DGL
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Cooling System Flush Procedure

PRODUCT DESCRIPTION

Total Coolants Organic Radiator Flush Cooling System Cleaner is an excellent choice for periodic, preventative maintenance of diesel, gasoline, and natural gas fired engine cooling systems without costly downtime. Total Coolants Organic Radiator Flush Cooling System Cleaner removes light mineral scale and limited oxide deposits.

Total Coolants Organic Radiator Flush Cooling System Cleaner can be used for up to 30 days in the cooling system without damage. Thereafter it must be thoroughly drained and flushed with fresh water.

Total Coolants Organic Radiator Flush Cooling System Cleaner is compatible with engine coolants, non-toxic to aquatic life, biodegradable, phosphate and amine free. Total Coolants Organic Radiator Flush Cooling System Cleaner contains a mixture of highly efficient organic inhibitors and a dispersant-detergent agent.

UTILISATION

For the flushing of heavy-duty engines Total Coolants recommend that the flush be left in the engine for up to 30 days. If the systems are brand new, we would not expect any heavy scale build up and would think that the most important aspect of the flushing procedure would be to remove any contaminants from the system, be it casting sands, weld spatter, iron chips from pipe threading, etc. If the system was in operation previously, other contaminants such as scale deposits and residual products may be removed.

It is important that during the flushing period, the operator must closely monitor the temperature of the engine. As scale is removed from the engine it can be deposited in the radiator tubes and other engine coolers. In a highly scaled engine, it is recommended that precaution be taken to drain and rinse more frequently. This will help to avoid fouling of radiators, engine coolers, and avoid engine overheating.

Set Up

Many hazards exist when carrying out the flushing procedure. Appropriate PPE must be worn during flushing procedure to minimize the risk of burns, slips, falls, chemical spills, personal injury etc. The minimum recommended PPE would consist of PVC gloves, Safety goggles and face shield, and full-length protective clothing. Refer to MSDS for further safety information. It is recommended that an eye wash station be as close as possible to the equipment being flushed and an emergency spill kit be on hand to prevent the loss of containment of any chemicals present.

For New and Re-manufactured Engines

This includes re-manufactured heavy-duty engines and engines that have had cylinder head/s removed for planned or unplanned maintenance.

Prior to starting a re-manufactured engine or an engine that has had the cylinder head/s removed it is important that the engine is filled off with "untreated" water only.

Water is to remain within the cooling system circuit/s (jacket water and auxiliary circuit if applicable) for the first 1 hour of operation or just prior to the engine being brought back into service.

It is recommended that the cooling system be pressure tested before draining (refer to the engine manufacturer's maintenance manuals for procedure on pressure testing. These will provide detailed instructions relating to the maximum pressure that can be placed upon the cooling system as well as any specialised tooling required)

Ensure the engine's cooling system has cooled down sufficiently prior to undertaking following procedure.

Drain cooling system thoroughly of water.

Procedure

For flushing of the engine cooling systems, 10% volume of the Total Coolants Organic Radiator Flush concentrate is diluted with tap water. Alternatively Premixed Total Coolants Organic Radiator Flush is available.

From a cold start:

1. Drain cooling system of any residual water from the initial test run, flush with clean water and refill with Total Coolants Organic Radiator Flush Cooling System Cleaner at 10% dose level. Care must be taken to avoid spills and used coolant should be disposed of in an environmentally friendly manner. Appropriate PPE must be worn to avoid personal injury caused by hot coolant and water. Ensure all drains and plugs have been replaced before attempting to start unit as personal injury or equipment damage may occur.

2. Start engine.

3. Run engine for approximately 30 minutes, but for no less than 20 minutes to ensure opening of the thermostatic valves. Monitor temperature of main jacket water pipe to radiator with infrared heat gun to observe operation of thermostatic valves. Ensure care is taken to avoid moving or hot components while monitoring engine. Appropriate PPE must be worn. It is important that during the flushing period, the operator must closely monitor the temperature of the engine. As scale is removed from the engine during flushing it can be deposited in the radiator, leading to reduced cooling capacity.

(Note: It is most important that during the flushing procedure, ALL ports and capillaries are opened.)

4. Allow to cool and drain both cooling systems (Draining from all low points E.g. intercooler petcock drains, engine block drains, thermostat housing petcock drains, water pump petcock drains, etc.). Observe colour and consistency of flushing product while draining. If there are any contaminants visible in the flushing product, repeat steps 1-4. Wear appropriate PPE and take care to avoid hot fluids as personal injury may occur.

5. When certain the system is cleaned thoroughly, flush with clean water (Preferably Demin/RO water). Ensure that all removed drain plugs are replaced, and all open petcocks have been closed to avoid personal injury or equipment damage before starting unit.

6. Fill Cooling systems with Total Coolants Organic EnviroLife HD Coolant Premix.

7. Take Coolant sample after engine has been allowed to run for a day or so and send to the Condition Monitoring Lab for confirmation of product condition for your commissioning records.