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# installation & maintenance

## Nett<sup>®</sup> Direct-Fit Catalytic Converter Installation

### General Information

Nett Direct-Fit Catalytic Mufflers/Pipes are designed to directly replace either the muffler, or the pipe between the muffler and manifold in the exhaust system for simple installation and maintenance. All of the stock clamps, bolts and pipes can be reused (note: we recommend replacing U-bolt type clamps with band style clamps to reduce leakage). If you have any difficulties with installation, please call 1-800-361-6388 (905-672-5453) or e-mail sales@nett.ca and we will be glad to help.

### A) Direct-Fit Catalytic Converter Installation

- 1) Remove the original muffler or pipe from the exhaust system.
- 2) Install the Nett<sup>®</sup> Catalytic Muffler or Catalytic Pipe in its place.
- 3) Use original fasteners to secure the catalytic converter.
- 4) Check installation for leaks and ensure that the catalytic converter fits correctly. Make sure that hangers and pipes are aligned properly.

### LPG/CNG/Gasoline Engine tune-up

The ignition/fuel system should be set to manufacturer's specifications. The mixer or carburetor should then be set to a slightly-lean mixture after the catalyst is installed.

To provide maximum conversions of CO, HC and NO<sub>x</sub>, Nett's NEES™200 air/fuel ratio controller should be used with three-way catalytic mufflers on LPG/CNG engines.

### LPG/CNG/Gasoline Catalytic Muffler Maintenance

Nett catalytic mufflers are maintenance-free, if the engine is in good operating condition. If the engine emissions are excessively high and/or contain engine lubrication oil, the catalyst may become damaged. Engine misfire can also damage the catalyst. It is important for long catalyst life that all engine problems are promptly identified and corrected.

The air/fuel mixture on an LPG/CNG/gasoline engine may go out of adjustment due to a dirty air filter, misfiring spark plugs or wires, blocked fuel filter, or other reasons. If the mixture becomes too rich, carbon monoxide levels may rise to as high as 5% or more. Even though the catalyst will function properly, the CO levels at the tailpipe may be too high. For best tail pipe emissions, the air/fuel mixture must be maintained slightly lean. A regular check of the air/fuel mixture should be included in the vehicle's maintenance schedule.

### Diesel Catalytic Muffler/Pipe Maintenance

Engine malfunctions such as leaking or stuck injectors or loss of compression will lead to lower exhaust temperatures and a reduction in catalytic converter efficiency.

- To improve catalytic converter performance and reduce engine smoke, regular maintenance should be performed. The following components should be checked: engine air cleaner element, air intake system, fuel injection system, injection timing, upper cylinder condition, and exhaust backpressure.
- For further improvements consider switching to a cleaner burning diesel fuel (sulfur content of less than 0.10% and an aromatic content of less than 18%.) The lower sulfur content reduces sulfur gases/particulate and the lower aromatic content will reduce carbon particulate. Using #2 on-road fuel (or on-road Ultra Low Sulfur Diesel) for off-highway applications is recommended.



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- Using a low ash or no ash engine oil will reduce engine smoke due to oil consumption.

Once the installation is complete, the engine exhaust backpressure should be measured using the 1/8" N.P.T. port on the inlet side of the muffler or pipe. Record this initial reading for comparison with future readings. If the backpressure levels increase significantly, the catalytic converter is most likely becoming plugged with diesel soot (DPM). If the engine operates frequently at idle or without load, most likely the catalyst temperature is not high enough to provide maximum performance and remain maintenance-free. In such cases consider:

- increasing the engine speed and applying high engine loads to increase the exhaust gas temperature to a minimum of 475°C (900°F) for at least 2-3 minutes.
- wrapping the catalytic converter and the exhaust pipe leading to it with an insulating blanket

## **B) NEES™200 Air/Fuel Ratio Controller Installation – Optional Component (LPG/CNG Engines Only)**

Please refer to the NEES™200 Technical Manual supplied with the NEES air/fuel ratio controller. This manual is also available online at <http://www.nett.ca> in the Online Tools / Technical Support Documents section.

Note: The fuel controller maintains the stoichiometric air-to-fuel ratio by biasing the diaphragm of the regulator/converter. It is necessary that the mixer be mechanically adjusted to a slightly-rich mixture to facilitate the operation of the controller and proper fuel control under all engine conditions. Please refer to the NEES Technical Manual for more information.

### **NEES™200 Air/Fuel Ratio Controller Maintenance**

A periodic checkup of the fuel controller should be included with the maintenance schedule of the vehicle (recommended every 100 engine hours). The checkup can be performed by viewing the LED's on the fuel controller module. Follow the procedure described in the NEES Technical Manual.

Nett Technologies Inc. has a corporate policy of continuous product development. Specifications are subject to change without notice.