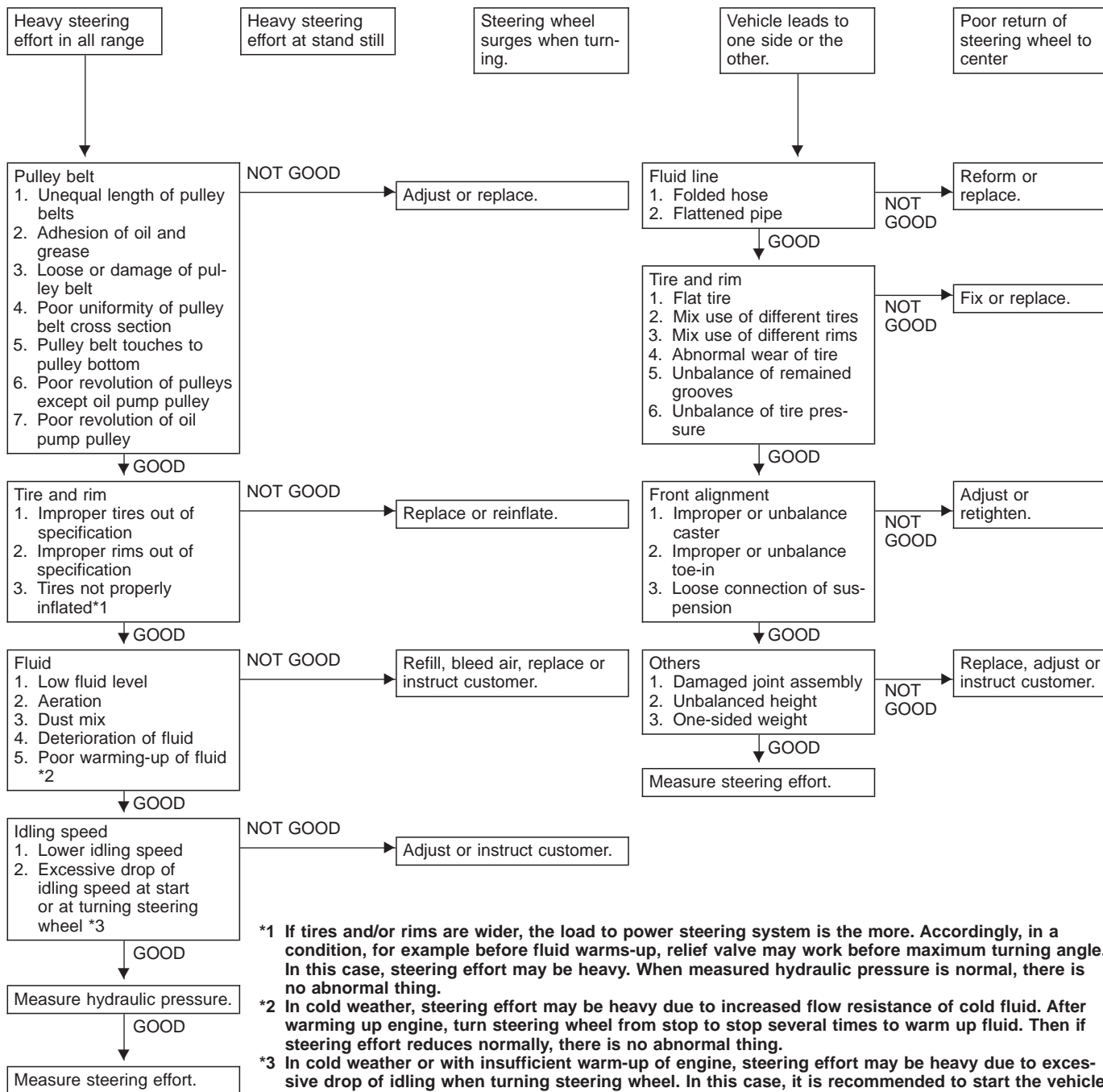


# 1. Power Steering

## 1. STEERING CONDITION



\*1 If tires and/or rims are wider, the load to power steering system is the more. Accordingly, in a condition, for example before fluid warms-up, relief valve may work before maximum turning angle. In this case, steering effort may be heavy. When measured hydraulic pressure is normal, there is no abnormal thing.

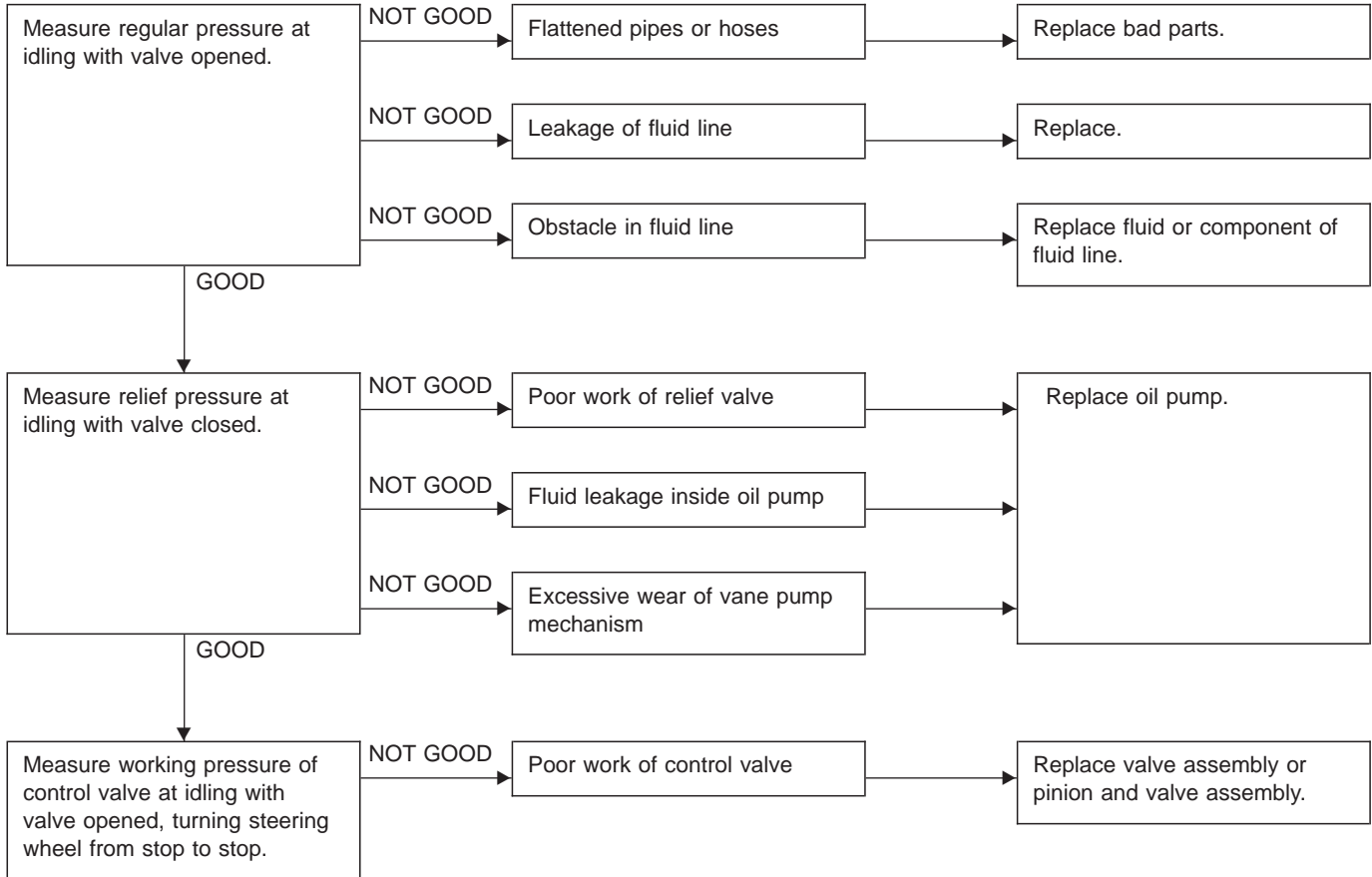
\*2 In cold weather, steering effort may be heavy due to increased flow resistance of cold fluid. After warming up engine, turn steering wheel from stop to stop several times to warm up fluid. Then if steering effort reduces normally, there is no abnormal thing.

\*3 In cold weather or with insufficient warm-up of engine, steering effort may be heavy due to excessive drop of idling when turning steering wheel. In this case, it is recommended to start the vehicle with increasing engine speed than usual. Then if steering effort reduces normally, there is no abnormal thing.

## 2. MEASUREMENT OF HYDRAULIC PRESSURE

**CAUTION:**

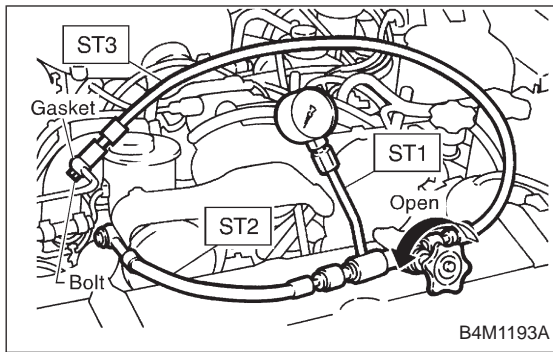
Be sure to complete all items aforementioned in "STEERING CONDITION" 4-3 [K101], prior to measuring hydraulic pressure. Otherwise, pressure can not be measured correctly.

**CAUTION:**

- Do not leave the valve of pressure gauge closed or hold the steering wheel at stop end for 5 seconds or more in any case, as the oil pump may be damaged due to long keep of these conditions.
- Put cotton cloth waste at a place where fluid drops before pressure gauge is installed. Wipe off split fluid thoroughly after the measurement.

**NOTE:**

Keep engine idling during the measurement.



- 1) Install STs to power steering pump.
  - (1) Drain the power steering fluid about 0.35 l (0.4 US qt, 0.3 Imp qt) from oil tank.
  - (2) Remove two bolts securing power steering pipes to engine.
  - (3) Install ST1, 2 and 3 between power steering pump and pipes using gasket (Part No. 34621AC020) and bolt (Part No. 34620AC010).

ST1 925711000 PRESSURE GAUGE

ST2 34099AC020 ADAPTER B

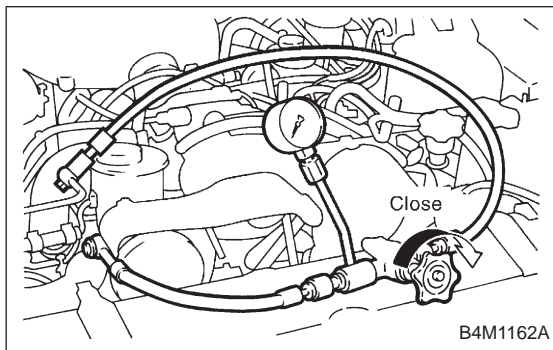
ST3 34099AC010 ADAPTER A

- (4) Replenish power steering fluid up to specified level.

- 2) Using STs, measure regulator pressure.

**Regulator pressure:**

**981 kPa (10 kg/cm<sup>2</sup>, 142 psi) or less**



- 3) Using STs, measure relief pressure.

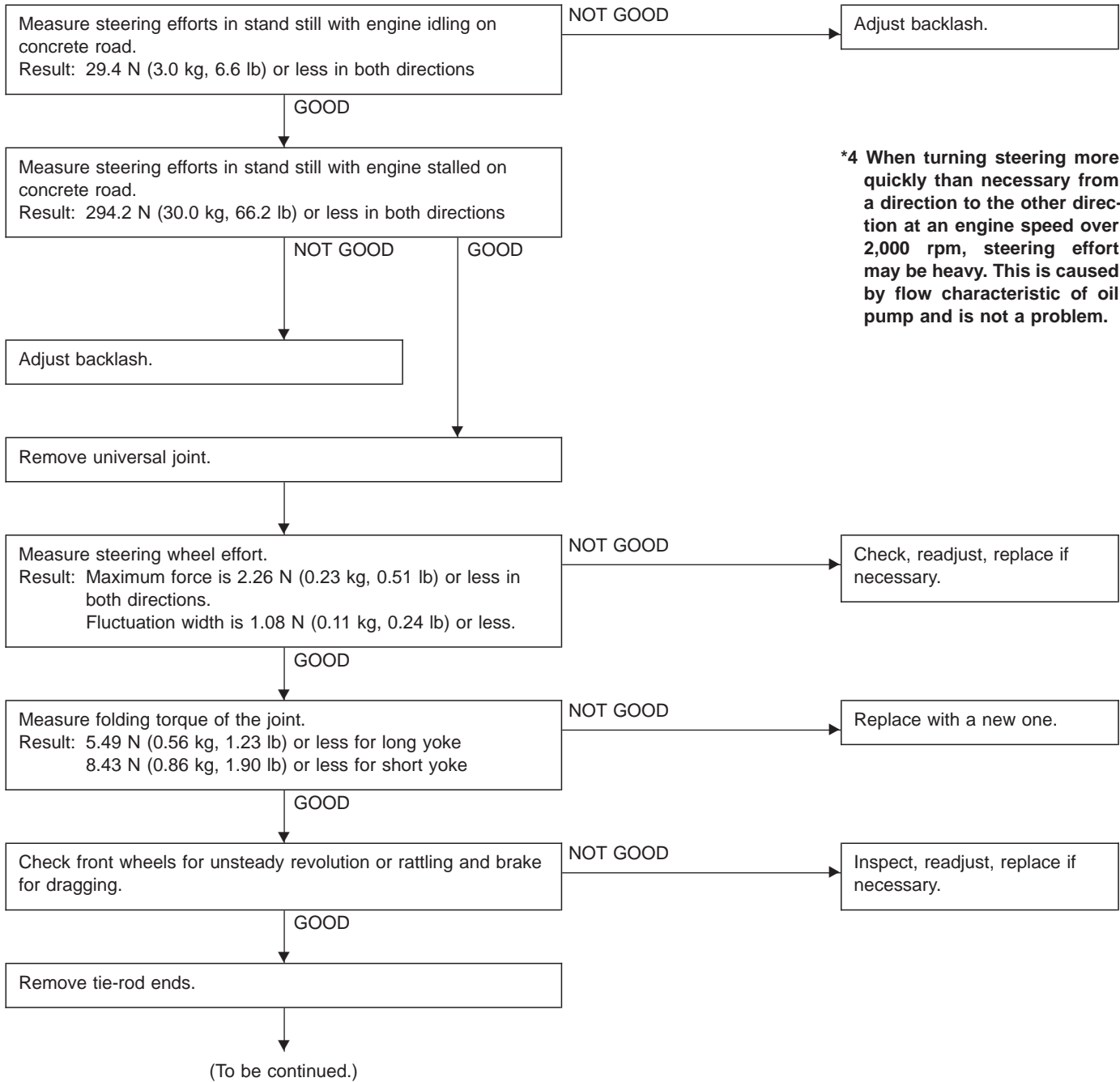
**Relief pressure:**

**7,159 — 7,748 kPa**

**(73 — 79 kg/cm<sup>2</sup>, 1,038 — 1,123 psi)**

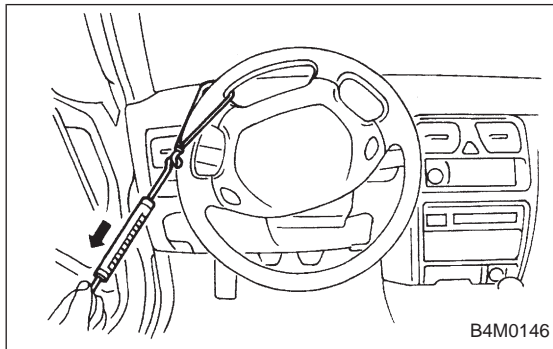
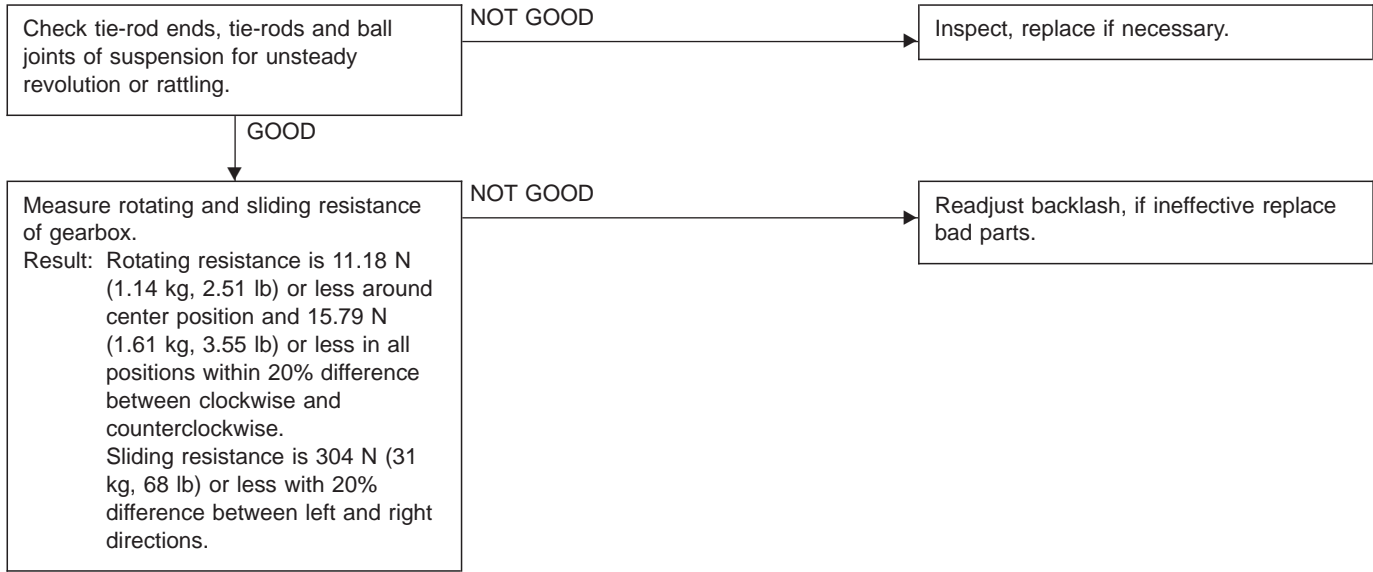
3. MEASUREMENT OF STEERING EFFORT

\*4

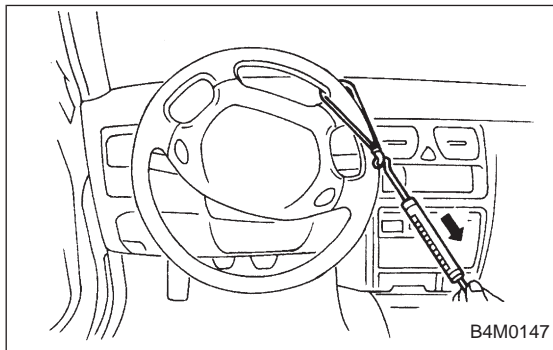


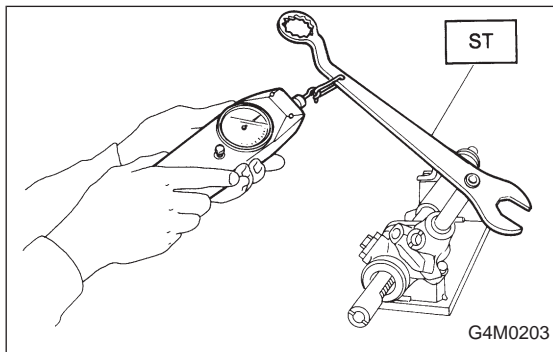
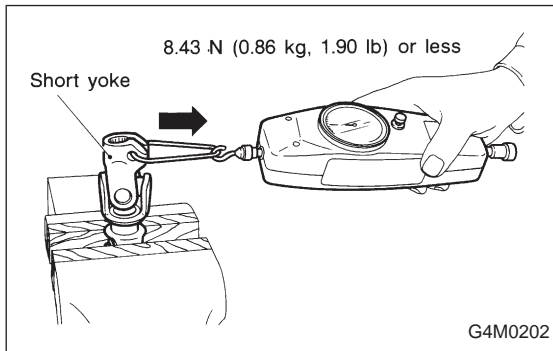
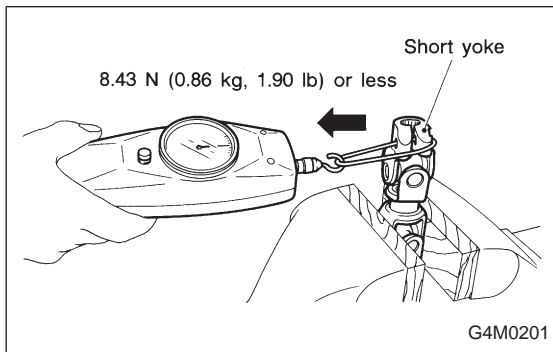
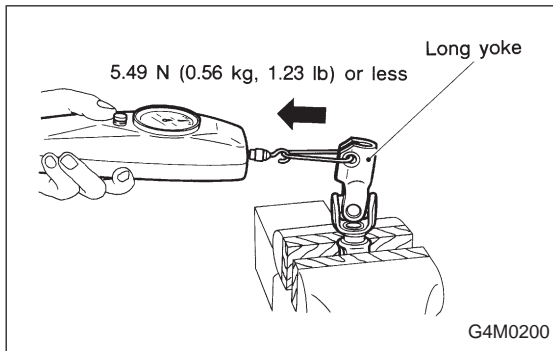
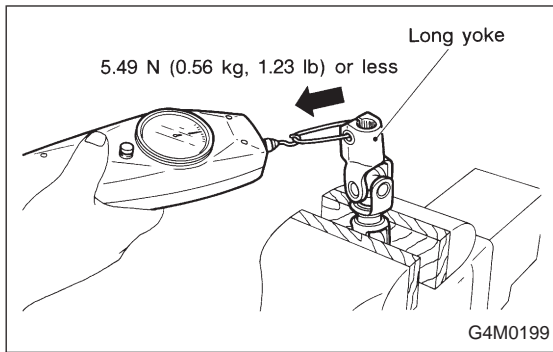
**\*4 When turning steering more quickly than necessary from a direction to the other direction at an engine speed over 2,000 rpm, steering effort may be heavy. This is caused by flow characteristic of oil pump and is not a problem.**

1. Power Steering



● Measurement of steering effort is as shown in the figures.





- Measurement of folding torque of universal joint is as shown in the figures.

NOTE:  
Using ST, measure resistances of gearbox.

ST 926230000 SPANNER

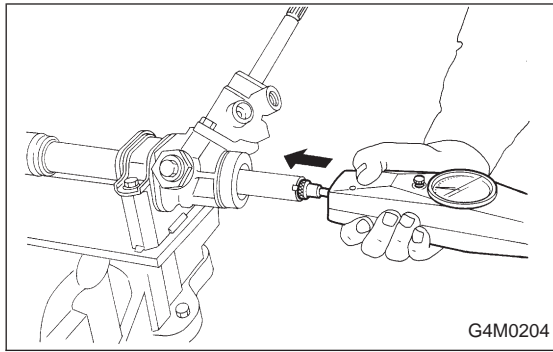
**Rotating resistance:**

***Straight-ahead position within 30 mm (1.18 in) from rack center***

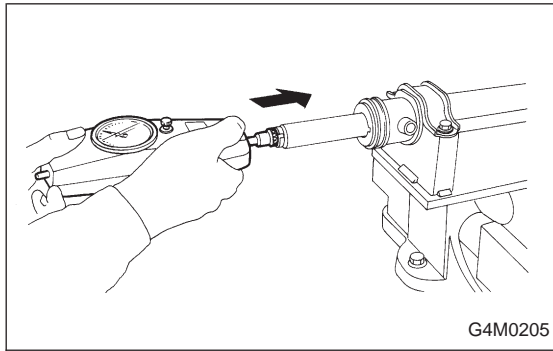
***Less than 11.18 N (1.14 kg, 2.51 lb)***

***Maximum allowable torque***

***15.7 N (1.6 kg, 3.5 lb)***



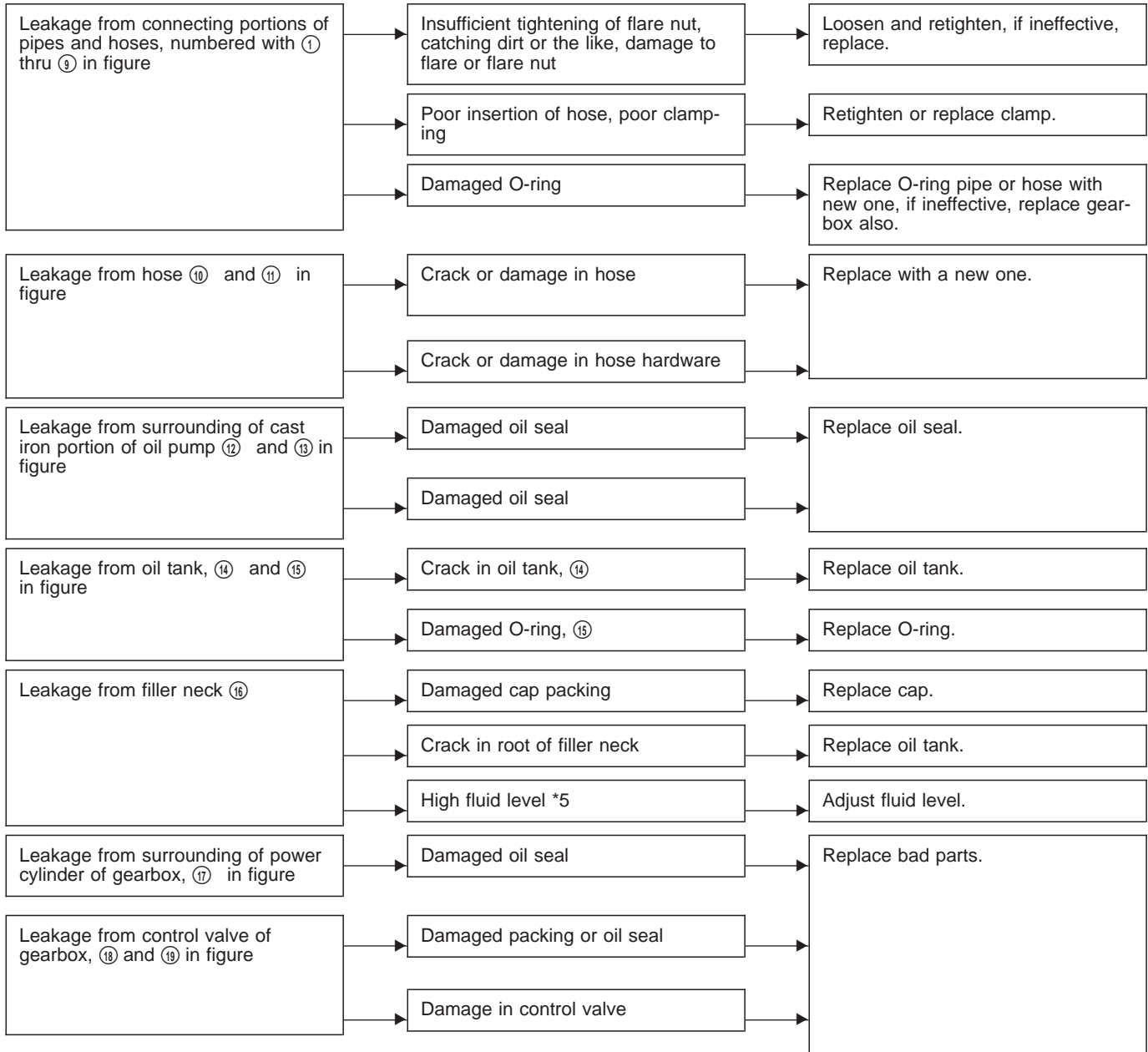
**Sliding resistance:**  
**Right-turn steering**  
**304 N (31 kg, 68 lb) or less**  
**Left-turn steering**  
**304 N (31 kg, 68 lb) or less**



4. FLUID LEAKAGE (LHD MODEL)

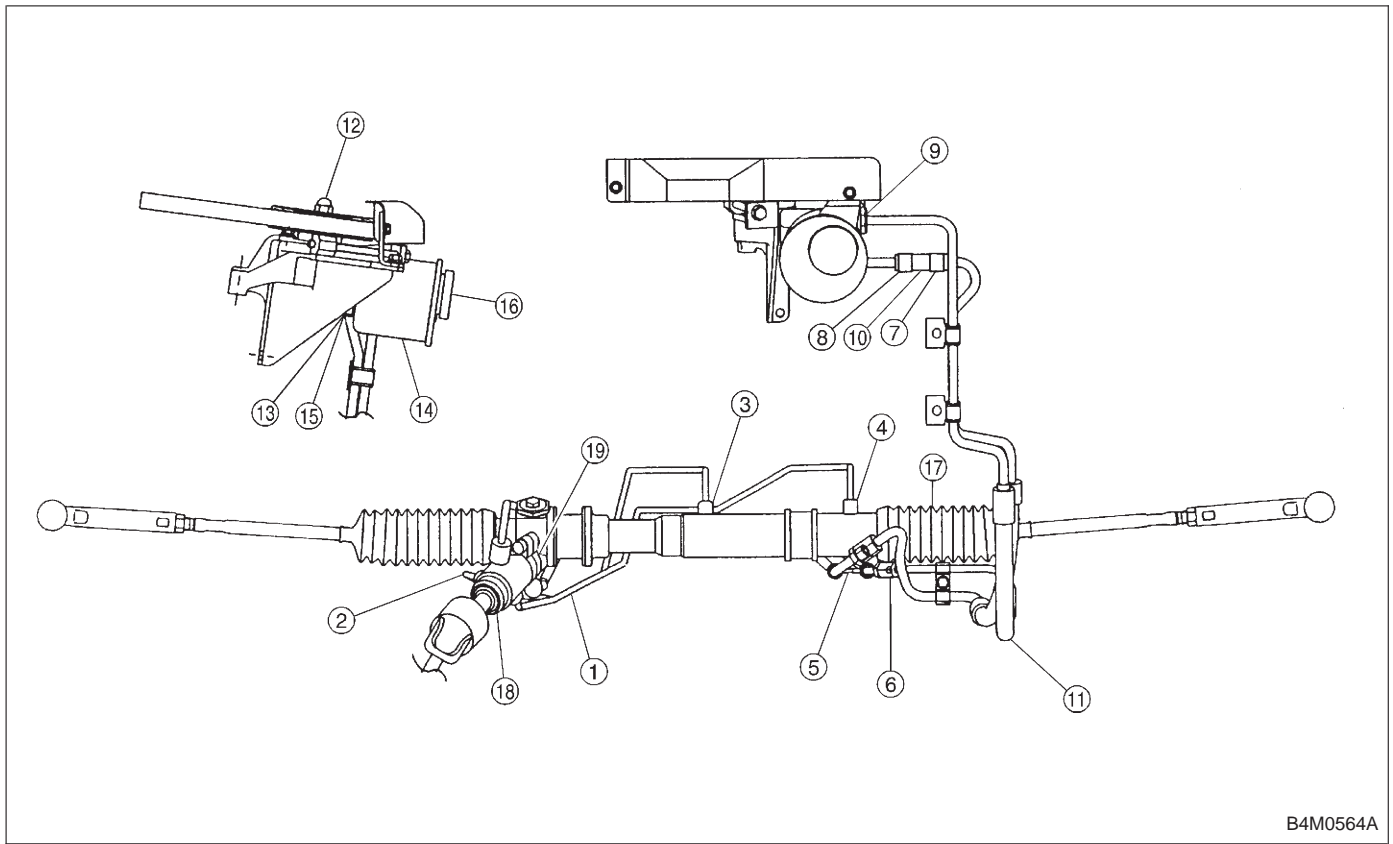
CAUTION:

It is likely that although one judges fluid leakage, there is actually no leakage. This is because the fluid spilt during the last maintenance was not completely wiped off. Be sure to wipe off spilt fluid thoroughly after maintenance.



\*5 Fluid level is specified at optimum position (range) for ordinary use. Accordingly, if the vehicle is used often under hard conditions such as on very rough roads or in mountainous areas, fluid may bleed out from cap air vent hole. This is not a problem. If a customer complains strongly and is not likely to be satisfied with the leakage, lower the fluid level to the extent that fluid will not bleed out under the conditions described, and have the customer check the fluid level and its quality more frequency than usual.



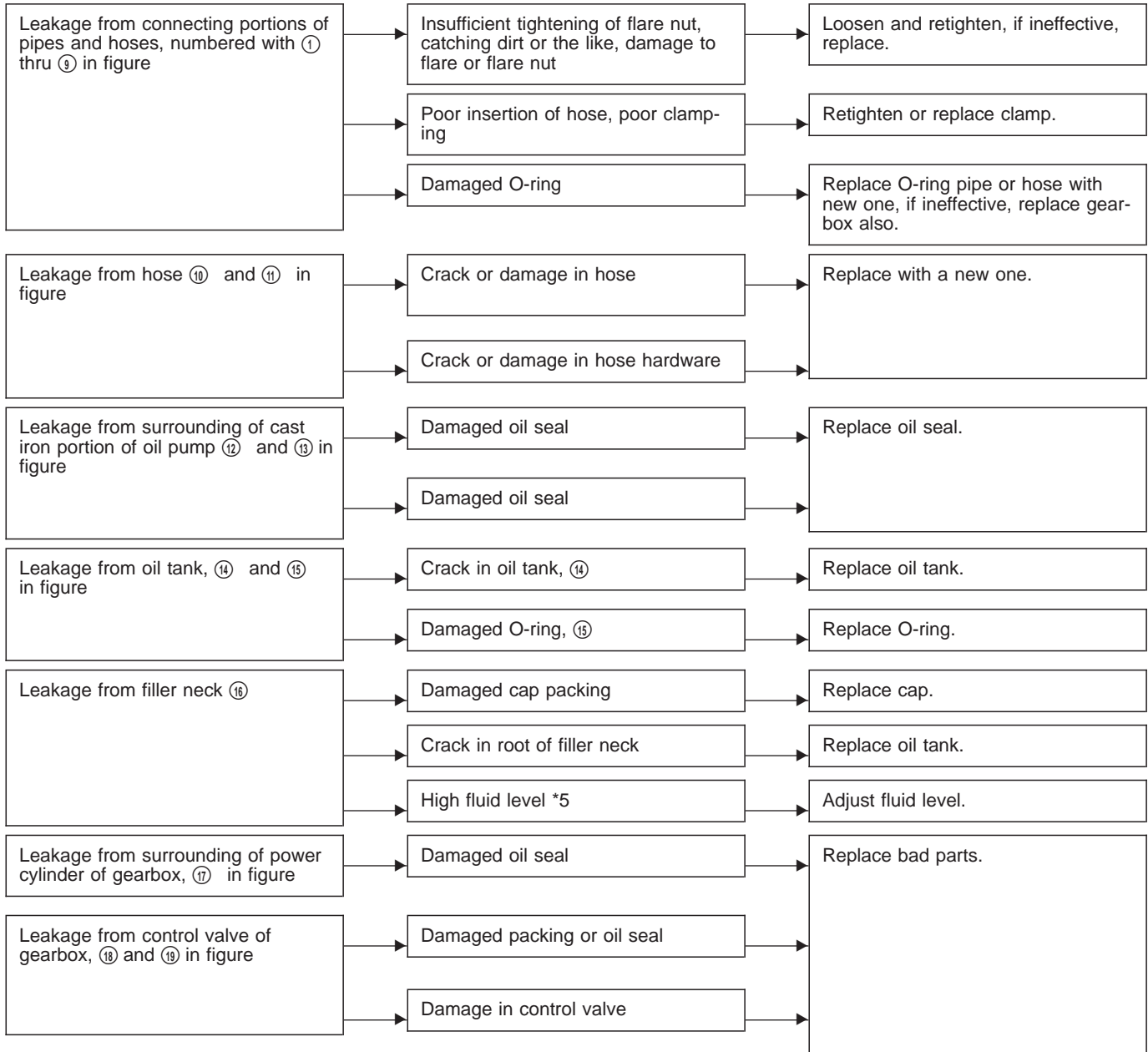


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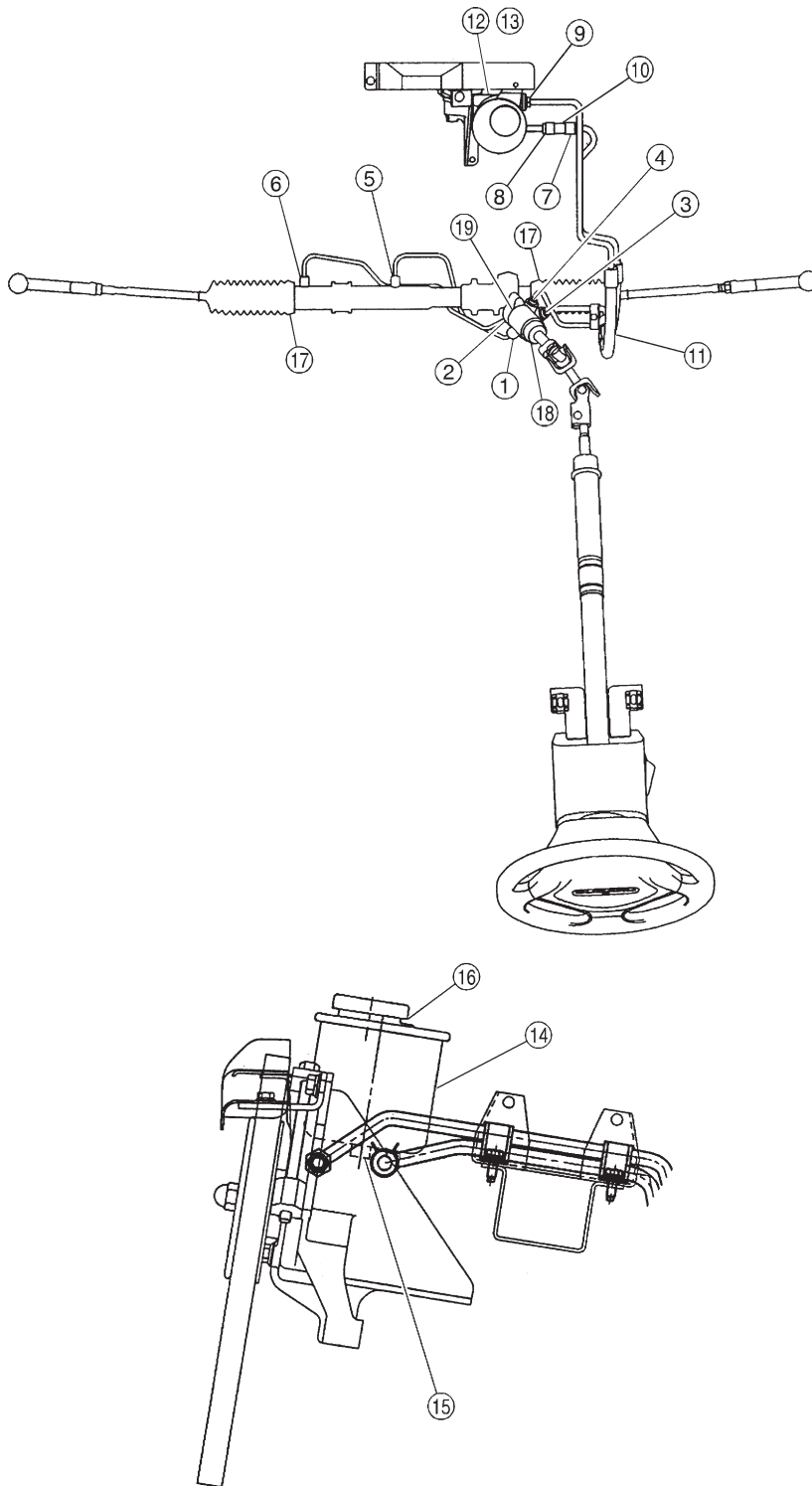
5. FLUID LEAKAGE (RHD MODEL)

CAUTION:

It is likely that although one judges fluid leakage, there is actually no leakage. This is because the fluid spilt during the last maintenance was not completely wiped off. Be sure to wipe off spilt fluid thoroughly after maintenance.



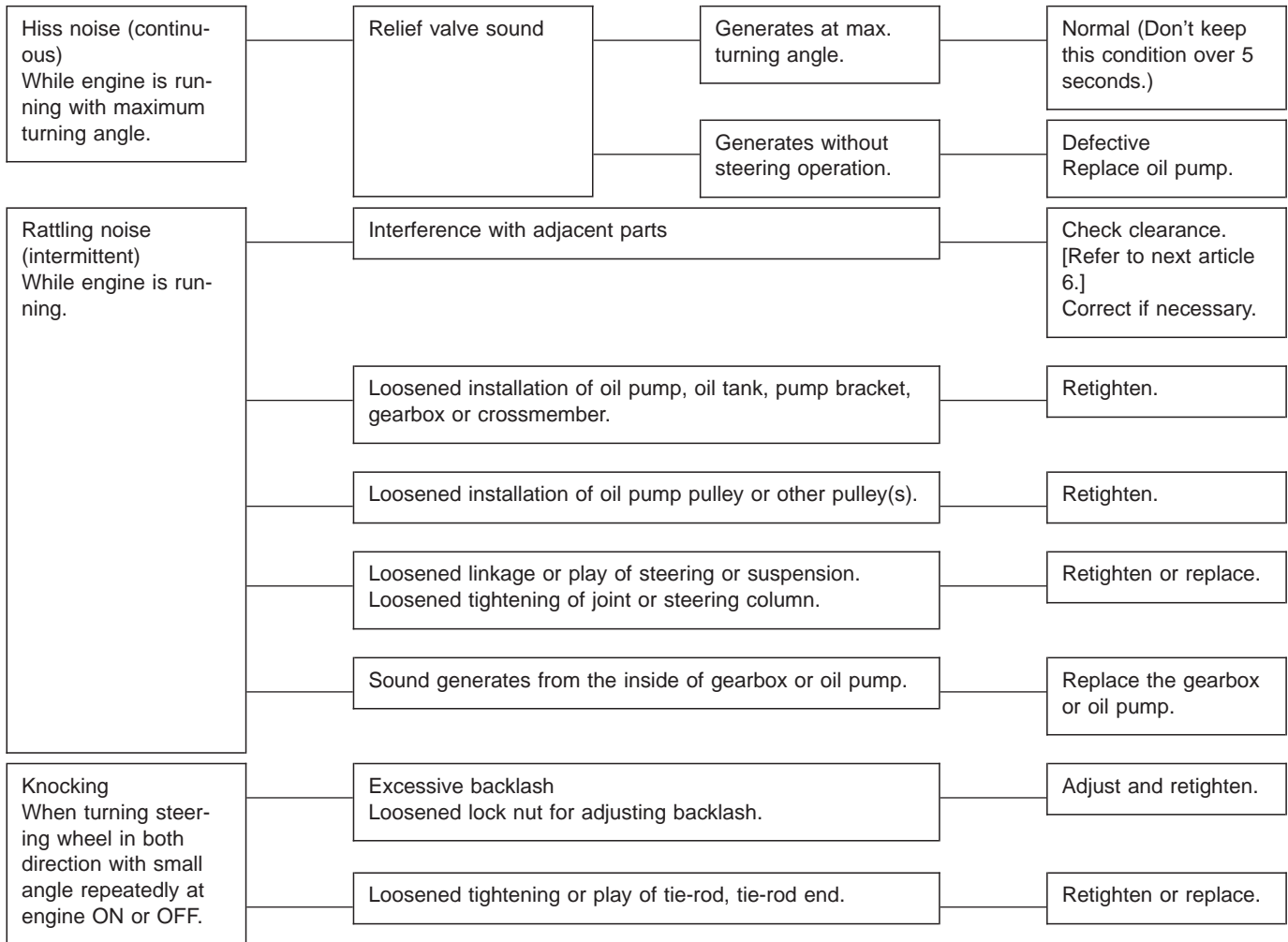
\*5 Fluid level is specified at optimum position (range) for ordinary use. Accordingly, if the vehicle is used often under hard conditions such as on very rough roads or in mountainous areas, fluid may bleed out from cap air vent hole. This is not a problem. If a customer complains strongly and is not likely to be satisfied with the leakage, lower the fluid level to the extent that fluid will not bleed out under the conditions described, and have the customer check the fluid level and its quality more frequency than usual.



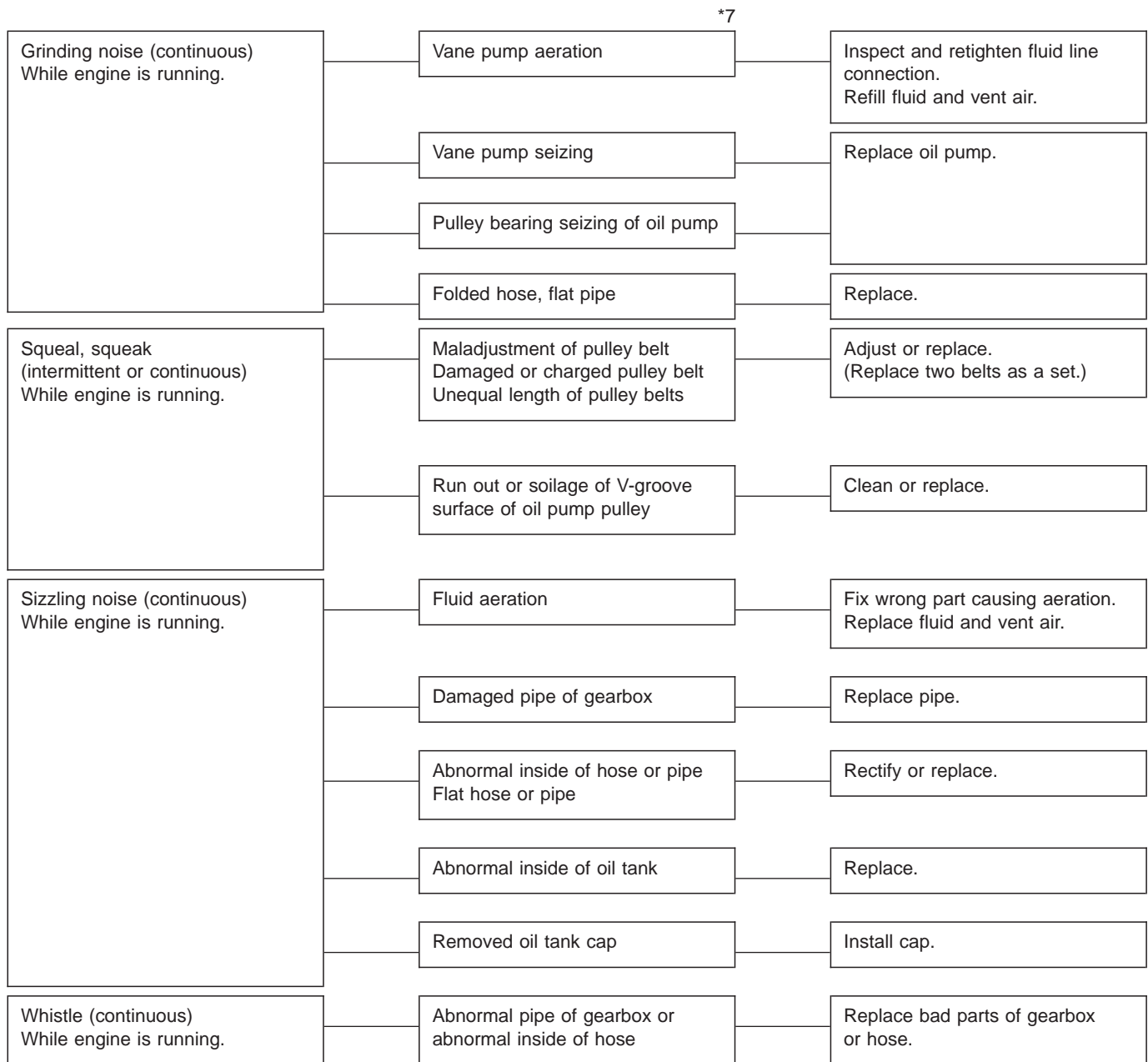
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6. NOISE AND VIBRATION

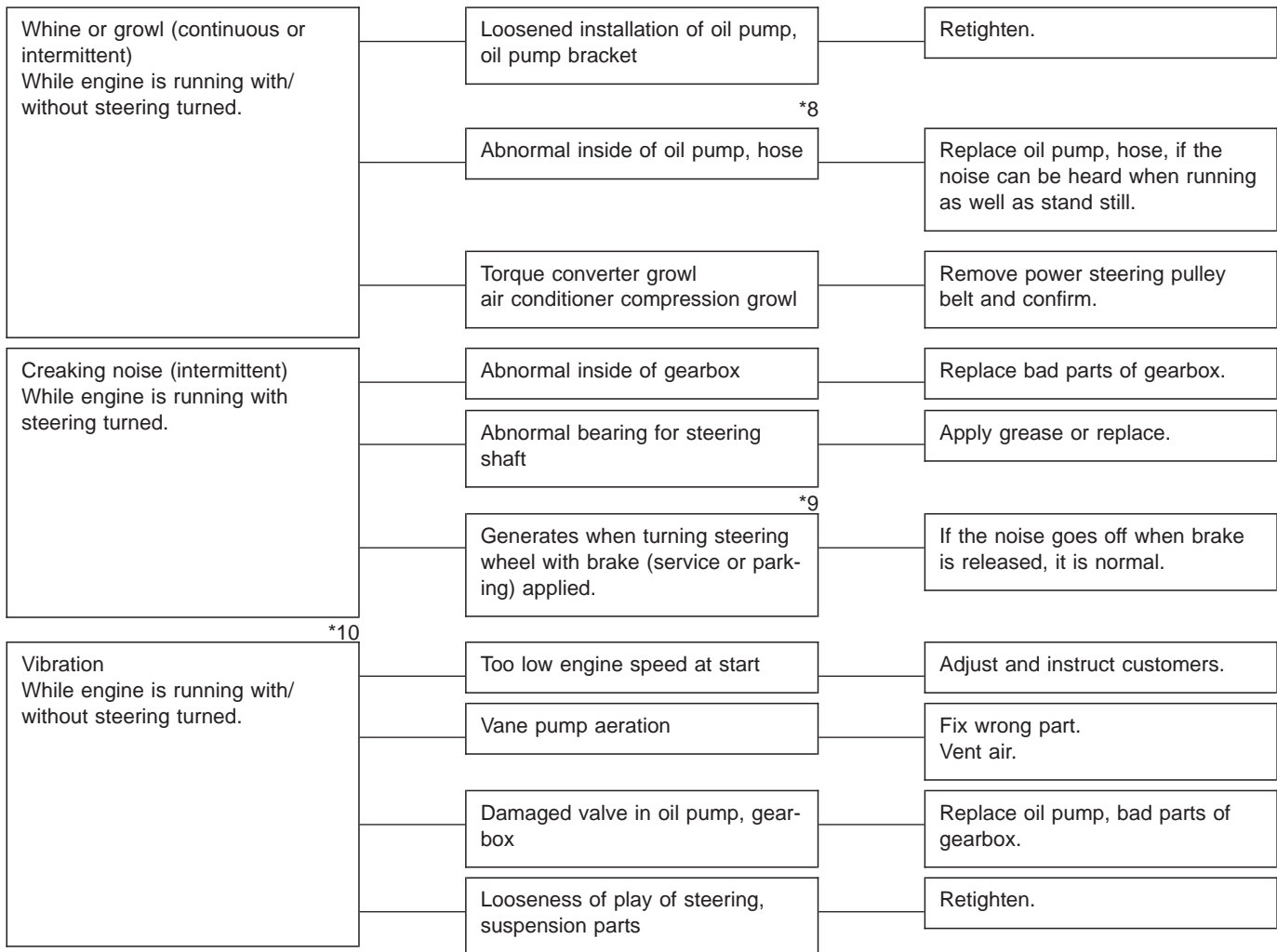
\*6



\*6 Don't keep the relief valve operated over 5 sec. at any time or inner parts of the oil pump may be damaged due to rapid increase of fluid temperature.



\*7 Grinding noise may be heard immediately after the engine start in extremely cold condition. In this case, if the noise goes off during warm-up there is no abnormal function in the system. This is due to the fluid characteristic in extremely cold condition.



**\*8** Oil pump makes whine or growl noise slightly due to its mechanism. Even if the noise can be heard when steering wheel is turned at stand still there is no abnormal function in the system provided that the noise eliminates when the vehicle is running.

**\*9** When stopping with service brake and/or parking brake applied, power steering can be operated easily due to its light steering effort. If doing so, the disk rotates slightly and makes creaking noise. The noise is generated by creaking between the disk and pads. If the noise goes off when the brake is released, there is no abnormal function in the system.

**\*10** There may be a little vibration around the steering devices when turning steering wheel at standstill, even though the component parts are properly adjusted and have no defects.

Hydraulic systems are likely to generate this kind of vibration as well as working noise and fluid noise because of combined conditions, i.e., road surface and tire surface, engine speed and turning speed of steering wheel, fluid temperature and braking condition.

This phenomena does not indicate there is some abnormal function in the system.

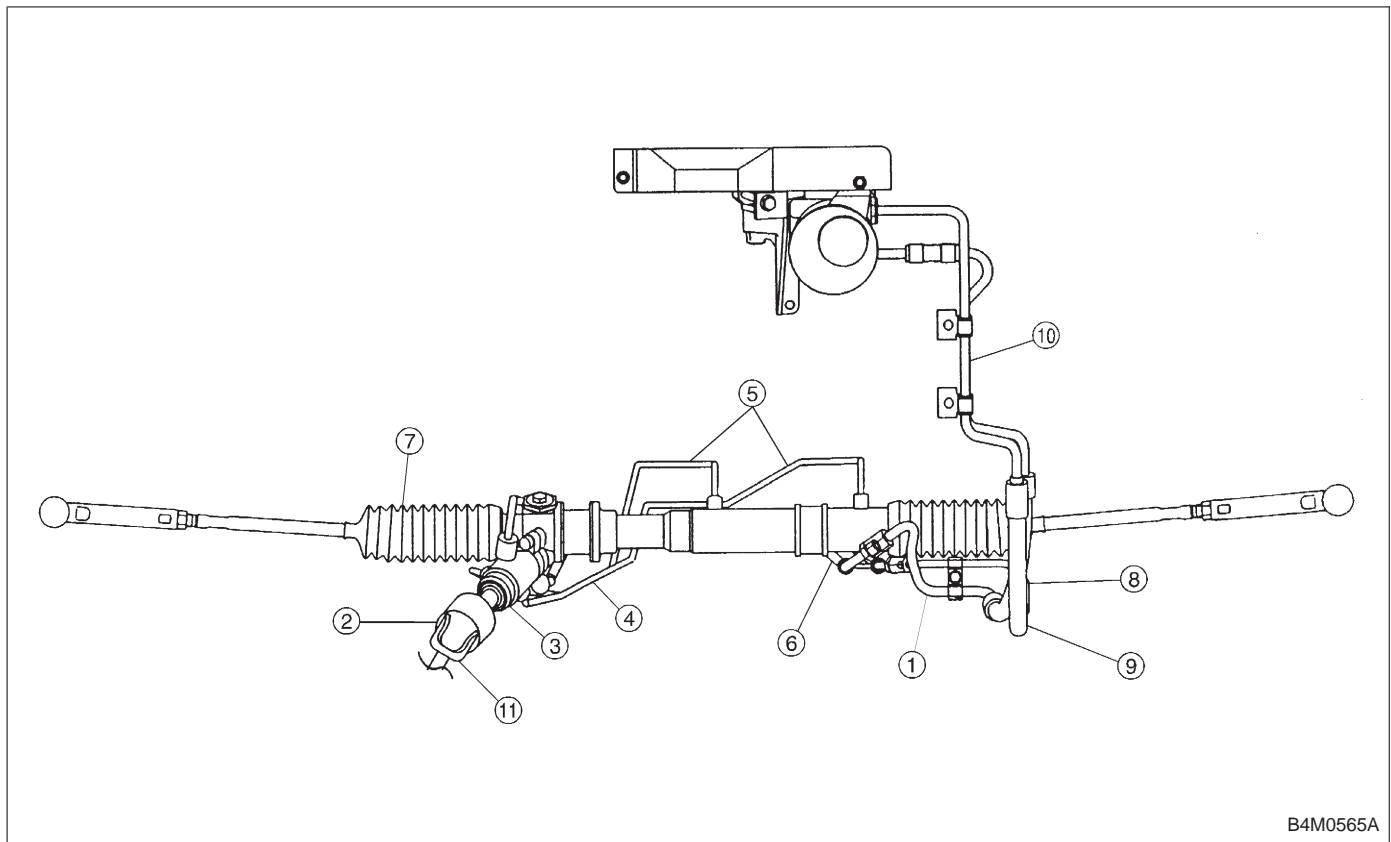
The vibration can be known when steering wheel is turned repeatedly at various speeds from slow to rapid step by step with parking brake applied on concrete road and in "D" range for automatic transmission vehicle.

7. CLEARANCE TABLE (LHD MODEL)

CAUTION:

This table lists various clearances that must be correctly adjusted to ensure normal vehicle driving without interfering noise, or any other faults.

Location	Minimum allowance mm (in)	Location	Minimum allowance mm (in)
① Crossmember — Pipe	5 (0.20)	⑥ Exhaust pipe — Pipe	15 (0.59)
② DOJ — Shaft or joint	14 (0.55)	⑦ Exhaust pipe — Gearbox bolt	15 (0.59)
③ DOJ — Valve housing	11 (0.43)	⑧ Side frame — Hose A and B	15 (0.59)
④ Pipe — Pipe	2 (0.08)	⑨ Cruise control pump — Hose A and B	15 (0.59)
Pipe — Crossmember		⑩ Pipe portion of hose A — Pipe portion of hose B	1.5 (0.059)
⑤ Stabilizer — Pipe	5 (0.20)	⑪ AT cooling hose — Joint	20 (0.79)



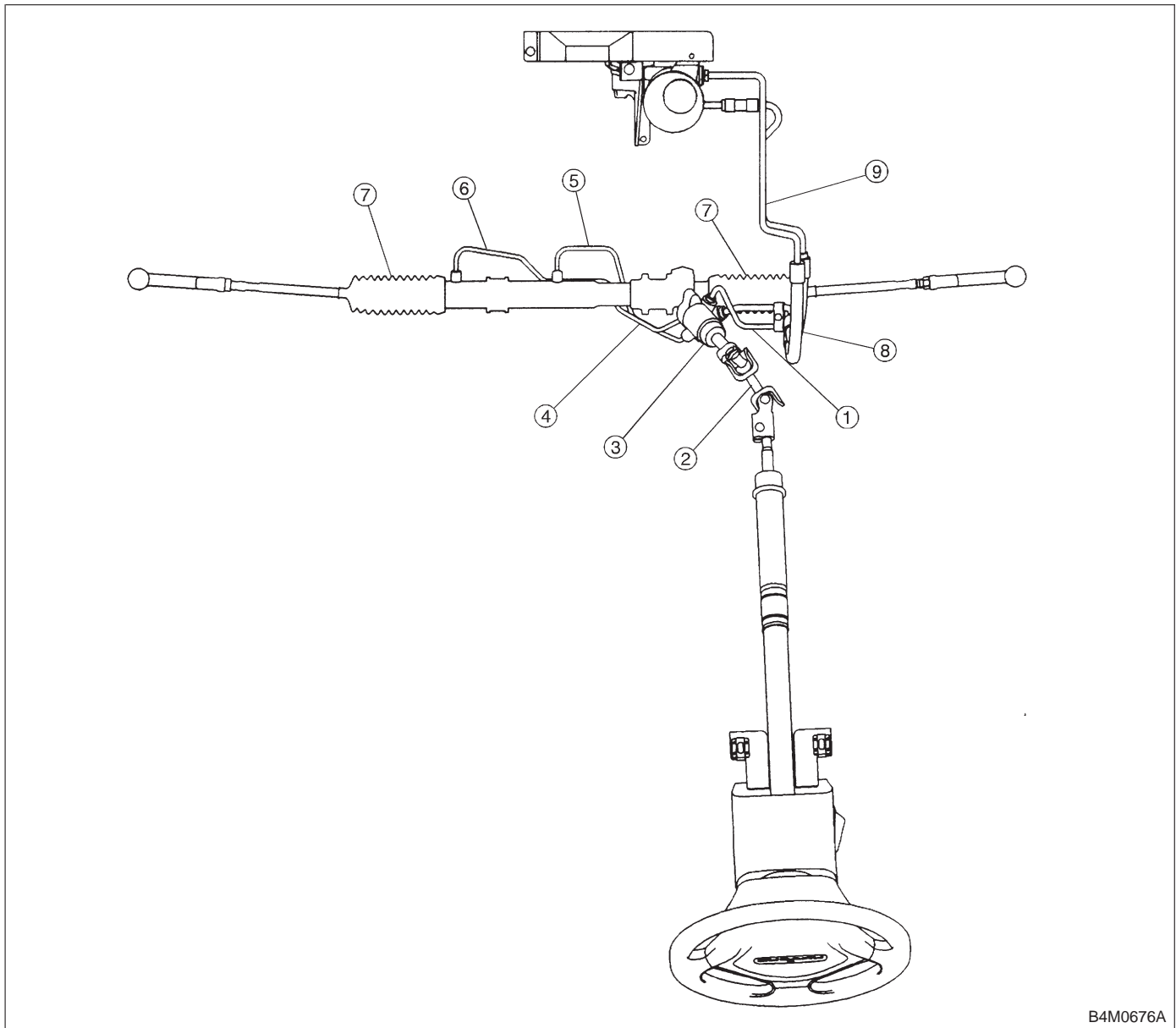
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8. CLEARANCE TABLE (RHD MODEL)

CAUTION:

This table lists various clearances that must be correctly adjusted to ensure normal vehicle driving without interfering noise, or any other faults.

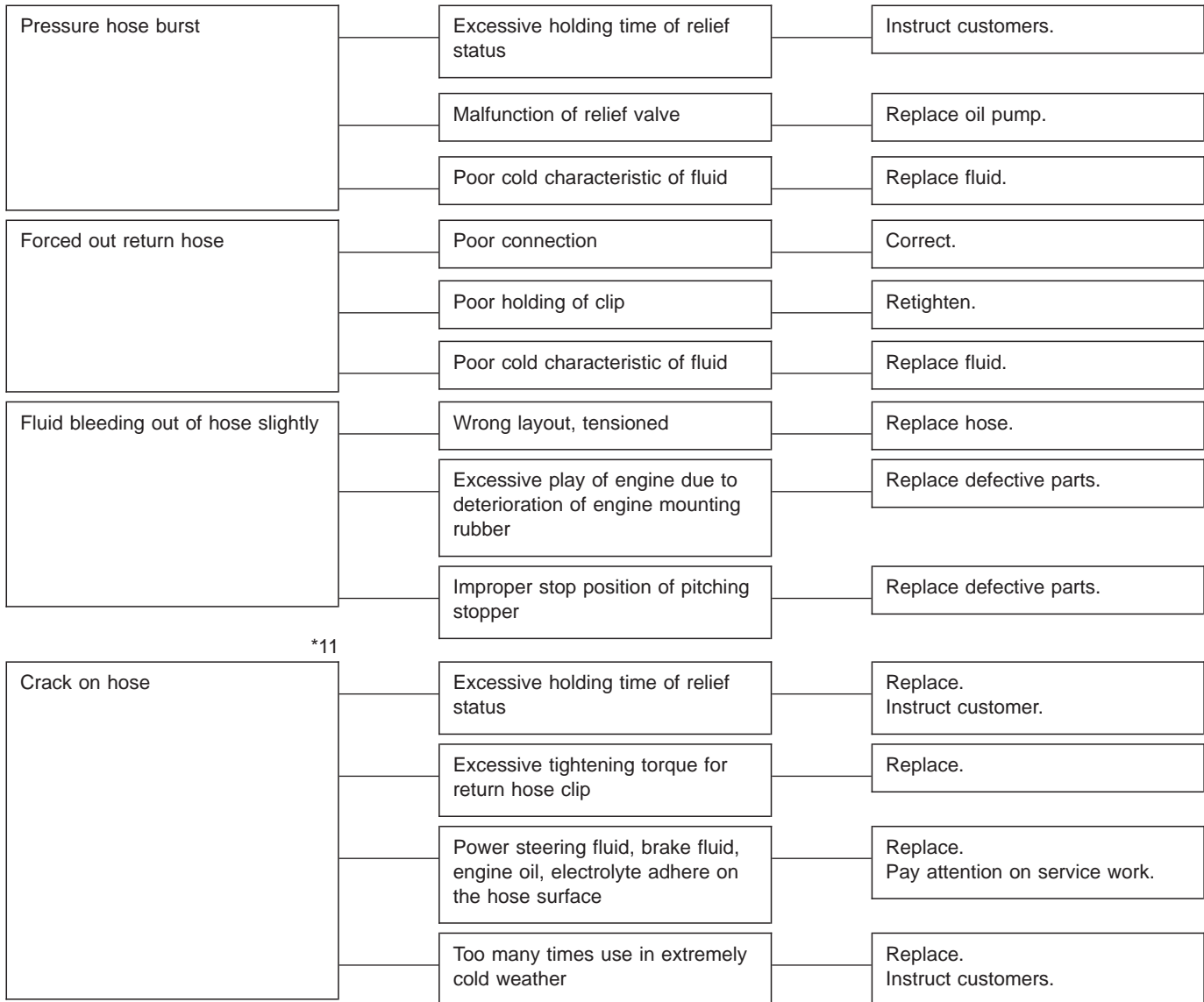
Location	Minimum allowance mm (in)	Location	Minimum allowance mm (in)
① Crossmember — Pipe	5 (0.20)	⑤ Stabilizer — Pipe	5 (0.20)
② DOJ — Shaft or joint	14 (0.55)	⑥ Exhaust pipe — Pipe	15 (0.59)
③ DOJ — Valve housing	11 (0.43)	⑦ Exhaust pipe — Gearbox boot	15 (0.59)
④ Pipe — Pipe	2 (0.08)	⑧ Side frame — Hose A and B	15 (0.59)
Pipe — Crossmember		⑨ Pipe portion of hose A — Pipe portion of hose B	1.5 (0.059)



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9. BREAKAGE OF HOSES



\*11 Although surface layer materials of rubber hoses have excellent weathering resistance, heat resistance and resistance for low temperature brittleness, they are likely to be damaged chemically by brake fluid, battery electrolyte, engine oil and automatic transmission fluid and their service lives are to be very shortened. It is very important to keep the hoses free from before mentioned fluids and to wipe out immediately when the hoses are adhered with the fluids. Since resistances for heat or low temperature brittleness are gradually declining according to time accumulation of hot or cold conditions for the hoses and their service lives are shortening accordingly, it is necessary to perform careful inspection frequently when the vehicle is used in hot weather areas, cold weather area and/or a driving condition in which many steering operations are required in short time. Particularly continuous work of relief valve over 5 seconds causes to reduce service lives of the hoses, the oil pump, the fluid, etc. due to over heat. So, avoid to keep this kind of condition when servicing as well as driving.