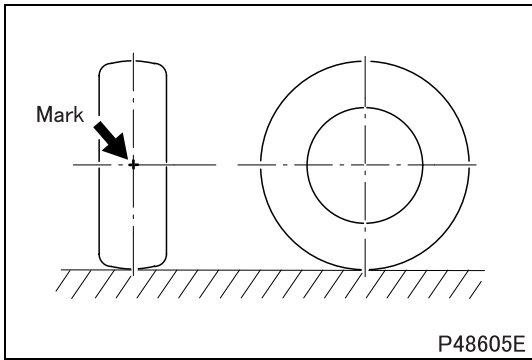
- Clean the O-ring mounting surface of the fuel filter head.

STRUCTURE AND OPERATION

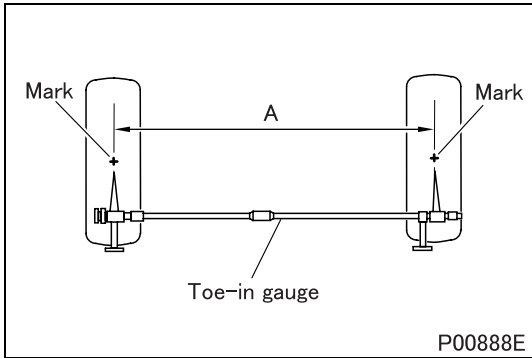
(2.2) Lower valve body



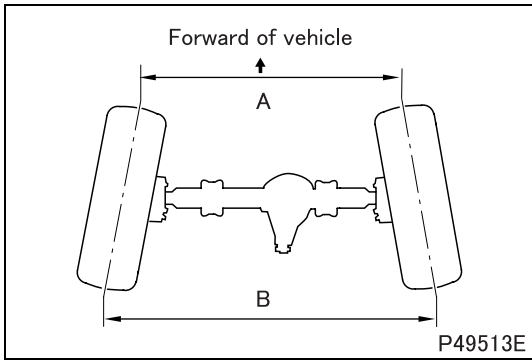
Valve	Function
Lockup control valve	Controls pressure (lockup pressure) fed to torque converter.
Linear solenoid valve 1	Controls pressure (control pressure) fed to clutches No. 1 and No. 2 and brake No. 1
Linear solenoid valve 2	Controls pressure (control pressure) fed to clutch No. 3 and brake No. 2
Linear solenoid valve 3	Controls pressure (control pressure) fed to clutches No. 1 and No. 3
Shift solenoid valve 4	Directs line pressure and control pressure for clutch and brake engagement.



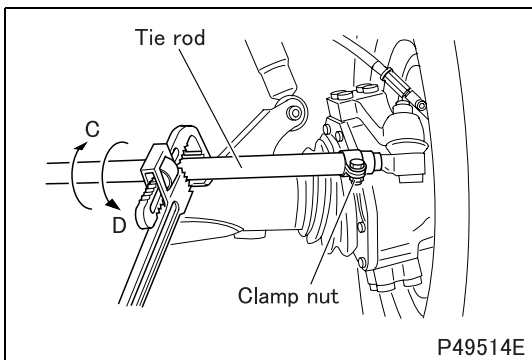
P48605E



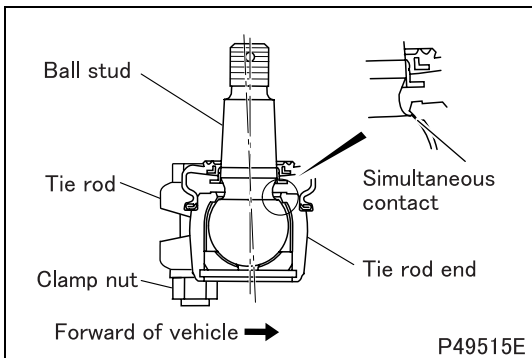
P00888E



P49513E



P49514E



P49515E

1.1 Inspection and adjustment of toe-in

[Inspection]

- Direct the front wheels exactly to forward running position.
- Put a mark to each tire of right and left at the height of front wheel axis and in the middle of tire width.

- Align the two points of the toe in gauge with respective marks and read distance **A** between the marks.

- Push the vehicle to roll the tires 180 degrees.
- Measure distance **B** between the marks that have moved to the rear of the vehicle.
- If toe-in (difference between **A** and **B**) deviates from the standard value, adjust.

[Adjustment]

- Loosen the clamp nuts on the right and left.
- Turn the tie rod with a pipe wrench to adjust the toe-in.
C: When adjusting to the toe-out direction
D: When adjusting to the toe-in direction
- After adjustment, tighten the clamp nut to the specified torque.

CAUTION

- Hold down the tie rod end toward the front of the vehicle with the front wheels directed to forward running position so that the right and left tie rod ends are in contact with the ball studs at the same time. In this state adjust so that the specified toe-in is achieved and tighten the clamp nut to secure the tie rod.

STRUCTURE AND OPERATION

2.2 Anti-lock brake system control functions

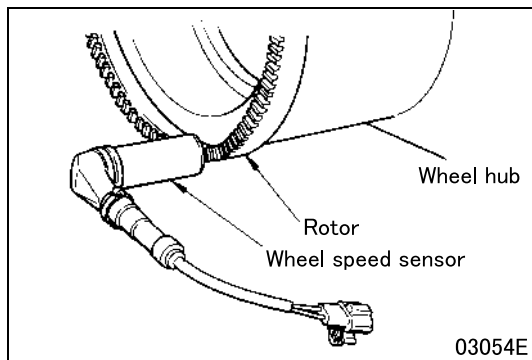
- The hydraulic unit (electronic control unit) continuously monitors signals from the wheel speed sensors. Upon detecting imminent wheel lock-up, the unit sends pressure HOLD, DECREASE or INCREASE signal to appropriate wheels.

(1) Anti-lock brake system fail-safe

- If any fault occurs in the anti-lock brake system, the warning lamp comes on to warn the driver of the fault and the normal braking will resume in place of the anti-lock braking which will be disabled.

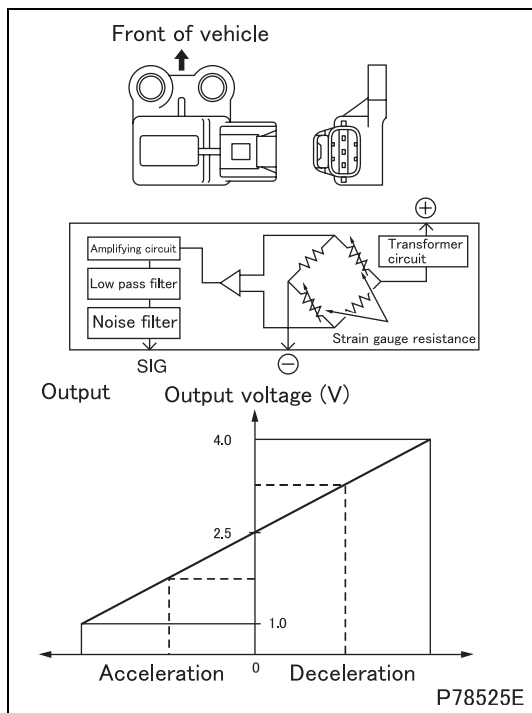
(2) Anti-lock brake system and exhaust brake

- On slippery roads, wheel lock-up can result even from application of the exhaust brake. In the anti-lock braking mode, activation of the exhaust brake makes it difficult for anti-lock brake system to perform controlled braking. To avoid this, the exhaust brake will be disabled upon activation of anti-lock brake system even when the exhaust brake switch is in the "ON" position. The exhaust brake will automatically be enabled upon deactivation of anti-lock brake system.



(3) Wheel speed sensor

- Each wheel speed sensor detects wheel speed and sends this as a signal to the hydraulic unit (electronic control unit). The sensor is essentially a magnetic pickup unit, consisting of a permanent magnet core and a coil of wire wound around the core.
- A rotor is fitted onto the wheel hub. This rotor, like a ring gear, has a set of evenly-spaced teeth directly facing the sensor. As the wheel rotates, these teeth pass through the magnetic flux of the sensor, inducing potential difference in the coil which is then sent as a signal (alternating voltage proportional to the wheel speed) to the hydraulic unit (electronic control unit).

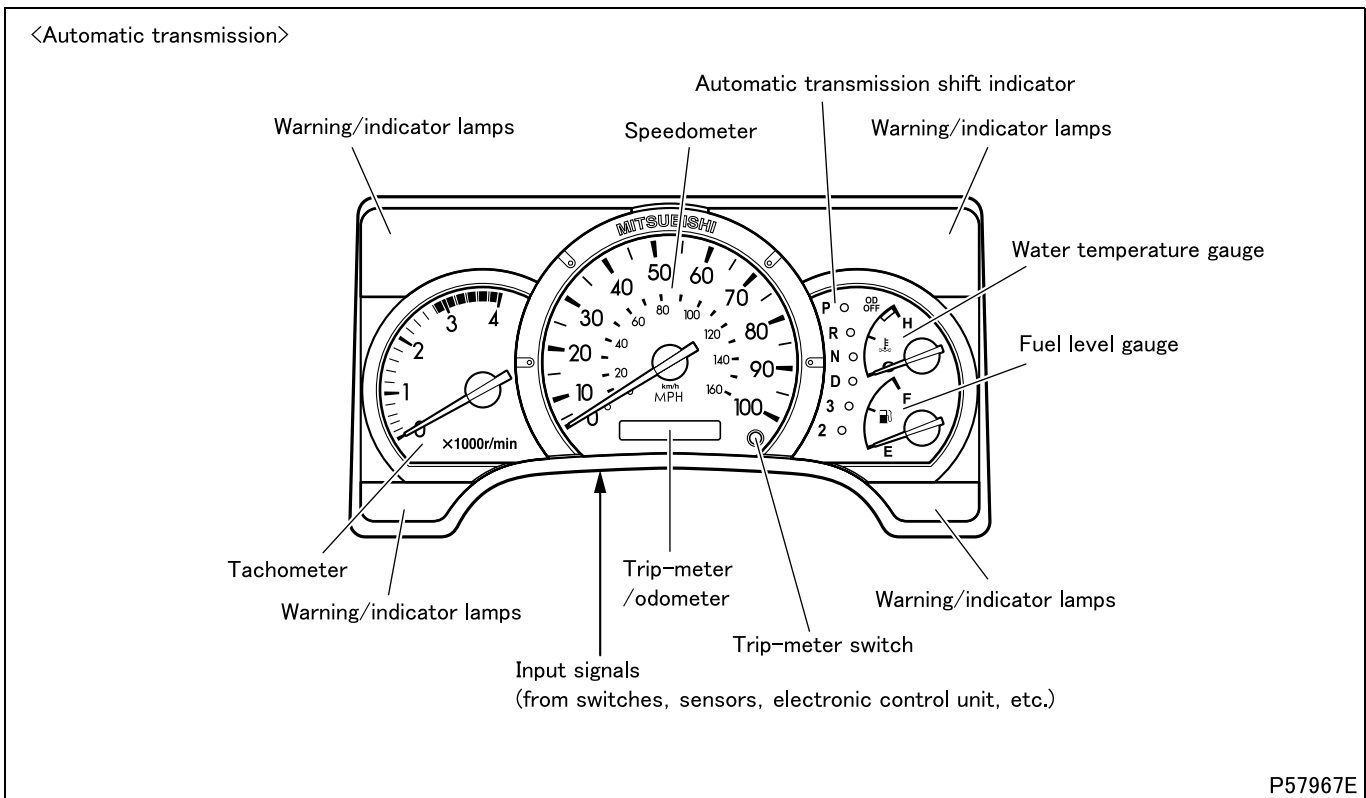
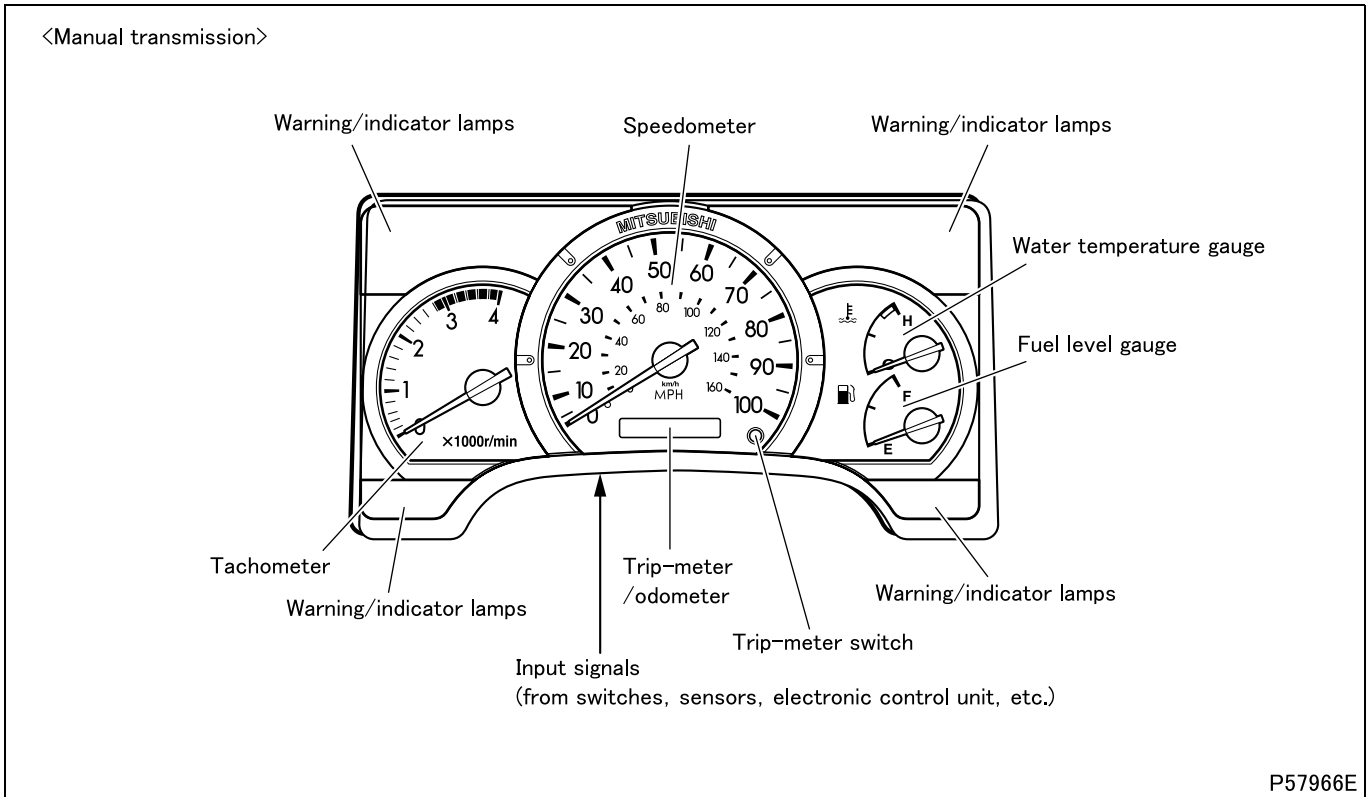


(4) G sensor <4WD>

- On slippery roads, trucks with 4WD can experience wheel lock-up due to the inertia of the powertrain. This makes it difficult for anti-lock brake system to perform controlled braking.
- To avoid this, in addition to the wheel speed sensors, a G sensor is also used to detect acceleration/deceleration and assist anti-lock brake system control.
- The G sensor is a semiconductor-type strain gauge. It detects acceleration or deceleration by converting acceleration/deceleration inertia into resistance and further converting this into voltage.

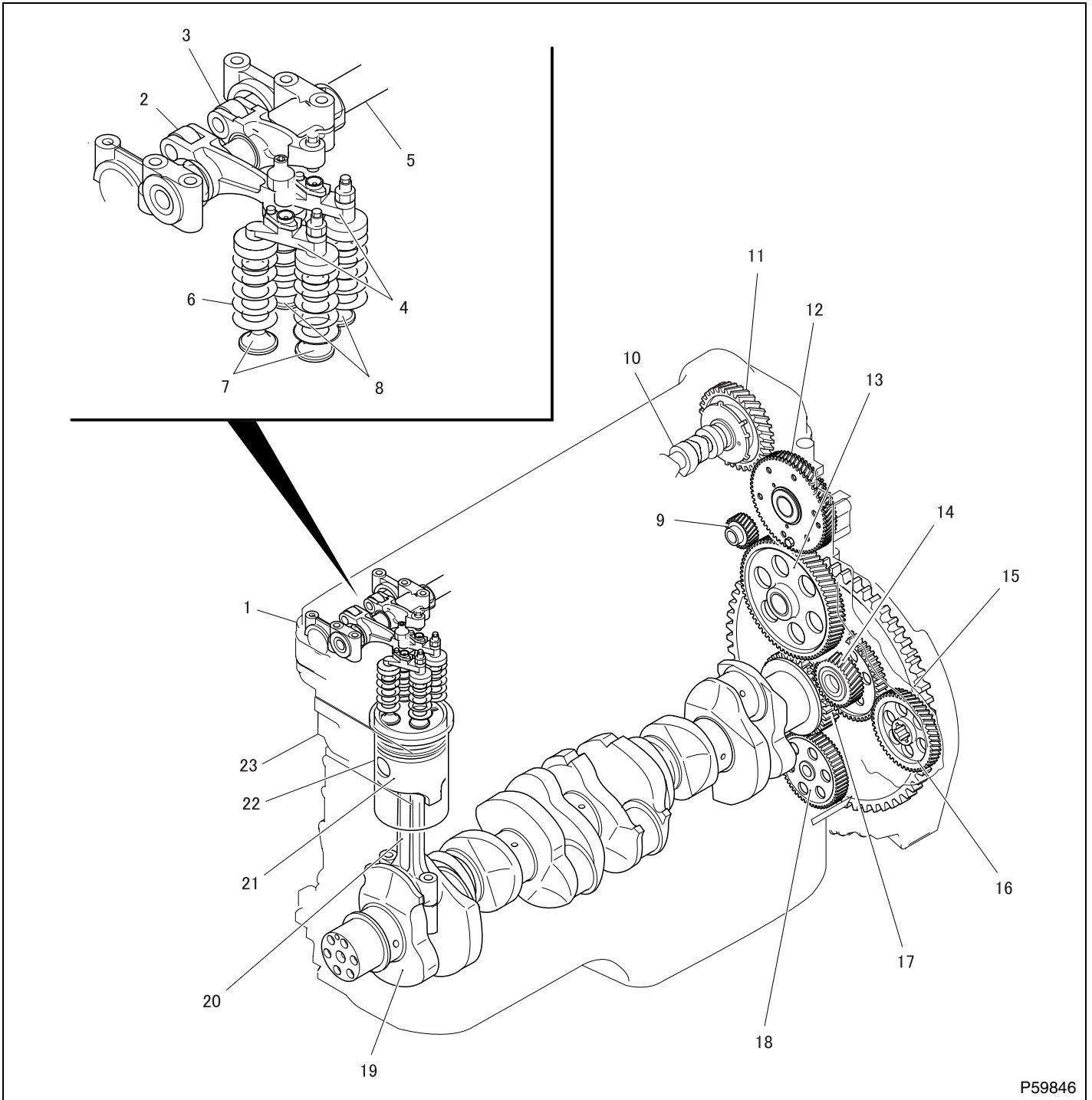
STRUCTURE AND OPERATION

4. Meter Cluster



- The meter cluster incorporates a CPU, which has the lighting and alarm control (LAC) function, learning function, and self-diagnosis function.

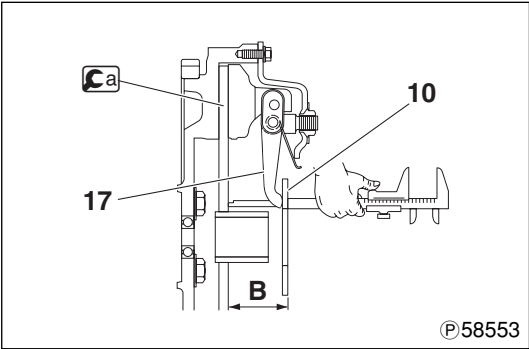
1. Engine Proper



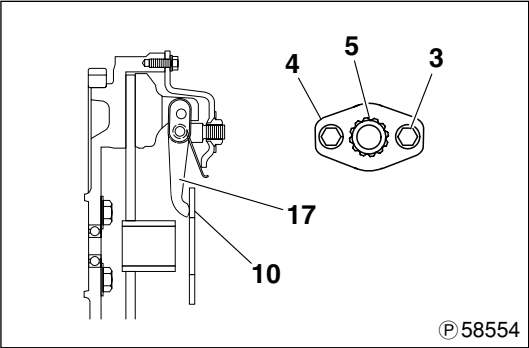
P59846

- | | | |
|------------------|--------------------------------|--------------------|
| 1 Rocker case | 9 Power steering oil pump gear | 17 Crankshaft gear |
| 2 Inlet rocker | 10 Camshaft | 18 Oil pump gear |
| 3 Exhaust rocker | 11 Camshaft gear | 19 Crankshaft |
| 4 Valve bridge | 12 No. 3 idler gear | 20 Connecting rod |
| 5 Rocker shaft | 13 No. 2 idler gear | 21 Piston |
| 6 Valve spring | 14 No. 1 idler gear | 22 Cylinder liner |
| 7 Inlet valve | 15 Flywheel | 23 Cylinder head |
| 8 Exhaust valve | 16 Air compressor gear | |

The 6M6 engine is an overhead camshaft (OHC) engine and has the valve mechanism and timing gears arranged as shown in the illustration above.

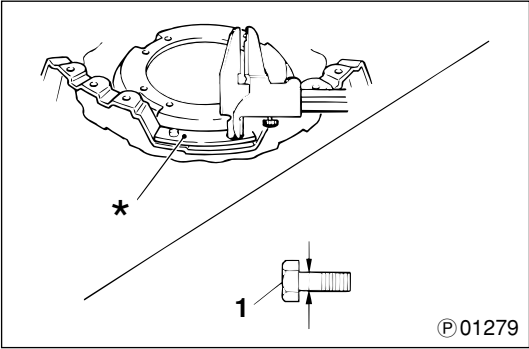


- Measure dimension **B** between **Ca** clutch master plate and each upper surface of release lever plate **10** (four points).
- If the measured values deviate from the standard value, adjust as follows. Even if the measured values are within the standard value, if the relative difference among each measured value is 0.5 mm {0.020 in.} or more, adjust the heights, too.



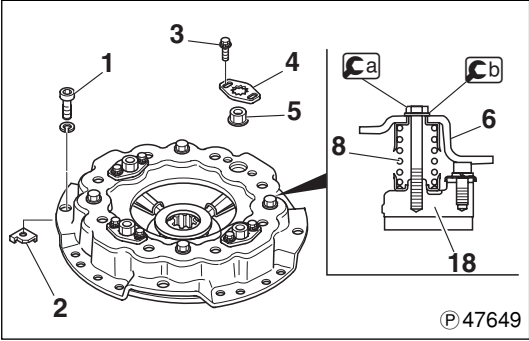
(2) Adjustment of release lever plate height

- Remove lock bolt **3** and lock plate **4**, and adjust the height by turning support nut **5**.
- After adjustment, install lock plate **4**, fasten support nut **5** and check the height of release lever plate **10**.



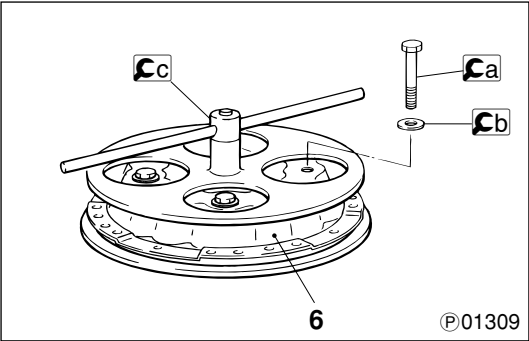
1 * Clearance between strap bolt and strap plate

If the measured value is higher than the limit, replace the faulty parts.
* : Strap plate



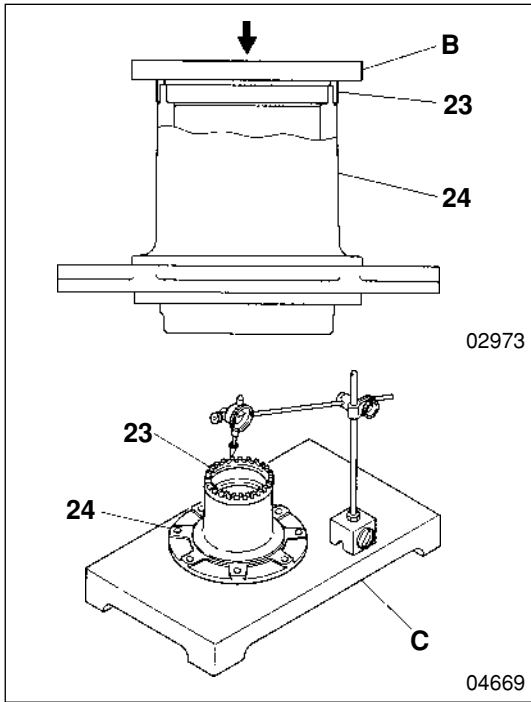
6 Removal and installation of clutch cover

- After fixing clutch cover **6** and pressure plate **18** using **Ca** stopper bolt and **Cb** washer, remove strap bolt **1**, washer **2**, lock bolt **3**, lock plate **4** and support nut **5**.



- Compress pressure spring **8** using **Cc** clutch installer, and remove **Ca** stopper bolt and **Cb** washer.
- Gradually loosen **Cc** clutch installer until pressure spring **8** is released, and remove clutch cover **6**.
- For installation, follow the removal sequence in reverse.

WHEEL HUB AND BRAKE DRUM < FM (AIR-OVER HYDRAULIC BRAKE) >



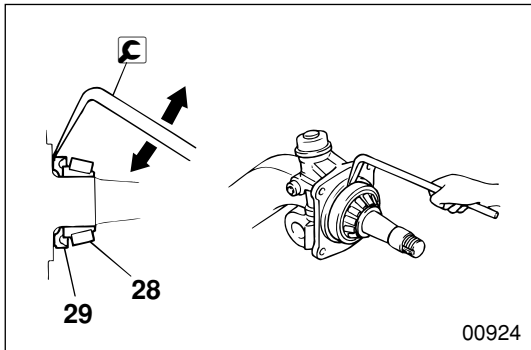
[Installation]

Heat rotor **23** to approximately 150°C {302°F}. Press the rotor evenly with iron plate **B** to press-fit the rotor to wheel hub **24**. Make sure there is no space between the rotor and wheel hub.

[Inspection]

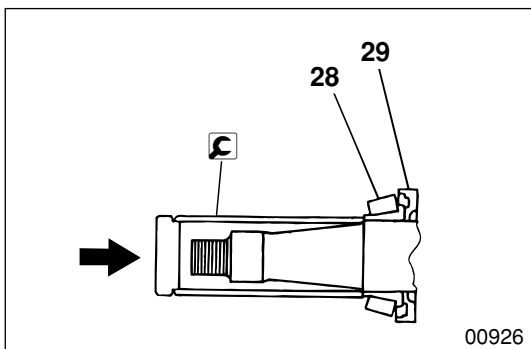
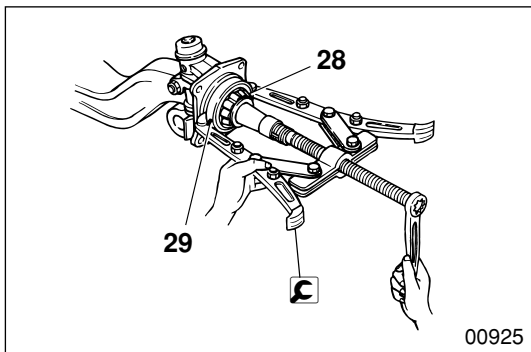
- If the amount of wobbling exceeds the standard value, repeat the assembly procedure from the beginning.
- If the amount of wobbling exceeds the standard value after reassembly, replace defective parts.

C : Base



28 **29** Inner bearing inner race and oil seal retainer

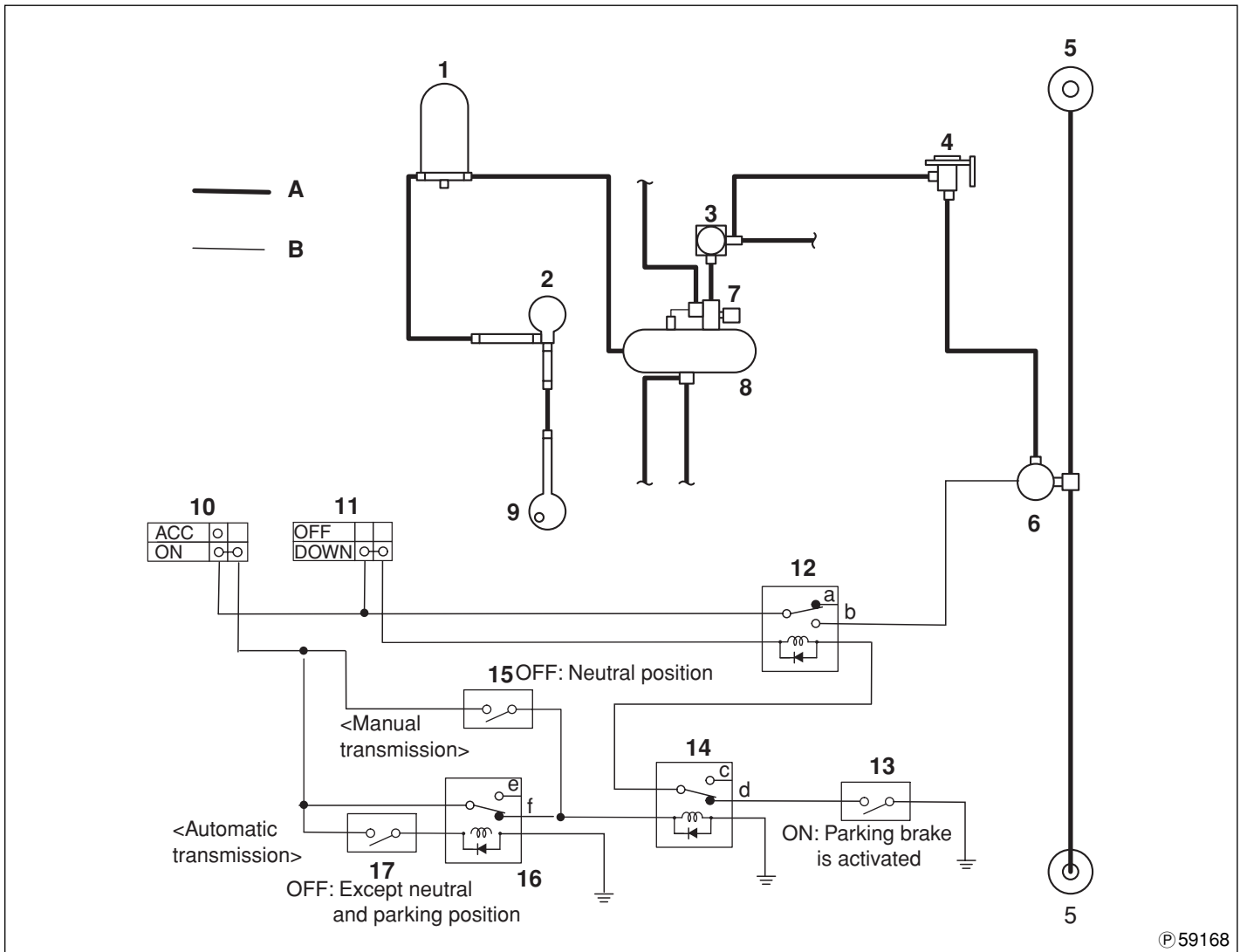
[Removal]



[Installation]

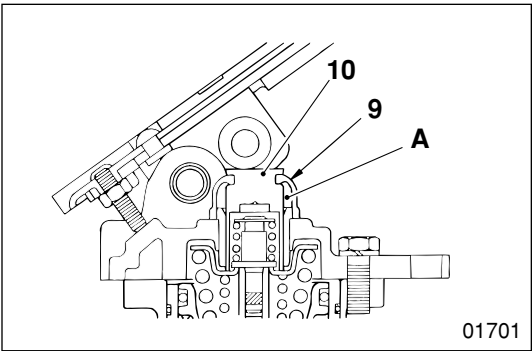
STRUCTURE AND OPERATION

2. Air Suspension System



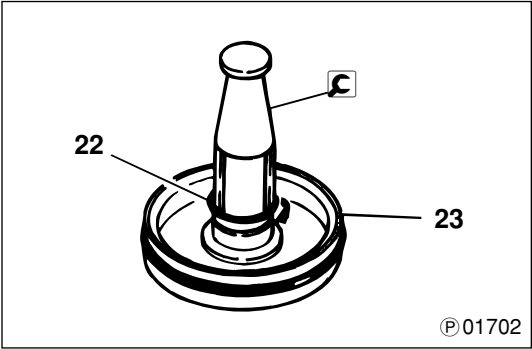
© 59168

- | | |
|--------------------------|---|
| 1 Air drier | 12 Air suspension hold relay |
| 2 Air compressor | 13 Parking brake switch |
| 3 Supply valve | 14 Air suspension release relay |
| 4 Leveling valve | 15 Transmission neutral switch
<Manual transmission> |
| 5 Air spring | 16 Automatic transmission reversing relay
<Automatic transmission> |
| 6 3-way magnetic valve | 17 Inhibitor switch <Automatic transmission> |
| 7 Safety valve | A : Air line |
| 8 Air tank (Wet) | B : Electric circuit |
| 9 Air cleaner | |
| 10 Starter switch | |
| 11 Height control switch | |

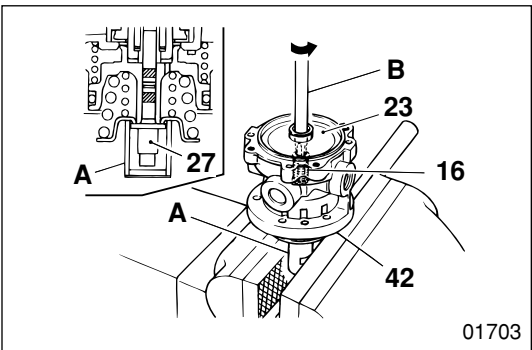


9 10 Packing grease between boot and plunger

Pack area **A** with 1 cm³ {0.061 cu. in.} of grease.



22 Installation of O-ring



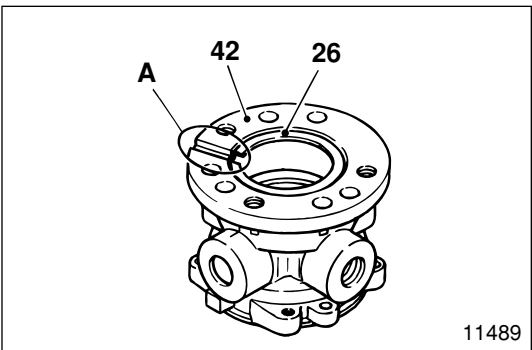
23 Removal of relay piston

- Grip (14 mm {0.55 in.}) socket wrench **A** in a vise.
- Insert the head of self-locking bolt **27** into socket wrench **A** to tighten body **42**.

WARNING ⚠

You must be careful when you loosen screw **16**, because the spring in body **42** can forcibly eject relay piston **23**. To avoid this hazard, press down on the relay piston with your hand when you carry out the above work.

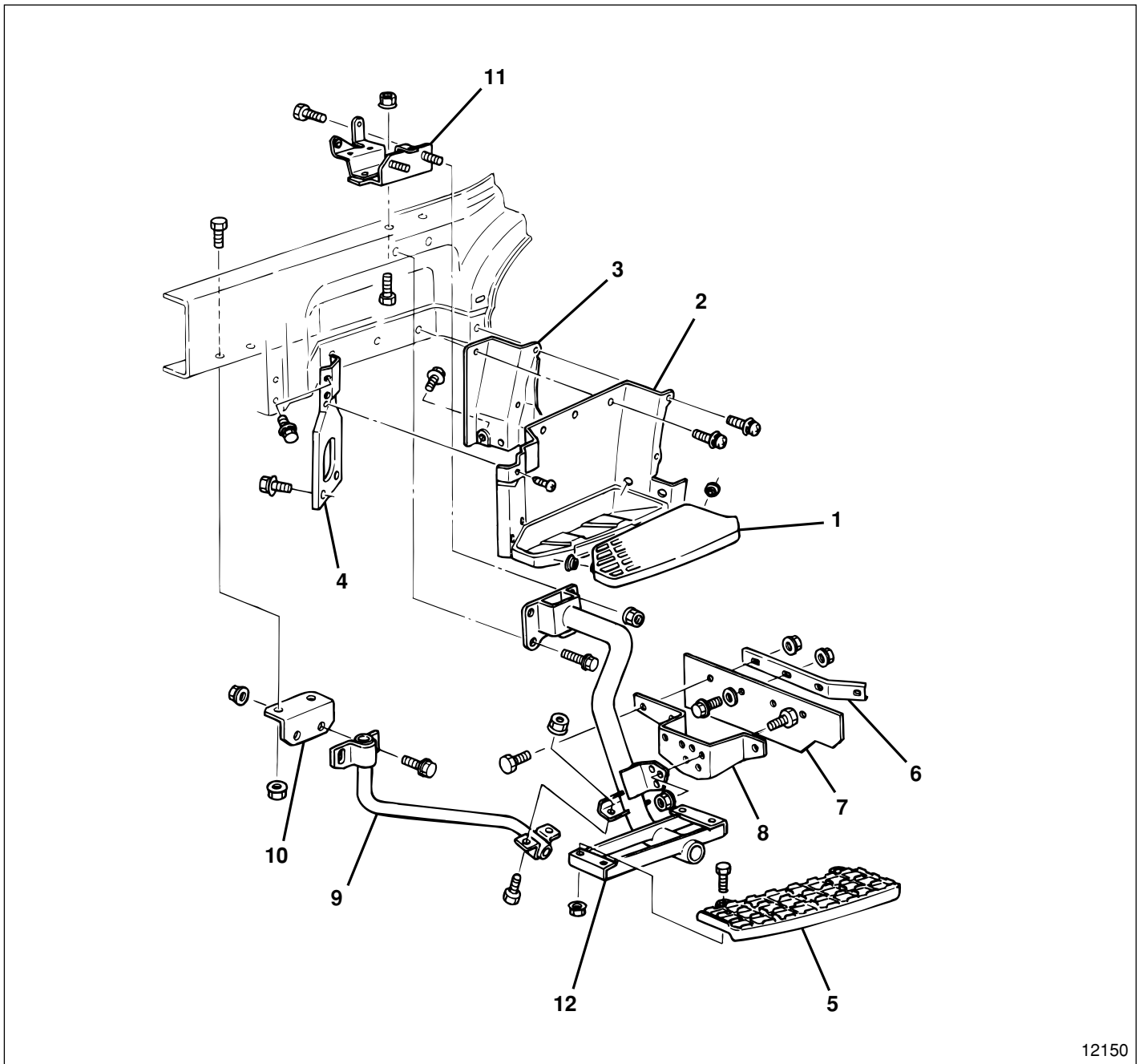
- Loosen screw **16** gradually to remove relay piston **23**.
B : Phillips screwdriver



26 Installation of bushing

A : Indent

STEP



12150

● Removal sequence

- | | | |
|----------------------|------------------------|---------------------------------|
| 1 Upper step | 5 Lower step < FM > | 9 Step stay < FM > |
| 2 Step wall | 6 Apron support < FM > | 10 Stay bracket < FM > |
| 3 Step rear bracket | 7 Splash apron < FM > | 11 Step bracket < FM > |
| 4 Step front bracket | 8 Apron support < FM > | 12 Step bracket assembly < FM > |

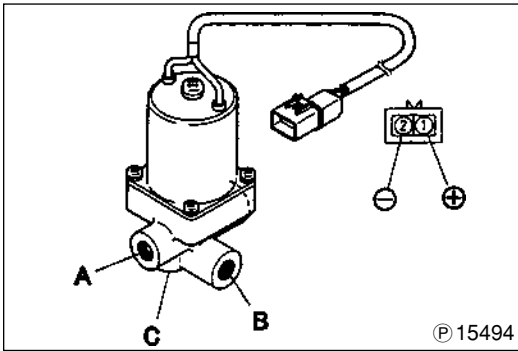
● Installation sequence

Follow the removal sequence in reverse.

NOTE

This illustration only shows the step for the left side; the same service procedure described above is used for the right side.

#560 to #609 MAGNETIC VALVE



#569 Inspection of 3-way magnetic valve

Perform the following checks, and if any fault is found, replace the 3-way magnetic valve.

(1) Operation test

- Gradually apply battery voltage to between terminals ① and ② from 0 volt.
- Measure the voltage (minimum operating voltage) at the moment when the 3-way magnetic valves starts operating. (The OFF to ON operating can be noticed from a sound the magnetic valve generates.)

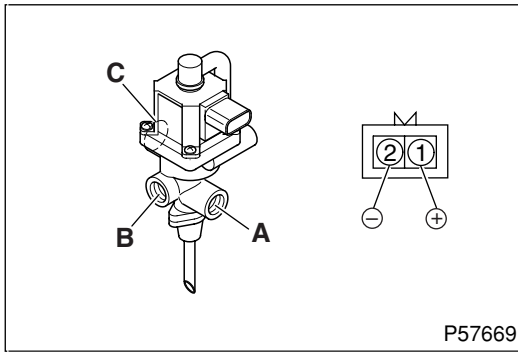
Standard value (Minimum operating voltage)	10 V or less
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(2) Continuity and airtightness test

Follow the table below to check for continuity.

	Input port B	Output port A	Exhaust port C
ON	○—○	○—○	
OFF		○—○	○—○

Air circuit table (○—○ : Air passage is open between ports.)
Air pressure at the time of check : 981 kPa {140 psi, 10 kgf/cm²}



#574 Inspection of 3-way magnetic valve

Perform the following checks, and if any fault is found, replace the 3-way magnetic valve.

(1) Operation test

- Gradually apply battery voltage to between terminals ① and ② from 0 volt.
- Measure the voltage (minimum operating voltage) at the moment when the 3-way magnetic valves starts operating. (The OFF to ON operating can be noticed from a sound the magnetic valve generates.)

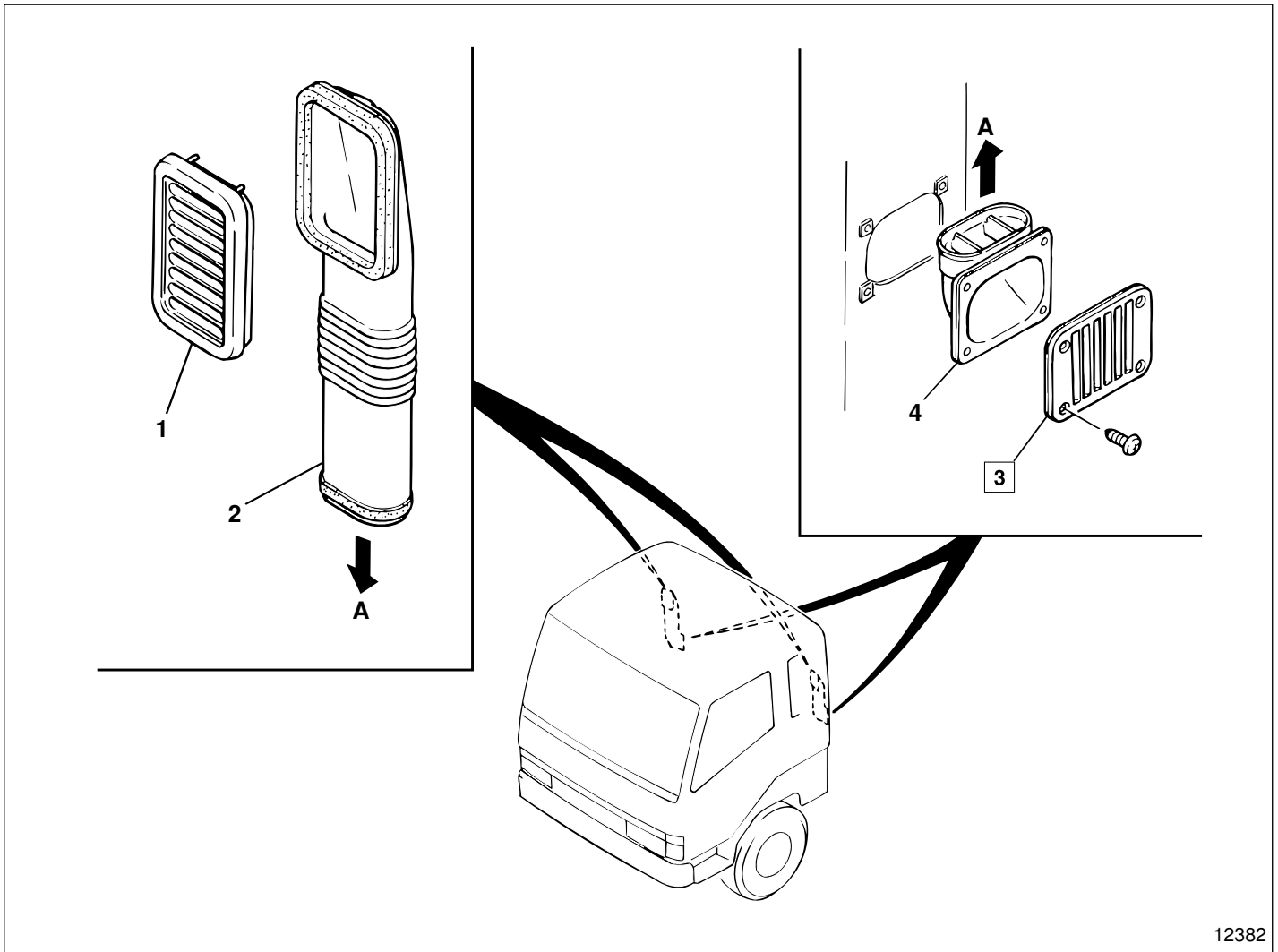
Standard value (Minimum operating voltage)	10 V or less
---	--------------

(2) Continuity and airtightness test

Follow the table below to check for continuity.

	Input port A	Output port B	Exhaust port C
ON	○—○	○—○	
OFF		○—○	○—○

Air circuit table (○—○ : Air passage is open between ports.)
Air pressure at the time of check : 981 kPa {140 psi, 10 kgf/cm²}



12382

● **Disassembly sequence**

- 1 Inside air outlet garnishment
- 2 Air outlet duct (Upper)

- 3 Outside air outlet garnishment
- 4 Air outlet duct (Lower)

NOTE

Remove inside air outlet garnishment 1 and air outlet duct 2 after removing the side trim.  Gr 42

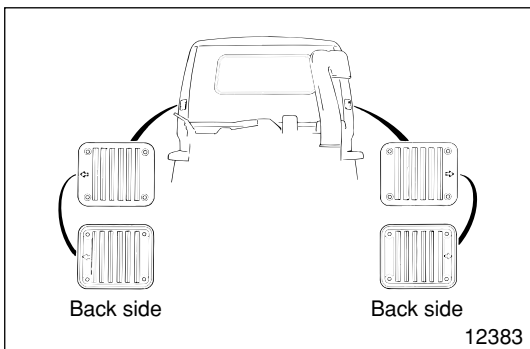
● **Assembly sequence**

Follow the disassembly sequence in reverse.

◆ **Service procedure**

3 Installation of outside air outlet garnishment

Install air outlet garnishment 3 in the direction as illustrated.



12383