



## Timing Chain Cover

### REMOVAL & INSTALLATION

#### Z24i Engine

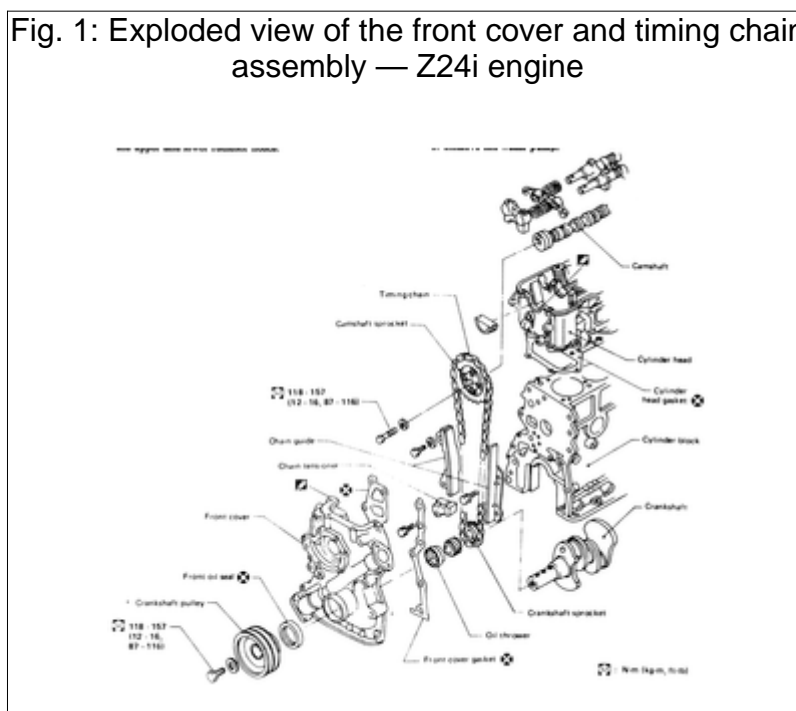
1. Disconnect the negative battery cable and drain the cooling system.

#### CAUTION

When draining the coolant, keep in mind that cats and dogs are attracted by ethylene glycol antifreeze, and are quite likely to drink any that is left in an uncovered container or in puddles on the ground. This will prove fatal in sufficient quantity. Always drain the coolant into a sealable container. Coolant should be reused unless it is contaminated or several years old.

2. Remove the radiator, along with the upper and lower radiator hoses.
3. Loosen the alternator drive belt adjusting screw and remove the drive belt. Remove the bolts which attach the alternator bracket to the engine and position the alternator aside, out of the way.
4. Remove the distributor.
5. Unthread the oil pump attaching screws, then remove the pump and its drive spindle.

Fig. 1: Exploded view of the front cover and timing chain assembly — Z24i engine



6. Remove the cooling fan and the fan pulley, along with the drive belt.
7. Remove the water pump.
8. Unfasten and remove the crankshaft pulley.
9. Remove the bolts holding the front cover to the front of the cylinder block, the bolts which retain the front of the oil pan to the bottom of the front cover, and the bolts which are screwed down through the front of the cylinder head into the top of the front cover.
10. With a suitable drain pan in place, carefully pry the front cover off the engine assembly.

#### To install:

11. Cut the exposed front section of the oil pan gasket away from the oil pan. Do the same to the gasket at the top of the front cover. Remove the two side gaskets and clean all of the mating surfaces.
12. Cut the portions needed from a new oil pan gasket and top front cover gasket.

13. Apply sealer to all of the gaskets and position them on the engine in their proper locations.
14. Apply a light coating of oil to the crankshaft oil seal. Carefully mount in the front cover to the front of the engine and install all of the mounting bolts. Tighten the 8mm bolts to 7–12 ft. lbs. (10–16 Nm) and the 6mm bolts to 3–7 ft. lbs. (4–10 Nm). Tighten the oil pan attaching bolts to 4–7 ft. lbs. (6–8 Nm).
15. Before installing the oil pump, place the gasket over the shaft and make sure that the mark on the drive spindle faces (is aligned with) the oil pump hole. Install the oil pump so that the projection on the top of the shaft is located in the exact position as when it was removed. However, if the engine was disturbed since disassembly, place the projection on top of the shaft at the 11 o'clock position when the piston when the No. 1 cylinder is placed at TDC on the compression stroke. Tighten the oil pump attaching screws to 8–10 ft. lbs. (11–15 Nm).
16. Install the crankshaft pulley and bolt. Tighten the bolt to 87–116 ft. lbs. (118–157 Nm).
17. Install the water pump with a new gasket. Install the fan pulley and cooling fan. Install the drive belt and adjust to the correct tension.
18. Install the distributor in the correct position. Reattach the alternator bracket and alternator. Install the drive belt and adjust to the correct tension.
19. Install the radiator, then reconnect the upper and lower radiator hoses.
20. Reconnect the negative battery cable.
21. Refill and bleed the cooling system.
22. Run the engine to normal operating temperature, then check ignition timing and check for leaks.

## KA24E Engine

1. Disconnect the negative battery cable from the battery and drain the cooling system.

### CAUTION

When draining the coolant, keep in mind that cats and dogs are attracted by ethylene glycol antifreeze, and are quite likely to drink any that is left in an uncovered container or in puddles on the ground. This will prove fatal in sufficient quantity. Always drain the coolant into a sealable container. Coolant should be reused unless it is contaminated or several years old.

2. Remove the radiator, along with the upper and lower radiator hoses.
3. Loosen the alternator drive belt adjusting screw and remove the drive belt. Remove the bolts which attach the alternator bracket to the engine and position the alternator aside, out of the way.
4. Remove the power steering and A/C compressor drive belts.
5. Remove all spark plugs and then set the No. 1 cylinder to TDC of its compression stroke.
6. Remove the distributor.

Fig. 2: Exploded view of the front cover and timing chain assembly — KA24E engine

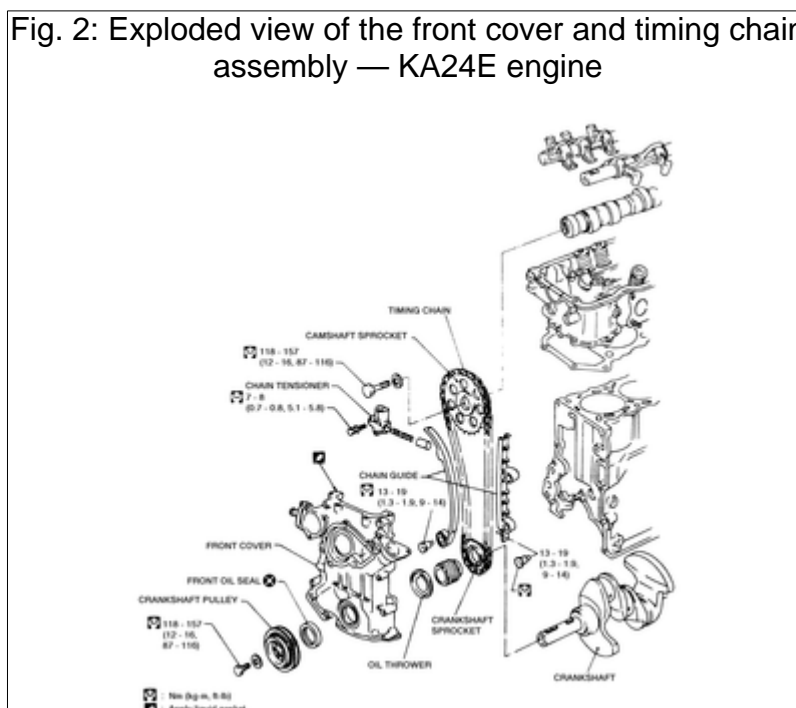


Fig. 3: Removing the front cover — KA24E engine

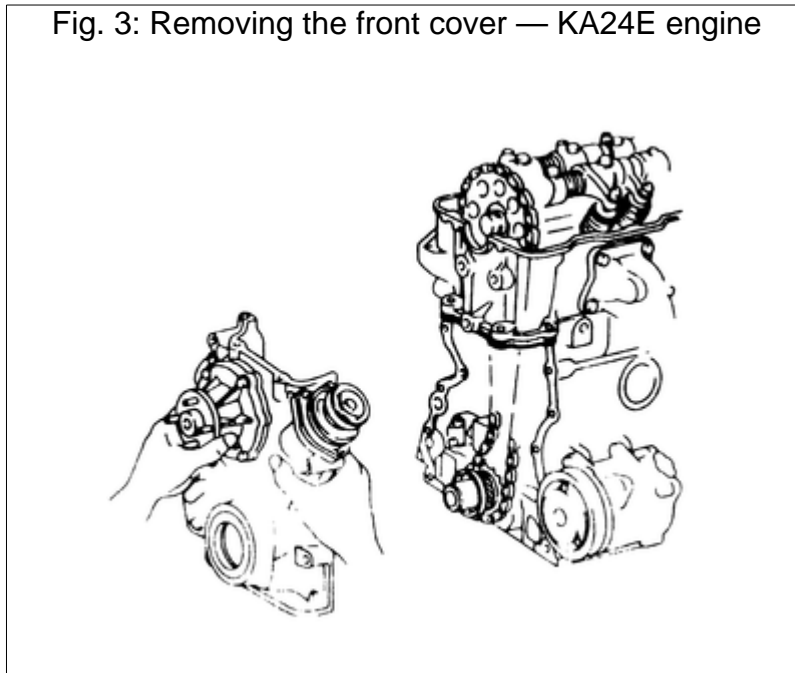
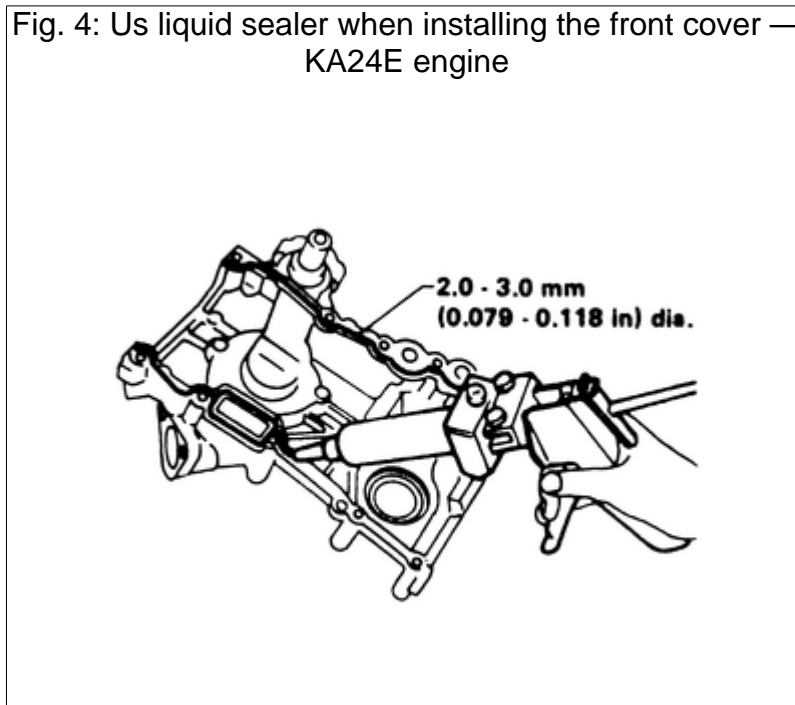


Fig. 4: Use liquid sealer when installing the front cover — KA24E engine



7. Unthread the oil pump attaching screws, then remove the pump and its drive spindle.
8. Remove the cooling fan and the fan pulley, along with the drive belt.
9. Remove the A/C compressor idler pulley.
10. Remove the water pump.
11. Unfasten and remove the crankshaft pulley.
12. Remove the bolts holding the front cover to the front of the cylinder block, the bolts which retain the front of the oil pan to the bottom of the front cover, and the bolts which are screwed down through the front of the cylinder head into the top of the front cover.
13. With a suitable drain pan in place, carefully pry the front cover off the engine assembly.
14. Cut the exposed front section of the oil pan gasket away from the oil pan. Do the same to the gasket at the top of the front cover. Remove the two side gaskets and clean all of the mating surfaces.

#### To install:

15. Cut the portions needed from a new oil pan gasket and top front cover gasket.
16. Apply sealer to all of the gaskets and position them on the engine in their proper places.
17. Apply a light coating of oil to the crankshaft oil seal. Carefully mount the front cover to the front of

the engine and install all of the mounting bolts. Tighten the 8mm bolts to 7–12 ft. lbs. (9–16 Nm) and the 6mm bolts to 3–7 ft. lbs. (4–9 Nm). Tighten the oil pan attaching bolts to 4–7 ft. lbs. (5.5–9 Nm).

18. Before installing the oil pump, place the gasket over the shaft and make sure that the mark on the drive spindle faces (is aligned with) the oil pump hole. Install the oil pump so that the projection on the top of the shaft is located in the exact position as when it was removed. However, if the engine was disturbed since disassembly, place the projection on top of the shaft at the 11 o'clock position when the piston in the No. 1 cylinder is placed at TDC on the compression stroke. Tighten the oil pump attaching screws to 8–10 ft. lbs. (11–15 Nm).
19. Install the crankshaft pulley and bolt. Tighten the bolt to 87–116 ft. lbs. (118–157 Nm).
20. Install the water pump with a new gasket. Install the fan pulley and cooling fan. Install the drive belt and adjust to the correct tension.
21. Install the distributor in the correct position. Reconnect the alternator bracket and alternator. Install the drive belt and adjust the tension.
22. Install the A/C compressor idler pulley.
23. Install all spark plugs.
24. Install the radiator, then reconnect the upper and lower radiator hoses.
25. Reconnect the negative battery cable.
26. Refill and bleed the cooling system.
27. Check the ignition timing and check for leaks.

