

# Fill-For-Life Approved Hino Practice for Non-Filtered Trucks

Category: Coolants  
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Hino, Canada, has authorized the following service recommendation regarding the use of the Penray Pencool® 3000 liquid SCA in an extended service interval (ESI) coolant program in engines where the customer does not have a coolant filter and does have either Japanese factory-fill coolant or Canadian heavy-duty coolant meeting the ASTM D-4985 specification.

## I. Begin with a clean cooling system:

Check the coolant and make sure there is no visible oil, rust, or discoloration of the coolant. If it appears clear, and uncontaminated, continue with Step II. If the coolant is visibly contaminated, drain the engine coolant and recycle or dispose of the used coolant properly. Clean the cooling system with a quality cleaning product such as Penray 2001 or 2015 Twin-Pack cooling system cleaner. Flush the system thoroughly with clean water. Refill the cooling system with with 50% - 60% fully-formulated, premixed coolant for best consistency. Penray recommends phosphate-free coolant that meets the TMC RP-329 specification with purified (i.e. deionized) water.

## II. Initiating the Fill-For-Life Program:

### Conductivity Test:

Prepare a test solution by mixing 10 ml of the coolant with 90 ml of distilled water. Observe the conductivity of the solution using a conductivity meter.

- If the conductivity is less than 2,500 mhos, proceed with the freeze-point test, step "b".
- If the conductivity exceeds 2,500 mhos, the solids content of the fluid may be hazardous to the water pump and the system should be drained. The system should then be cleaned, and refilled with fresh, fully-formulated coolant as described in Step I, above

### Freeze-point test:

Using either a Penray test strip or a refractometer, test the freeze point of the coolant.

- If the freeze point is between -37 and -60°F proceed with the nitrite test, step "C".
- If the coolant freeze point is higher than -37°F, it will be necessary to adjust the coolant by adding concentrated, fully-formulated antifreeze to achieve a 50/50 mix yielding a freeze point of -37°F.
- If the coolant freeze point is lower than -60°F, it will be necessary to adjust the coolant by adding purified water to achieve a 50/50 mix yielding a freeze point of -37°F.

If [NO<sub>2</sub>] is less than 1,200 ppm, add 1 pint of Pencool 3000 for up to 60 liters of cooling system capacity. Run the engine to mix the coolant at least 15 minutes, (making sure the thermostat has opened) then recheck. Repeat if necessary. Do not add more than 1 pint of Pencool 3000 per 15 liters cooling system capacity.

## III. Periodic maintenance:

A. Test the coolant at the scheduled maintenance interval or at least every every three months to assure that adequate freeze point (-37oF recommended) and nitrite levels (1,200 to 3,000 ppm) are being maintained. Use a Penray Two-Way Heavy Duty Test Strip (TS-100 or TS-102). Experience has shown that monitoring is necessary to detect major changes in the coolant chemistry that may occur while the truck in on the road.

B. Observe the Pencool 3000 Extended Service Interval (ESI) practice. If [NO<sub>2</sub>] is less than 1,200 ppm, add 1 pint of Pencool 3000 for up to 60 liters of cooling system capacity. Re-test at the next PM.

C. Coolant Change intervals: Change the coolant when the need is indicated by high coolant conductivity of 2,500 mhos or more in a solution of 10% coolant and 90% distilled water. Thoroughly clean the system, and refill with coolant as described in Step I.

**CAUTION: IN NO CASE SHOULD AMINE COOLANTS BE MIXED WITH AMERICAN, NITRITED ANTIFREEZES OR SCAs. ENGINE DAMAGE AND/OR CARCINOGENIC CHEMICAL FORMATION MAY RESULT.**