

2-Way Purimufflers™

For LPG, CNG, and gasoline fueled Lift Trucks and Industrial Equipment



- ✓ *The most economical solution to control Carbon Monoxide (CO)*
- ✓ *Built-in venturi increases catalytic performance and durability*
- ✓ *Direct Fit design allows quick and easy installation*
- ✓ *Electronic Safety Package warns of potential engine problems and high emissions*
- ✓ *Also available as a separate purifier and venturi configuration*

Operating a LPG fuelled lift truck indoors poses a threat to occupational health and safety

LPG fueled lift trucks have been traditionally used in North America due to simplified fuel handling and storage requirements. Regardless of fuel choice, a spark ignited internal combustion engine without emissions controls will emit odorless and colorless carbon monoxide. Occupational health standards may be exceeded in confined spaces such as inside buildings or rail cars but may also happen in outside storage yards! Exposure to carbon monoxide can impair equipment operators, cause headaches and loss of consciousness, and in severe cases even death.

A **2-Way Purimuffler** from ECS is an integrated catalytic converter and muffler that will effectively reduce carbon monoxide and odor causing hydrocarbon emissions from LPG, CNG, and gasoline powered industrial equipment.

Purimufflers are an easy to install direct-fit replacement of the original muffler, designed for a wide variety of lift truck and other equipment types.

ECS also offers an electronic safety package (Part A54-0004) and/or a temperature gauge (Part A54-0003) to monitor exhaust temperature and warn of potential vehicle problems that might negatively affect the equipment and system performance.

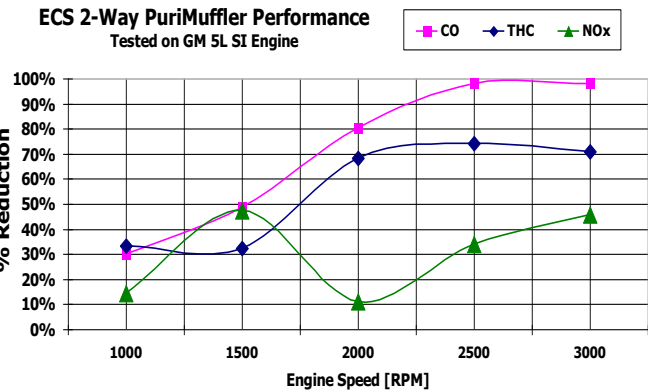
ECS 2-Way Purimufflers™

2-Way Purimufflers represent the quickest and most economical way to reduce carbon monoxide (CO) emissions. Most pre-2004 model year forklift trucks have open loop fuel systems with little control of the air fuel ratio and exhaust emissions. The lack of a closed loop electronic control module (ECM) on these engines means that the exhaust can run rich or lean under portions of the vehicle duty cycle. Rich air fuel ratio problems can cause unburned fuel to pass into the exhaust, which can damage the catalyst. Rich exhaust can also mean that there will not be enough oxygen to allow the catalyst to work effectively.

The ECS 2-Way Purimufflers correct these conditions by means of an integrated venturi. The venturi ensures the presence of sufficient oxygen to allow the catalyst to reduce emissions as well as reduce exhaust gas temperatures to prevent catalyst damage.

TermiNOx™ 3-way closed-loop emissions control system

The **TermiNOx** system consists of a digitally programmed electronic control module (ECM) and a 3-Way Purimuffler or Purifier. The ECM ensures proper fuel control, which reduces fuel consumption, fuel system adjustments, and maintains perfect air/fuel ratio control. Under these conditions, a 3-Way Purifier or Purimuffler can reduce CO emissions by >95%, hydrocarbons by >95% as well as NOx emissions by >85%.



ECS 2-way Purimufflers will reduce CO by up to 90% and total hydrocarbons (THC) by up to 75%. *Depending on fuel system settings and test conditions, variable NOx reductions can be achieved, up to 50%.

It is important to remember that a poorly maintained engine may damage the catalyst permanently since the oxidation of excessive amounts of unburned fuel and carbon monoxide will increase the exhaust temperature by several hundred degrees Celsius.

If you are operating several lift trucks indoors under controlled environments, the TermiNOx system is the emissions solution that pays for itself by reducing fuel, heating, cooling and ventilation costs. TermiNOx has also been approved by the California Air Resources Board for Mazda 2.0L, Toyota 2.0L and GM 3.0L engines. TermiNOx kits are available for most lift truck models.

2-Way vs. 3-Way Catalyst Emission Reduction Performance – Which do I need?

ECS Product	CO	HC	NOx	Fuel Economy	CARB Approval?
2-Way Purimuffler	Up to 90%	Up to 75%	Up to 50%*	No Change	NO
TermiNOx (3-Way Purimuffler and closed-loop fuel system)	>95%	>95%	>85%	10 – 20%	YES

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