

SECTION 3

DISMOUNTING AND MOUNTING OF POWER UNIT

| | |
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A. Description

The power unit is extremely compact, single-unit (engine, clutch, transmission, differential, etc.) mounted at the front of the vehicle by means of the sub-frame to provide frontwheel drive.

Dismounting or remounting the power unit is made as an assembly together with the sub-frame, drive shaft, front wheels, etc. Either operation is easily accomplished in a short period of time.

In addition to the foregoing, another feature of N-series sedan and van is that engine parts (with the exception of the crankshaft, transmission, and differential) can be replaced without dismounting the engine from the vehicle. Even pistons can be replaced within a very short period of time by disassembling the engine from the head.

Disassembling the cylinder from the engine.

Exploded views of the power unit shown separately on the following two pages indicate to what extent the engine can be disassembled and reassembled without dismounting the power unit from the vehicle. All parts with the exception of those within the crankcase can be disassembled and reassembled without dismounting the power unit.



Fig. 3A-1

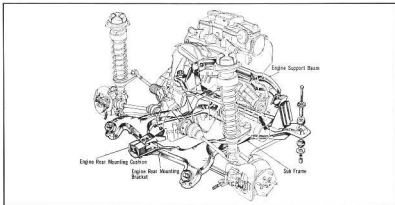


Fig. 3A-1a

By using the special tool (universal joint socket wrench), the primary drive mechanism as well as the oil pump within the engine's interior can be removed and inspected without dismounting the engine. (Fig. 3A-2)

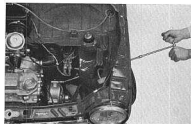
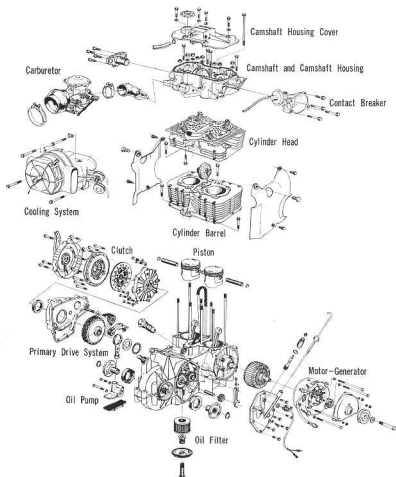


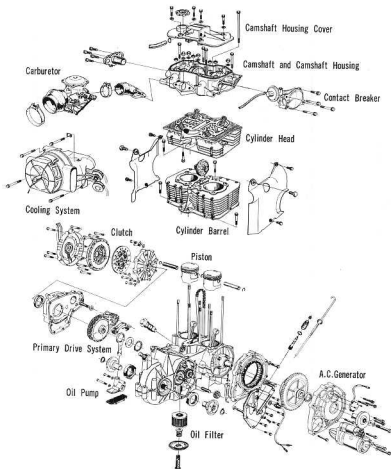
Fig. 3A-2

3-2 DISMOUNTING AND MOUNTING OF POWER UNIT

360/400 Engine



600 Engine



3-4 DISMOUNTING AND MOUNTING OF POWER UNIT

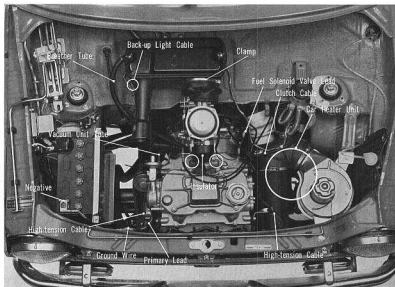


Fig. 3B-1

B. Dismounting

1. Drain the engine oil. (Refer to SECTION 1 E. Lubrications.)
2. Remove the battery cable from the negative terminal.
3. Remove the car heater unit (for the model equipped with the exhaust car heater type) from the vehicle. (Refer to SECTION 16. HEATER AND VENTILATION)
4. Disconnect electrical wiring from the engine.
 - 1) Engine ground wire
 - 2) Ignition primary lead
 - 3) High-tension cables
 - 4) Fuel solenoid valve lead
 - 5) Back-up light cable
 - 6) Generator cable
 - 7) Starter cable
5. Detach the following cables:
 - 1) Clutch cable (Refer to SECTION 3. CLUTCH)
 - 2) Speedometer cable
 - 3) Throttle cable and choke cable
6. Separate the vacuum unit tube from the vacuum unit and the breather tube from the camshaft housing cover.
7. Loosen the clamp and separate the bellows from the air cleaner case.
8. Separate the fuel feed tube from the carburetor.
9. Remove the two insulator mounting bolts and then remove insulator, carburetor, and bellows from the camshaft housing as a unit. Do not lose the O-ring located between the camshaft housing and insulator. (Refer to Fig. 3C-3)
Loosen the heater hot-air duct clamps and separate them from the cooling fan housing. (for the model equipped with the engine car heater type).

10. (For Engine type heater)
Pull out the heater control rod joint pin to disconnect the rod from the heater drum and then force the rod toward the interior of the vehicle (Fig. 3B-2)
11. Drive out the joint pin by means of the special tool shift rod pin driver, and separate the gear shift column from the gear shift rod. (Fig. 3B-3 and Fig. 3B-4)
12. Retract the gear shift rod toward the engine as shown in Fig. 3B-4.

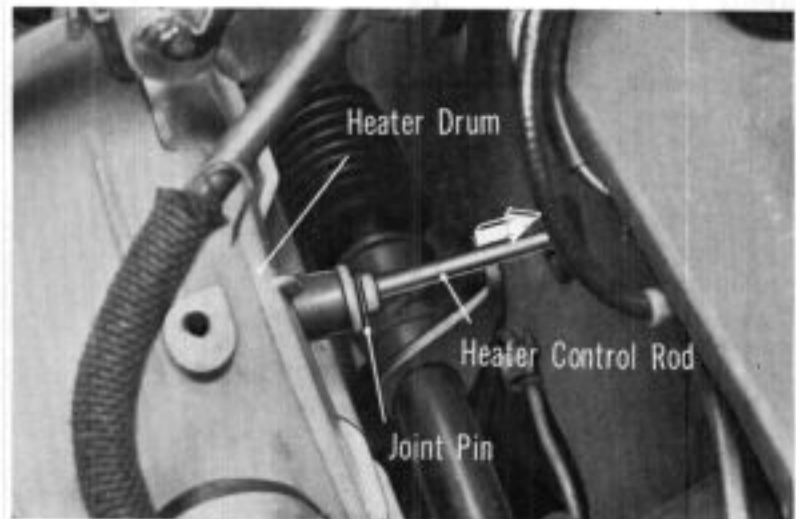


Fig. 3B-2

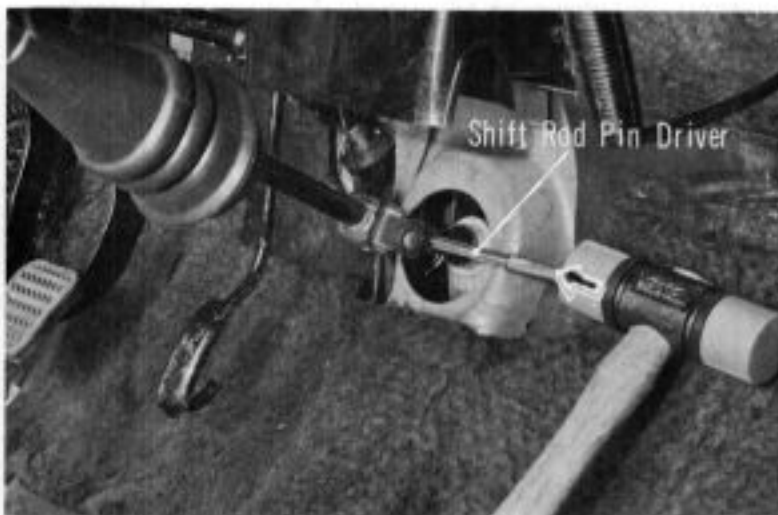


Fig. 3B-3



Fig. 3B-4

13. Disconnect wirings of turn signal lights, R and L. (Fig. 3B-5)

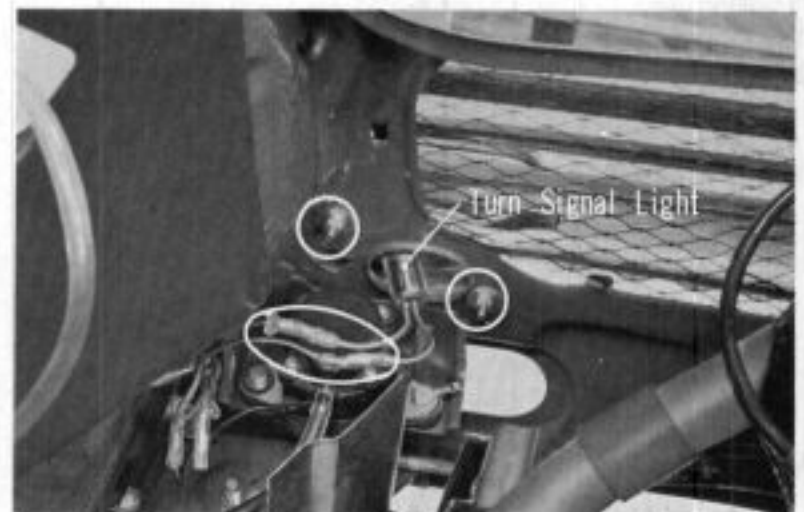


Fig. 3B-5

14. (For the 360 Seriese)
Remove the front grille and front grille screen by removing the five retaining screws. (Fig. 3B-6)

(For the 400 and 600 Series)

Remove the turn signal light lenses and bolts mounting the front grille on both sides, and the three screws at the top. The front grille can be then separated. (For details see SECTION 18. D. Front Grille and Bumper)

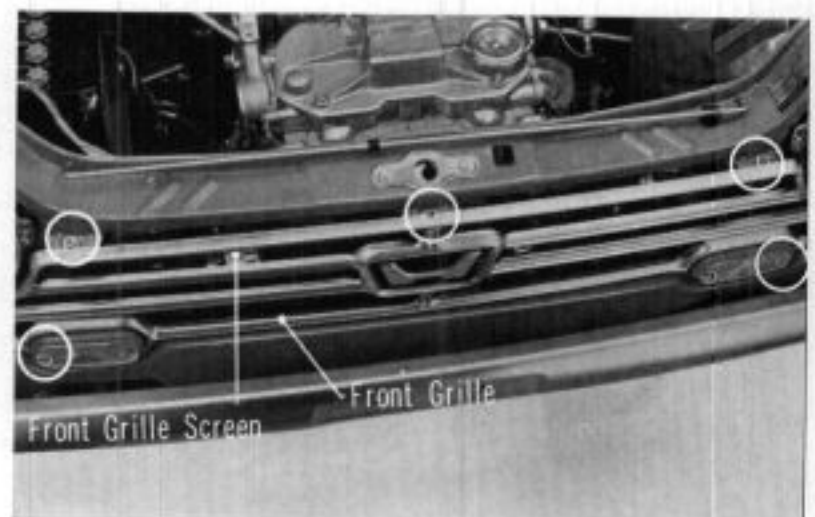


Fig. 3B-6

3-6 DISMOUNTING AND MOUNTING OF POWER UNIT

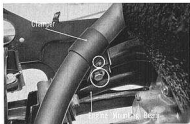


Fig. 3B-7

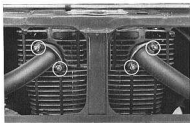


Fig. 3B-8

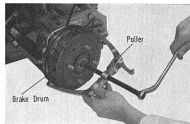


Fig. 3B-9

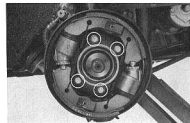


Fig. 3B-10

15. Loosen the exhaust pipe clamber retaining nut, and release the clamber by removing the bolt securing it to the engine mounting beam.

16. Separate the exhaust pipe from the cylinder head. It is unnecessary to remove the exhaust pipe from the engine compartment as this is done after it has been dismantled with the engine.

17. Loosen the front wheel nuts and wheel bearing nuts.

18. Jack up the engine lower crankcase and raise the vehicle. Place a support beneath the front of the vehicle body as shown in Fig. 3B-11. The height of the support should allow a distance of 730mm (28.7 in.) or more between the ground and the front bumper. (See Fig. 3B-16)

19. Remove the wheel and wheel bearing nut on both sides.

Remove the brake drum by using a suitable tool, puller from the axle shaft. (Fig. 3B-9)

20. Separate the back plate from the knuckle after removing four plate mounting bolts. (Fig. 3B-10)

This work does not require the trouble some air bleeding of the brake system after remounting the power unit.

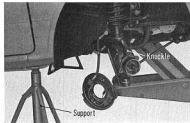


Fig. 3B-11

21. Remove the knuckle clamp bolt and separate the knuckle from the front damper. If it is hard, insert a screwdriver into the knuckle opening and wrench it, and they can be easily separated.

To dismount the power unit, there is another way which does not require disassembling front brake system and front dampers from the knuckles. According to this method, front dampers should be dismantled from the body shell by removing 8mm nuts as single with power unit / sub frame / front suspension while front brake hoses should be also disconnected.

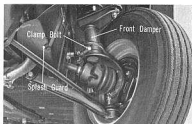


Fig. 3B-12



Fig. 3B-13

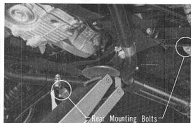


Fig. 3B-14

22. (For Engine type car heater)
Remove the right and left splash guards.
23. Remove the front and rear sub-frame mounting bolts. (Fig. 3B-13 and Fig. 3B-14)
24. Remove the two bolts retaining the exhaust silencer on the vehicle body, and remove the rubber.
(Refer to SECTION 15. EXHAUST SYSTEM)



Fig. 3B-15

25. Slowly dismount the power unit, sub-frame, exhaust pipe and silencer as an assembly and check to see that no lead wires or cables were overlooked. Upon completion, the power unit is completely separated from the vehicle body subframe, and exhaust pipe, as an assembly by pulling in a forward direction.

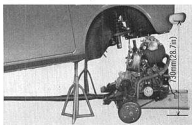


Fig. 3B-16

3-8 DISMOUNTING AND MOUNTING OF POWER UNIT

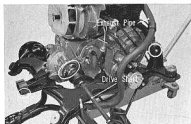


Fig. 3B-17

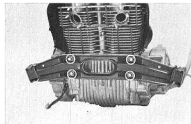


Fig. 3B-18



Fig. 3C-1

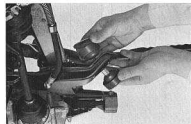


Fig. 3C-2

26. Remove the starter from the engine (N600), and remove the exhaust pipe.

Remove the drive shaft from the differential. Remove the front engine mounting beam and the rear mounting bolt, and separate the engine and sub-frame; also at this time, separate the exhaust pipe from the engine. (Fig. 3B-17)

27. Remove the four front engine mounting beam bolts and separate the beam from the engine. Power unit dismounting is thus completed. (Fig. 3B-18)

C. Mounting

Power unit mounting is the reverse of dismounting, but note the following:

1. The power unit is mounted onto the sub-frame with the bolts placed through the rubber cushions. Avoid incorrect installation of rubber cushions and washer plates. Fig. 3C-1 shows the front engine mounting rubber cushion arrangement, and Fig. 3C-2 the arrangement at the rear.

Check the rubber cushions for deterioration. When tightening the mounting bolts and nuts, avoid metal to metal contacts among body shell, sub-frame, and sheath to have a complete noise insulation to passenger room.

2. Connect the wirings and cables according to their colors (colors should match).
3. When installing the insulator, do not forget to install the insulator O-ring.
4. Check the front wheel toe-in and adjust it if necessary.

Toe-in OUT 2mm
(Refer to SECTION 10. STEERING)



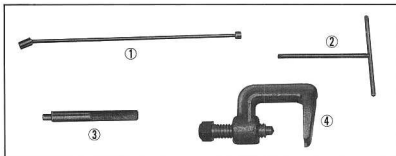
Fig. 3C-3

TORQUE SPECIFICATIONS

| Description | Size (mm) | Torque | kg-m (lbs-ft) |
|---|--------------|---------------|------------------|
| Engine support beam-to-sub frame | 10 | 3.0-3.5 kg-m | (22-26) |
| Engine-to-support beam | 8 | 2.0-2.4 kg-m | (15-18) |
| Engine rear mounting bracket-to-sub frame | 8 | 2.0-2.4 kg-m | (15-18) |
| Engine rear mounting cushion-to-bracket | 6 | 0.81-1.0 kg-m | (6-8) |
| Front wheel hub nut | 20 | 14-20 kg-m | (101-145) |
| | 22 | 14-20 kg-m | (101-145) |
| Knuckle clamp bolt | 10 | 4.5-5.0 kg-m | (33-37) |
| | 8 | 2.8-3.4 kg-m | (20-25) |
| Drive shaft-to-differential | 8 | 2.8-3.2 kg-m | (20-24) |
| Exhaust pipe clamp bolt | 8 | 2.0-2.4 kg-m | (15-18) |
| Exhaust pipe-to-engine | 8 | 2.0-2.4 kg-m | (15-18) |
| Heat exchanger mounting nut | 10 | 4.0-4.8 kg-m | (21-34) |
| Front shock absorber mounting bracket-to-body | 8 | 1.5-2.3 kg-m | (11-15) |

3-10 DISMOUNTING AND MOUNTING OF POWER UNIT

D. Special Tool



| Ref. No. | Tool No. | Description | N360 LN360 | N400 N600 |
|----------|-------------|--------------------------------------|---------------|--------------|
| 1. | 07093-55101 | Universal joint socket wrench, 10mm | ○ | ○ |
| 2. | 07093-55105 | Universal joint socket wrench handle | ○ | ○ |
| 3. | 07047-55101 | Shift rod pin driver | ○ | ○ |
| 4. | 07092-55103 | Tie-rod end puller | ○ | ○ |