

REMOVAL AND INSTALLATION OF ENGINE ASSEMBLY

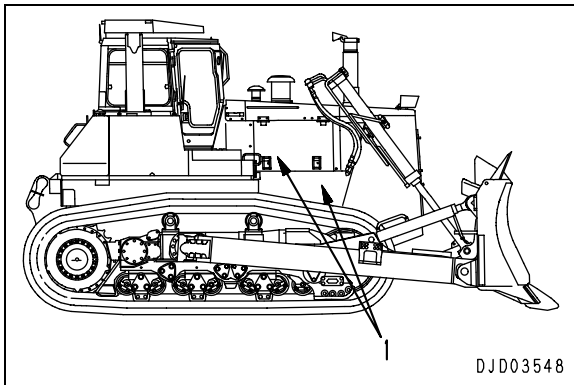
SPECIAL TOOLS

| Symbol | Part No. | Part name | Necessity | Q'ty | New/Re-model | Sketch |
|--------|--------------|-------------------|-----------|------|--------------|--------|
| X | 799-703-1200 | Service tool kit | | 1 | | |
| | 799-703-1100 | Vacuum pump | ■ | 1 | | |
| | 799-703-1110 | Vacuum pump | ■ | 1 | | |
| | 799-703-1120 | Vacuum pump | ■ | 1 | | |
| | 799-703-1401 | Gas leak detector | ■ | 1 | | |

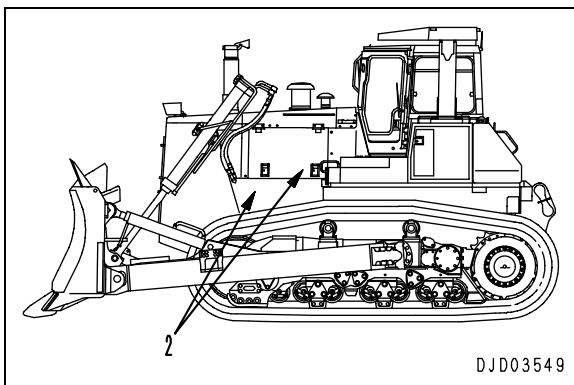
REMOVAL

⚠ Disconnect the cable from the negative (-) terminal of the battery.1.


1. Drain coolant.
2. Remove engine hood assembly.
3. Remove engine right side cover (1).

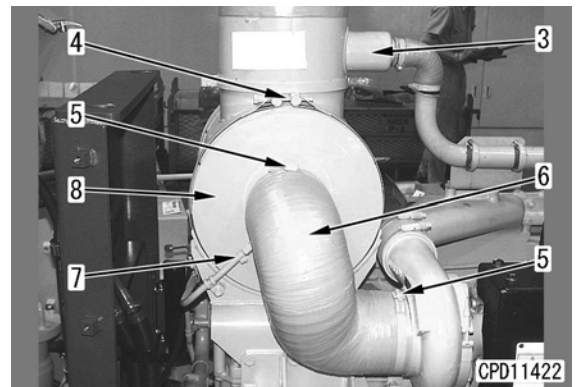


4. Remove engine left side cover (2).

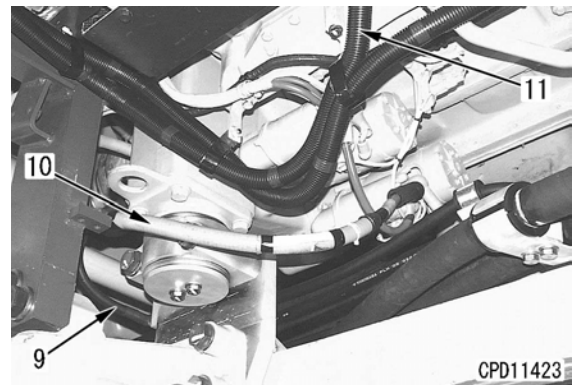


5. Remove air cleaner dust discharge tube hose clamp (3).
6. Remove air cleaner band (4).
7. Remove air supply tube clamp (5), then remove air supply tube (6).
8. Disconnect dust indicator hose (7).
9. Lift off air cleaner assembly (8).

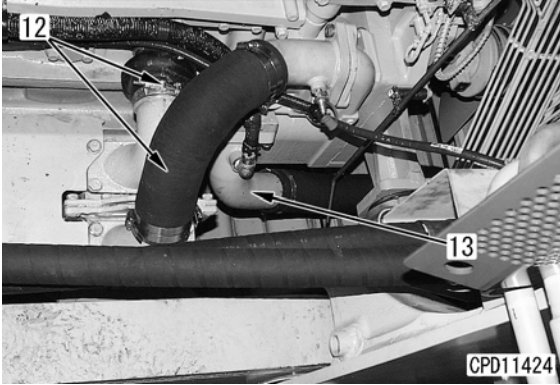
 Air cleaner assembly: **22kg**



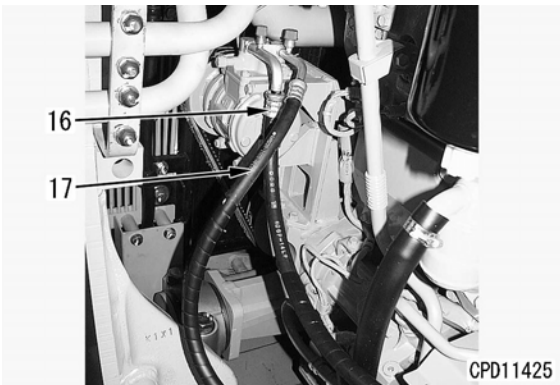
10. Disconnect ground connection wiring (9).
11. Disconnect starting motor wiring (10).
12. Close heater valve (11), and move engine to rear.



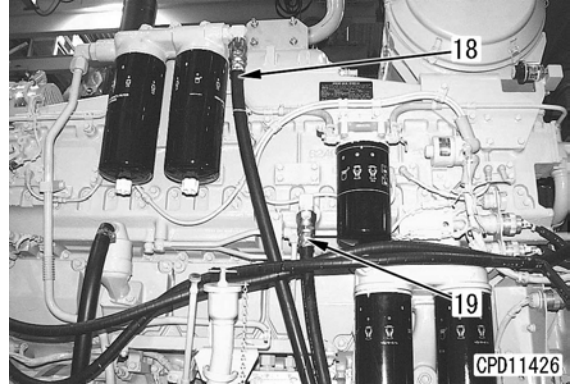
- 13. Remove torque converter oil cooler connector (12).
- 14. Disconnect radiator outlet tube (13).



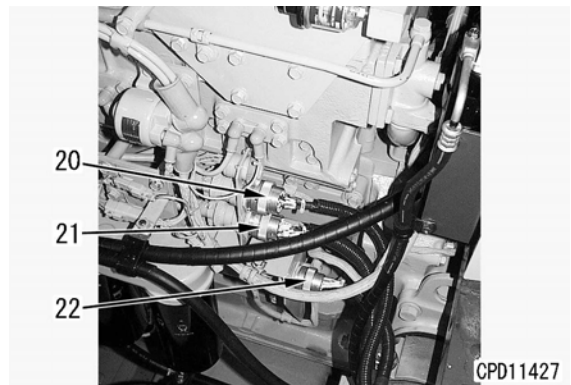
- 15. Disconnect air conditioner hoses (16) and (17).
 - ★ Collect air conditioner gas (R134a) completely before disconnecting the hoses.
 - ★ Fit blind plugs to prevent dirt, dust, or moisture from getting inside the hoses.
 - ★ Disconnect all clamps of hoses (16) and (17).



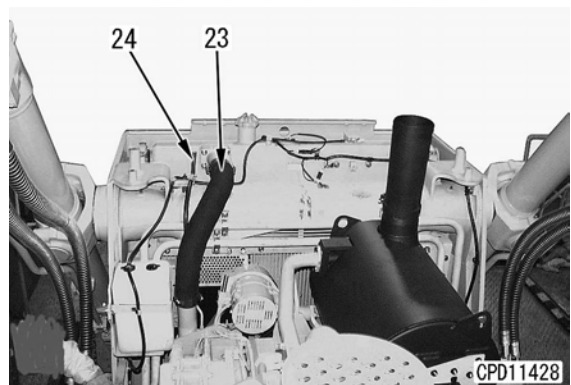
- 16. Disconnect fuel supply hose (18).
- 17. Disconnect fuel return hose (19) and remove hose clamp.



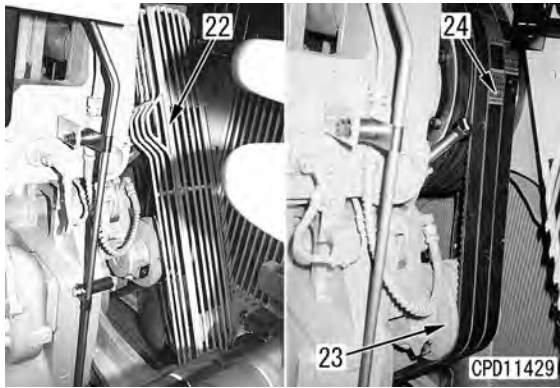
- 18. Disconnect wiring connectors (CN-101) (20), (CU-EG1) (21), and (CU-EG2) (22).



- 19. Disconnect radiator inlet hose (23). Disconnect aeration hose (24).



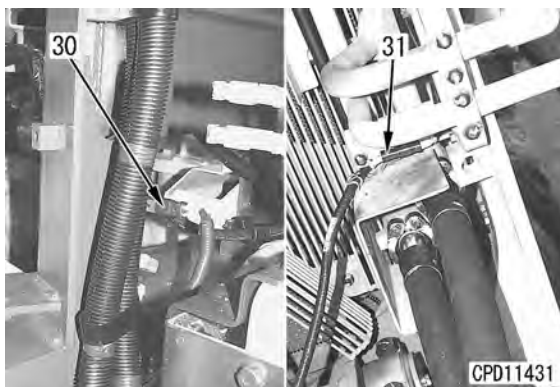
- 20. Remove fan net (22).
- 21. Loosen tension of tension pulley (23) and remove fan belt (24).




- 22. Remove right covers (25) and (26).
- 23. Remove left covers (27) and (28).
- 24. Remove cover (29).

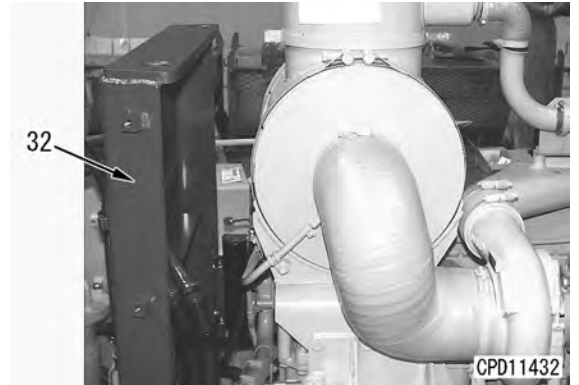


- 25. Disconnect wiring connectors (CN206) (30) and (CN-201) (31).

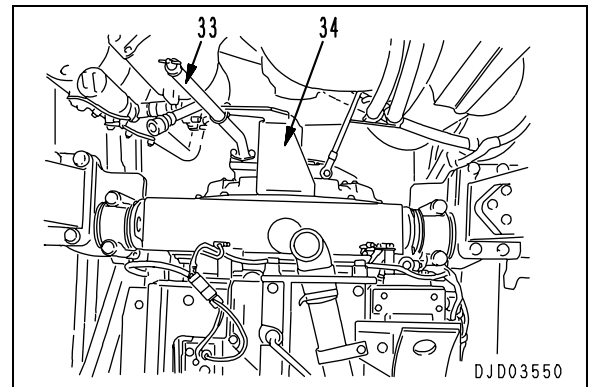


- 26. Lift off bracket assembly (32).

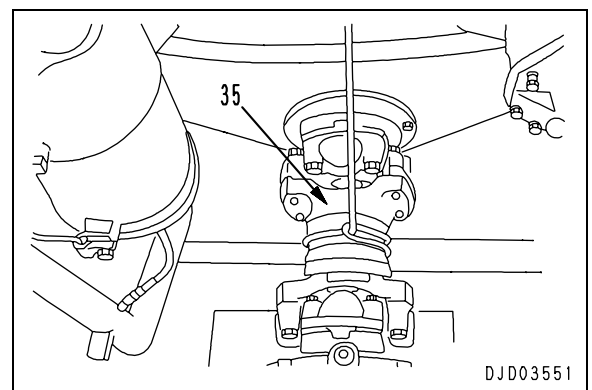
 kg Bracket assembly: **170kg**




- 27. Remove damper case oil level gauge (33).
- 28. Remove bracket (34).

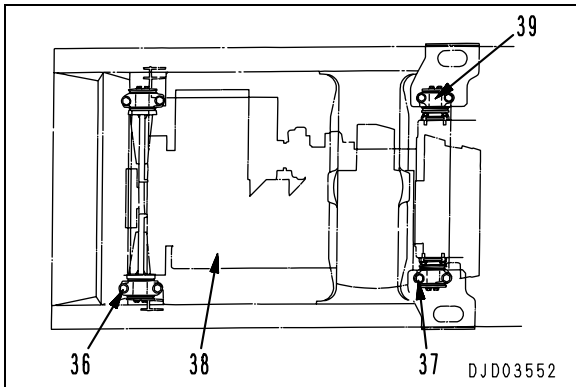


- 29. Sling universal joint (35), remove mounting bolts, then lift off.

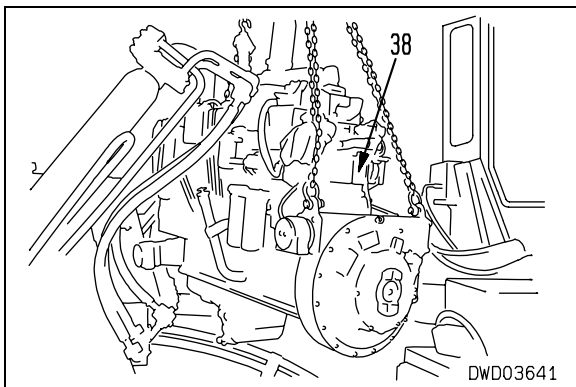


- 30. Remove front mount bolt (36) and rear mount bolt (37).
- 31. Raise engine assembly (38), and remove right rear mount cap (39).

 Engine assembly: **3,200kg**

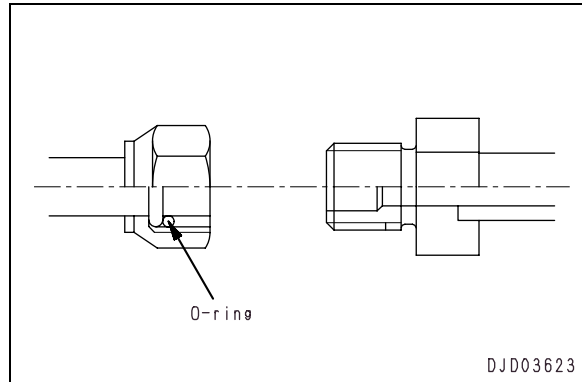



- 32. Move engine assembly (38) to above chassis and operate chain block to raise front of engine assembly and set assembly at an angle.
- 33. Pass chassis parts through front and rear of engine assembly (38), then rotate engine assembly (38) 90° to right of chassis and remove.
 - ★ When removing, be careful not to damage the wiring and hoses.




INSTALLATION


- ★ Be careful to prevent the entry of moisture, dust or dirt into the air conditioner circuit hoses when installing.
- ★ Check that there are O-rings at the portion of the air conditioner hoses connecting to the piping, then tighten. Coat the O-rings thoroughly with compressor oil (Showa-Shell Suniso 4G or 5G).





 Air conditioner gas piping tightening torque

| Thread size | Tightening torque |
|------------------------------|---------------------------------|
| 16 × 1.5 | 13.23 ± 1.47Nm {1.35 ± 0.15kgm} |
| 22 × 1.5 | 22.05 ± 2.45Nm {2.25 ± 0.25kgm} |
| 24 × 1.5 | 31.85 ± 2.45Nm {3.25 ± 0.25kgm} |
| M6 bolt (receiver portion) | 5.39 ± 1.47Nm {0.55 ± 0.15kgm} |
| M6 bolt (compressor portion) | 9.8 ± 1.96Nm {1.0 ± 0.2kgm} |

 Radiator inlet hose clamp:
882 ± 98Ncm {90 ± 10kgm}

 Aeration hose clamp:
333.2 ± 49Ncm {34 ± 5kgm}

 Universal joint mounting bolt:
176.4 ± 19.6Ncm {18 ± 2kgm}

 Engine mount bolt:
926.1 ± 102.9Ncm {94.5 ± 1kgm}

Refilling with water

Add water through water filler to the specified level. Run the engine to circulate the water through the system. Then check the water level again.

Charging air conditioner with gas

Using tool X, charge the air conditioner circuit with air conditioner gas (R134a).

REMOVAL AND INSTALLATION OF DAMPER ASSEMBLY

SPECIAL TOOLS

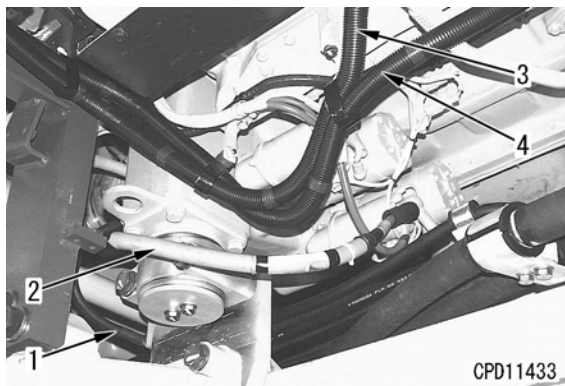
| Symbol | Part No. | Part name | Necessity | Q'ty | New/Re-model | Sketch |
|--------|--------------|-------------------|-----------|------|--------------|--------|
| X | 799-7.3-1200 | Service tool kit | ■ | 1 | | |
| | 799-703-1100 | Vacuum pump | ■ | 1 | | |
| | 799-703-1110 | Vacuum pump | ■ | 1 | | |
| | 799-703-1120 | Vacuum pump | ■ | 1 | | |
| | 799-703-1401 | Gas leak detector | ■ | 1 | | |

REMOVAL

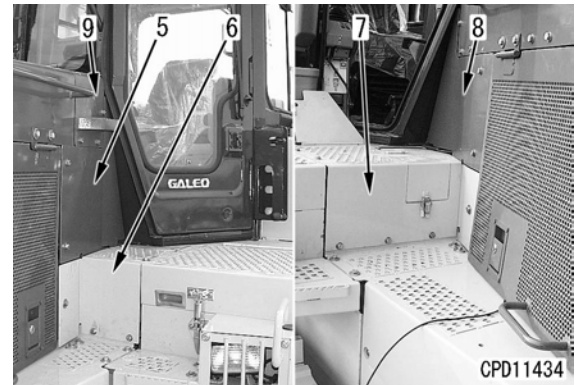
⚠ Disconnect the cable from the negative (–) terminal of the battery.

1. Remove hood assembly. For details, see REMOVAL OF HOOD ASSEMBLY.
2. Disconnect ground connection wiring (1).
3. Disconnect starting motor wiring (2).
4. Close heater valve, then remove heater hose clamp, and disconnect heater hoses (3) and (4).

※ 1



5. Remove right covers (5) and (6).
6. Remove left covers (7) and (8).
7. Remove cover (9).




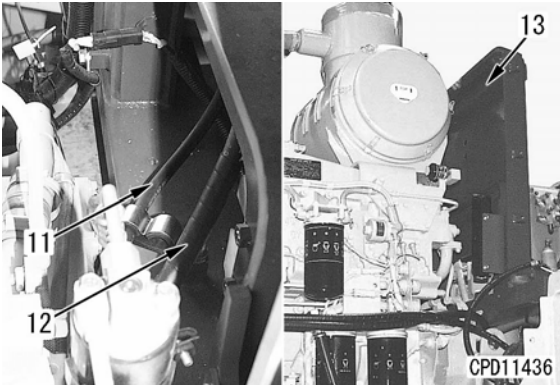
8. Disconnect wiring connector (CN-206) (10).



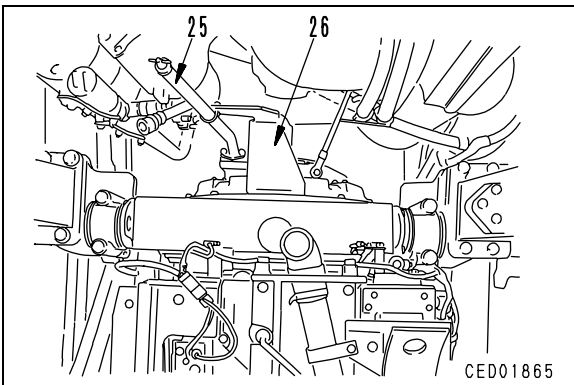
9. Disconnect air conditioner hoses (11) and (12).
 - ★ Collect air conditioner gas (R134a) completely before disconnecting the hoses.
 - ★ Fit blind plugs to prevent dirt, dust, or moisture from getting inside the hoses.

10. Lift off bracket (13).

 Bracket assembly: **170kg**

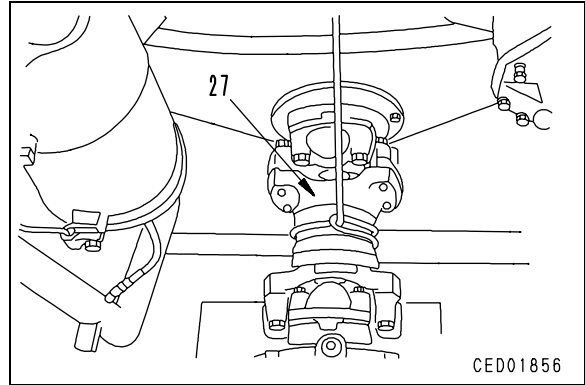



11. Remove damper case oil level gauge (25).
12. Remove bracket (26).

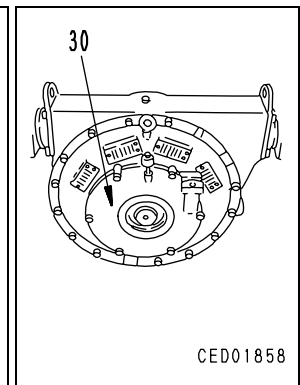
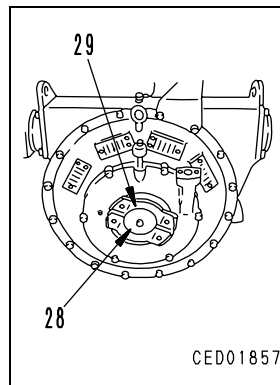


13. Open power train underguard (front).
14. Sling universal joint (27), then remove mounting bolts, and lift off.D ※ 2

 Universal joint: **45kg**



15. Remove drain plug and drain oil from damper case.
 -  Damper case: **Approx. 2.1ℓ**
16. Remove holder (28) and coupling (29). ※ 3
17. Remove retainer (30).




18. Using eyebolts ①, sling damper cover (31), then use forcing screws to remove. ※ 4

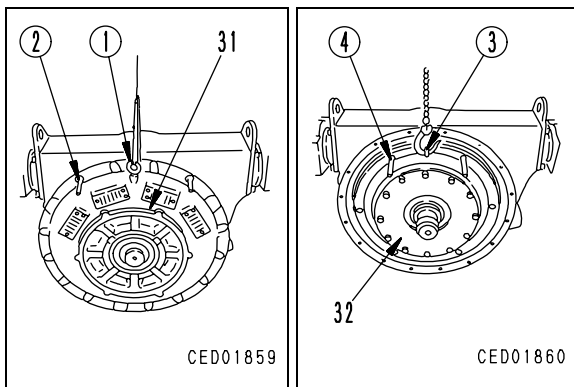
⚠ To prevent the damper cover from coming out suddenly, set guide bolt ② (ℓ=200mm).

 Damper cover: **75kg**

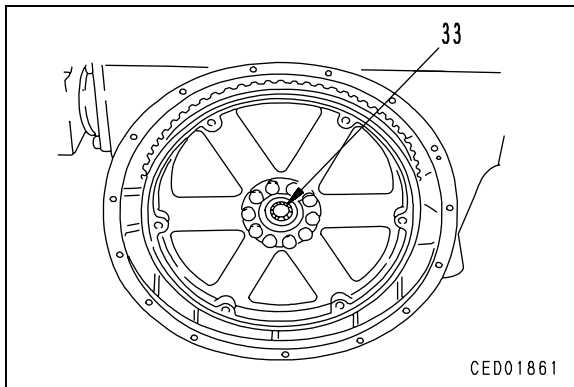
19. Using eyebolts ③, remove damper assembly (32). ※ 5

⚠ To prevent the damper assembly from coming out suddenly, set guide bolt ④ (ℓ=200mm).

 Damper assembly: **70kg**



20. Remove bearing (33) from flywheel. ※ 6

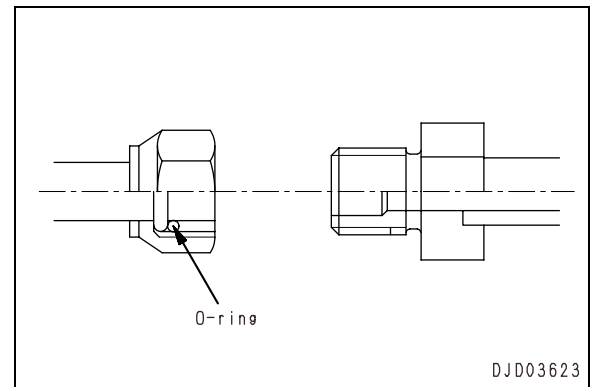


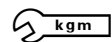
INSTALLATION

• Carry out installation in the reverse order to removal.

※ 1

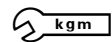
- ★ Install the hoses without twisting or interference.
- ★ Be careful to prevent the entry of moisture, dust or dirt into the air conditioner circuit hoses when installing.
- ★ Check that there are O-rings at the portion of the air conditioner hoses connecting to the piping, then tighten.
Coat the O-rings thoroughly with compressor oil (Showa-Shell Suniso 4G or 5G).



 Air conditioner gas piping tightening torque

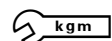
| Thread size | Tightening torque |
|-------------|---------------------------------|
| 16 × 1.5 | 13.23 ± 1.47Nm {1.35 ± 0.15kgm} |
| 22 × 1.5 | 22.05 ± 2.45Nm {2.25 ± 0.25kgm} |
| 24 × 1.5 | 31.85 ± 2.45Nm {3.25 ± 0.25kgm} |

※ 2

 Universal joint mounting bolt:
176.4 ± 19.6Nm {18 ± 2kgm}

※ 3

 Holder mounting bolt thread portion:
Thread tightener (LT-2)

 Holder mounting bolt:
276.85 ± 31.85Nm {28.25 ± 3.25kgm}

※ 4

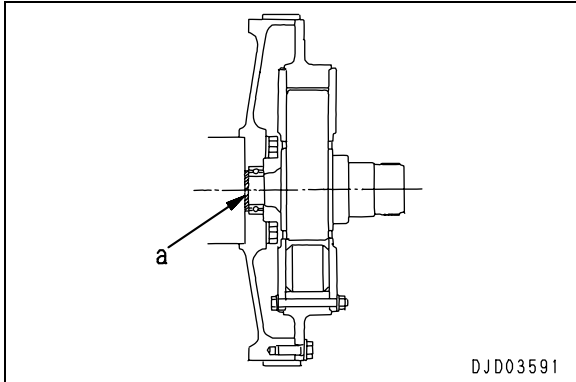
- ★ Using guide bolt ② ($\ell=200$ mm), determine the position of the damper cover.

※ 5

- ★ Using guide bolt ④ ($\ell=200$ mm), determine the position of the damper assembly.

※ 6

- ★ Fill approx.50% (approx. 11 g) of the hatched portion **a** in the diagram with grease (G2-LI).



- **Refilling with oil**

- ★ Fill with oil to the specified level.

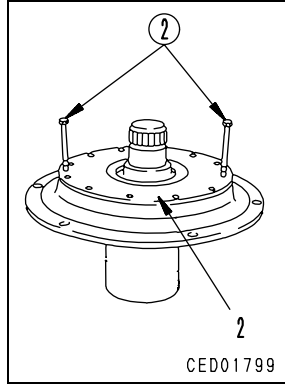
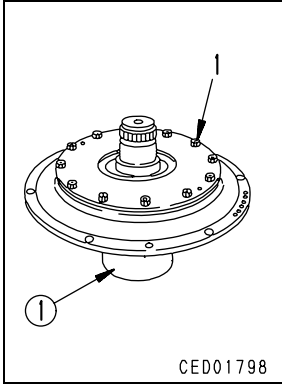
- **Charging air conditioner with gas**

- ★ Using tool **X**, charge the air conditioner circuit with air conditioner gas (R134a).

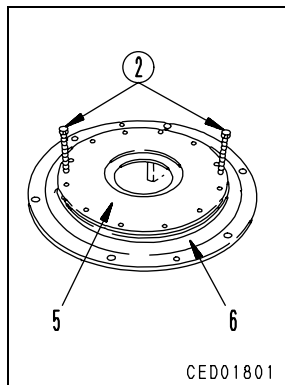
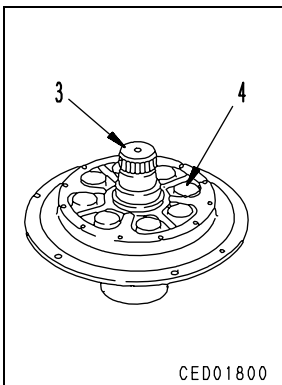
DISASSEMBLY AND ASSEMBLY OF DAMPER

DISASSEMBLY OF DAMPER ASSEMBLY

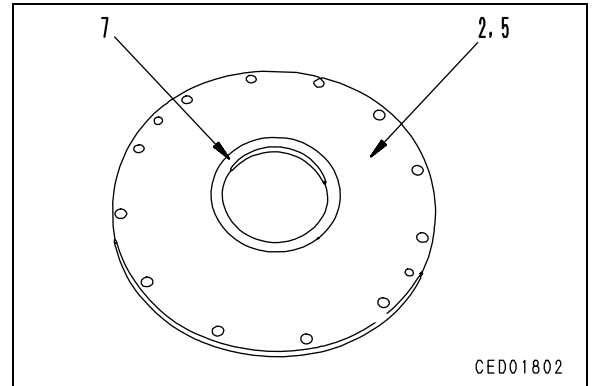
1. Set damper assembly to block ① .
2. Remove mounting nut (1), then using forcing screws ② , remove flange (2).



3. Remove shaft (3).
4. Remove rubber (4).
5. Using forcing screws ② , remove flange (5) from body (6).

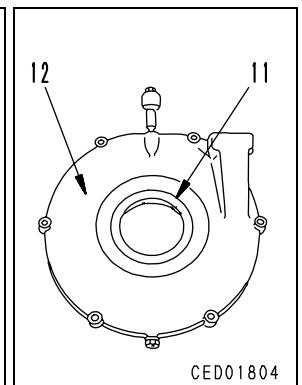
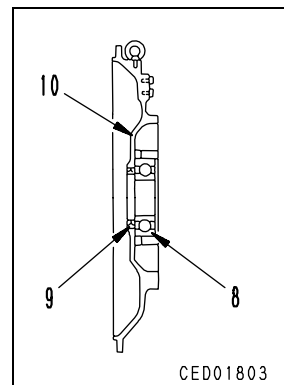


6. Remove seal (7) from flanges (2) and (5).



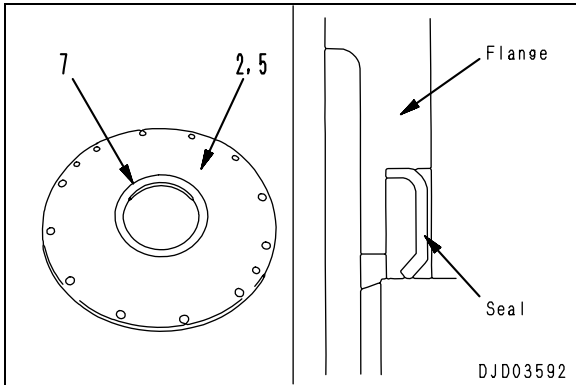
DISASSEMBLY OF DAMPER COVER ASSEMBLY

7. Remove bearing (8) and oil seal (9) from cover (10).
8. Remove oil seal (11) from retainer (12).




ASSEMBLY OF DAMPER ASSEMBLY

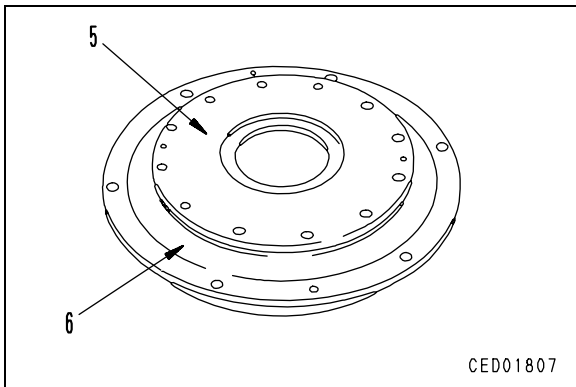
1. Install seals (7) to flanges (2) and (5).
 - ★ Install the seal with the lip facing the inside as shown in the diagram.



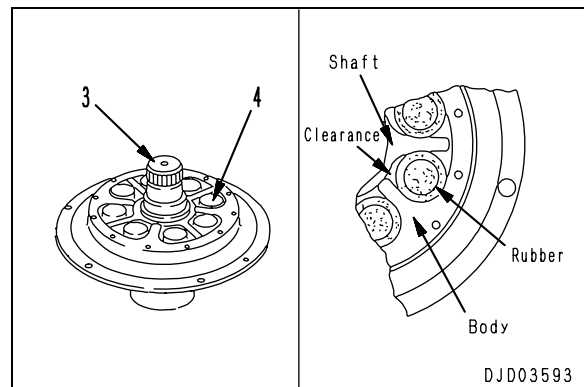
2. Align bolt holes with body (6) and install flange (5).

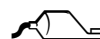
 Mating surface of flange:
Gasket sealant (LG-4)

- ★ Check that there are no dents, rust, oil or grease, or water on the mating surface, then coat both faces of the flange and body with gasket sealant.



3. Set flange and body assembly to block, then set shaft (3) in position.
4. Assemble rubber (4).
 - ★ When assembling the rubber, coat the whole surface of the rubber, the outside circumference of the shaft, and the inside circumference of the body with grease (G2-LI).
 - ★ After assembling to the rubber, fill approx. 30% of the clearance (16 places) between the flange and body with grease (G2-LI).



5. Install flange (2).
 -  Mating surface of flange:
Gasket sealant (LG-4)
 - ★ Check that there are no dents, rust, oil or grease, or water on the mating surface, then coat both faces of the flange and body with gasket sealant.

6. Set bolt in position, and tighten mounting nut (1).

