



CARB VERIFIED

DIESEL PARTICULATE FILTER

OWNER'S MANUAL

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ERRORS AND OMISSIONS EXCEPTED.



Thank you for purchasing our emissions control product. GTE proudly works with industries such as yours to promote a clean environment. As a CARB verified Level 3 Plus unit, GTE's Diesel Particulate Filter (DPF) aids engines in complying with CARB emission standards by reducing levels of diesel particulate matter, carbon monoxide and hydrocarbons. The GTE Purity™ DPF can be purchased as either a separate unit that can be installed in front of an existing silencer or as a new silencer / filter combination that can be installed in place of the existing silencer to meet your sound attenuation and emissions control needs. Whatever your needs, GTE will design the system to ensure that the engine does not exceed back pressure limits when operated properly. We are proud to utilize leading technology in our DPF's to dramatically reduce levels of diesel engine emissions while promoting a cleaner environment.

Thoroughly reviewing this manual will help ensure the proper installation, operation, and maintenance of your DPF filter or filter / silencer combination.

NOTE: This manual is to accompany and be used in conjunction with your company's regulatory and other instructional guidelines. All data in this publication is based on years of research and experience, and represents the best information available at the time of printing. Because of developments and changes, the information contained in this manual is subject to change without notice.

STATE OF CALIFORNIA WARRANTY INFORMATION

GTE Industries, warrants for the minimum periods as specified in the table below whichever occurs first that if the GTE Purity™ DPF is properly installed and maintained according to the directions provided in the owner's manual, the GTE Purity™ DPF will be free from defects in design, materials, workmanship, or operation. Provided there has been no abuse, neglect, or improper maintenance of your GTE Purity™ DPF during this period of time, the GTE Purity™ DPF will conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, sections 2700 to 2706. Where a warrantable condition exists, GTE Industries will repair or replace your diesel emission control system at no cost to you including diagnosis, parts, and labor. Also, where a warrantable condition exists, this warranty also covers other vehicle or equipment parts from damage caused by the diesel emission control system, subject to the same exclusions for abuse, neglect or improper maintenance of your vehicle or equipment. Failure of the engine owner to ensure scheduled maintenance or to keep maintenance records for the equipment, engine, or the GTE Purity™ DPF may void this warranty. Please review your owner's manual for other warranty related information.

TABLE 1: GTE Purity™ DPF Engine Warranty Coverage

Engine Type	Engine Size	GTE Purity™ DPF Warranty Period
Prime and Emergency Use Stationary Generator Sets and Pumps	Under 25 hp, and for constant speed engines rated under 50 hp with rated speeds greater than or equal to 3,000 rpm	3 years or 1,600 hours
	At or above 25hp and under 50 hp	4 years or 2,600 hours
	At or above 50 hp	5 years or 4,200 hours

YOUR WARRANTY RIGHTS AND OBLIGATIONS.

GTE Industries warrants that the diesel emission control system in the application for which it is sold or leased is to be free from defects in design, materials, workmanship, or operation of the diesel emission control system which cause the diesel emission control system to fail to conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, sections 2700 to 2706, for the periods of time listed above, provided there has been no abuse, neglect, or improper maintenance of your diesel emission control system, vehicle or equipment, as specified in the owner's manuals. Where a warrantable condition exists, this warranty also covers the engine from damage caused by the diesel emission control system, subject to the same exclusions for abuse, neglect or improper maintenance of your vehicle or equipment. Please review your owner's manual for other warranty information. Your diesel emission control system may include a core part, the particulate filter, as well as hoses, connectors, a back pressure monitor, and other emission-related assemblies. Where a warrantable condition exists, GTE Industries will repair or replace your diesel emission control system at no cost to you including diagnosis, parts, and labor.

WARRANTY COVERAGE

For the engine sizes and applications listed prior, the warranty period will be the corresponding years or hours of operation whichever occurs first. If any emission-related part of your diesel emission control system is defective in design, materials, workmanship or operation of the diesel emission control system, thus causing the diesel emission control system to fail to conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, sections 2700 to 2706, within the warranty period, as defined above, GTE Industries, will repair or replace the diesel emission control system, including parts and labor.

In addition, GTE Industries will replace or repair the engine components to the condition they were in prior to the failure, including parts and labor, for damage to the engine or other vehicle components proximately caused by the verified diesel emission control strategy. This also includes those relevant diagnostic expenses in the case of a valid warranty claim. GTE Industries may, at its option, instead pay the fair market value of the vehicle, equipment, or engine prior to the time the failure occurs.

OWNER'S WARRANTY RESPONSIBILITY

As the (vehicle, engine, equipment) owner, you are responsible for performing the required maintenance described in your owner's manual. GTE Industries recommends that you retain all maintenance records and receipts for maintenance expenses for your vehicle, engine, or equipment, and diesel emission control system. If you do not keep your receipts or fail to perform all scheduled maintenance, GTE Industries may have grounds to deny warranty coverage. You are responsible for presenting your vehicle, equipment, or engine, and diesel emission control system to a GTE Industries dealer as soon as a problem is detected. The warranty repair or replacement should be completed in a reasonable amount of time, not to exceed 30 days. If a replacement is needed, this may be extended to 90 days should a replacement not be available, but must be performed as soon as a replacement becomes available.

If you have any questions regarding your warranty rights and responsibilities, you should contact GTE Industries at 1.888.894.3726 or the California Air Resources Board at 9528 Telstar Avenue, El Monte, CA 91731, or 800.363.7664, or email: helpline@arb.ca.gov

INSTALLATION WARRANTY FOR THE STATE OF CALIFORNIA

YOUR WARRANTY RIGHTS AND OBLIGATIONS

GTE Industries and its designated representatives or installers warrant that the installation of the GTE Purity™ DPF diesel emission control system is free from defects in workmanship or materials which cause the diesel emission control system to fail to conform to the emission control performance level it was verified to, or to the requirements in the California Code of Regulations, Title 13, sections 2700 to 2706. The warranty period and the extent of the warranty coverage provided by GTE Industries and its designated representatives or installers is the same as the warranty provided by GTE Industries for the GTE Purity™ DPF and the same exclusions apply.

OWNER'S WARRANTY RESPONSIBILITY

As the vehicle, engine or equipment owner, you are responsible for presenting your vehicle, engine, or equipment, and diesel emission control system to GTE Industries as soon as a problem with the installation is detected.

If you have any questions regarding your warranty rights and responsibilities, contact GTE Industries at +1.888.894.3726 or the California Air Resources Board at 9528 Telstar Avenue, El Monte, CA 91731, or 800.363.7664, or email: helpline@arb.ca.gov

PRODUCT DESCRIPTION

GTE Purity™ DPF consist of a cellular ceramic substrate. Exhaust gases enter a honeycombed maze of channels that capture the particulates. The interaction between the exhaust gas and the filter creates a chemical reaction, which converts carbon monoxide and hydrocarbons into carbon dioxide and water vapors. Virtually all particles larger than 35 nanometers are removed from the exhaust. Tests have shown that up to 98 percent of the diesel particulate matter is removed. Hydrocarbons and carbon monoxide are also reduced up to 98 percent.

The regeneration process temperature is dependent on the sulfur concentration of fuel. To achieve complete regeneration, the exhaust temperature should be maintained at or above 400°C for at least 30 minutes every 5 hours of operation. GTE Purity™ DPF units and silencer combination units contain a special thermal insulation designed to maintain these exhaust temperatures while preventing any insulating material from escaping into the exhaust system and the filter elements.

To the fullest extent allowed by law, the warranty does not cover any defects in products caused by:

- Manufacturer's reliance on specifications or directions provided by the purchaser.
- Failure to comply with or contrary usage of manufacturer's directions, specifications, or designs.
- Negligent, improper or careless installation, removal, reinstallation, alteration, storage, handling, or application.
- Lack of proper maintenance or failure to follow maintenance schedule intervals.
- Acts of nature or accident.
- Alterations or repairs by others without manufacturer's prior written approval.
- Corrosive or caustic environments.

Please be sure to read the installation, start-up procedure and maintenance instructions below carefully. If you have any questions or concerns, call the Customer Care department at 1.888.894.3726.

INSTALLATION

Before beginning installation of your GTE Purity™ DPF unit, complete the following:

1. ORDER CONFIRMATION. Review your order to make certain that all items have been received as specified in the packing slip. If any parts of your order are missing or incorrect, contact our customer service department immediately at +1.888.894.3726.
2. PRODUCT INSPECTION. Carefully examine each item to ensure nothing has been damaged and that it meets your specifications. Any gaskets that have been shipped loose should be damage free and free of debris.
3. VERIFICATION OF OPERATION REQUIREMENTS. In order for the GTE Purity™ DPF to function properly and meet the emission control performance level it was verified to, or to meet the requirements in the California Code of Regulations, Title 13, Sections 2700 to 2706, the following requirements should be taken into account before installing the GTE Purity™ DPF: **Failure to follow any of the below guidelines may void the warranty.**
 - a. The unit is being installed on the same engine model and power rating as specified to GTE at the time of design.
 - b. Engine operation and service should be according to the OEM specifications.
 - c. The engine oil consumption should be according to OEM specifications.
 - d. The fuel is either a diesel fuel with 15 ppm or less sulfur or a biodiesel blend provided the biodiesel portion of the blend complies with ASTM D6751 (15 ppm sulfur), the diesel portion of the blend complies with Title 13 (CCR) sections 2281 and 2282, and the blend contains no more than 20 percent biodiesel by volume.
 - e. There are no fuel additives, kerosene or emulsified fuels.
 - f. Provisions are in place for proper engine operation guidelines to ensure that the Purity™ DPF will regenerate, as outlined next.
 - g. Provisions are in place for the required maintenance, as outlined next.

STEPS REQUIRED FOR:

GTE Purity™ DPF/Silencer Combination

1. If retrofitting an existing engine system, remove the existing silencer by loosening the inlet and outlet flanges and mounting points. Make sure the existing flange faces on the pipes going to and from the silencer are free of any dirt and / or damage that may interfere with the gasket seal.
2. Mount the new GTE Purity™ DPF / Silencer Combination with provided mounting brackets.
3. Replace the old gaskets with new gaskets, ensuring that they are the proper size.
4. Connect the inlet and outlet flanges on the GTE Purity™ DPF / Silencer to the exhaust piping. Be sure all of the weight of the Purity™ DPF / Silencer Combination is supported independently of the engine exhaust connection. An exhaust flexible connector must be used between the engine and the Purity™ DPF / Silencer Combination.
NOTE: Mounting arrangement should keep the monitoring ports and the access panel free from obstruction.
5. Install back pressure monitor into the ½” couplings located at the inlet and outlet of the GTE Purity™ DPF / Silencer Combination. Route wires as required for your control system and set the gage to the proper limit.

STEPS REQUIRED FOR: GTE Purity™ DPF

1. If retrofitting an existing engine system, remove a section of the exhaust pipe the length of the GTE Purity™ DPF in-line unit. The DPF should be placed as close to the engine as possible to ensure that the exhaust temperature does not fall below regeneration temperature. An exhaust flexible connector must be used between the engine and the GTE Purity™ DPF in-line unit.
NOTE: Mounting arrangement should keep the monitoring ports and the filter housing free from obstruction.
2. Connect the inlet and outlet of the in-line unit, supporting the additional weight of the filter as necessary to maintain structural integrity of your exhaust system.
3. Install back pressure monitor into the ½" couplings located at the inlet and outlet of the in-line GTE Purity™ DPF unit. Route wires as required for your control system and set the gage to the proper limit.

START-UP PROCEDURE

Always check for exhaust leaks.

1. The installer should record the following:
 - a. Date of Installation
 - b. Engine hours of operation at time of start-up
 - c. GTE Purity™ DPF serial number
2. Start the engine and record the following information in the SERVICE LOG (It is important to record this information so that the after use data can be compared to the new data for proper system monitoring and maintenance.):
 - a. Inlet pressure, outlet pressure, and exhaust temperature at idle.
 - b. Inlet pressure, outlet pressure, and exhaust temperature at 50% load.
 - c. Inlet pressure, outlet pressure, and exhaust temperature at full load.
3. Never operate the engine in idle mode for more than 300 consecutive minutes.
4. The diesel particulate filter system must be regenerated after every ten cold engine start-ups. To achieve filter regeneration, the engine must run until the exhaust temperature exceeds 400°C and the back pressure monitor indicates a normal back pressure reading.

RETURN POLICY

Written notice must be given to GTE Industries, Inc. immediately upon discovery of any defect. All returned products must be pre-approved by the manufacturer, and all return shipments must be prepaid by the purchase (FOB) and identified with Return Material Authorization (RMA) number issued by manufacturer.

MAINTENANCE

GTE Purity™ Diesel Particulate Filters remove particulate matter and inorganic ash from the engine exhaust system. During this process, the filter collects this material until the required heat is sufficient to burn the accumulated particulate matter. In normal operating conditions, the engine exhaust will have a small degree of inorganic ash from engine oil and lubricants. This ash will not burn away and instead begins to slowly accumulate in the filter. **The filter needs to be routinely cleaned to remove the ash: the recommended cleaning interval is every 2000 hours.** If a low ash lubricating oil is used, the cleaning period may be extended to 4,000 hours. A cleaning is also recommended if the back pressure after a regeneration cycle is more than 5" H₂O higher than the back pressure after a regeneration cycle when the Purity™ DPF had less than 100 hours of operation.



TO PERFORM CLEANING, WEAR GLOVES, MASK, AND EYE PROTECTION.

Service Equipment Required:

1. Compressed dry air (80 –100 psi) with standard shop air nozzle
2. Industrial vacuum cleaner
3. Appropriate torque wrenches
4. Replacement gaskets (Call GTE Customer Care for assistance at +1.888.894.3726)
5. For Purity™ DPF / Silencer Combination only: Vermiculite tape

NOTE: Disposal of ash must be in accordance with all Federal, State, and Local laws and regulations. For information regarding ash disposal, contact the California Department of Toxic Substances Control (DTSC) Regional Duty Offices at (800) 728-6942. If you have any additional questions, DTSC's web page can be accessed at:

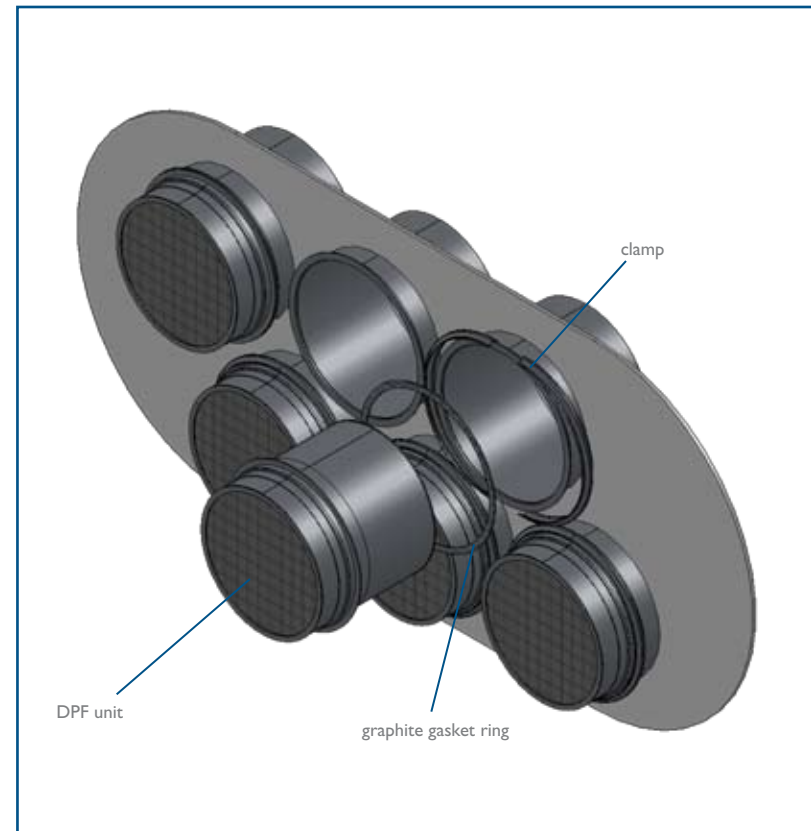
www.dtsa.ca.gov/HazardousWaste/Index.cfm#Generator_Information

STEPS REQUIRED FOR:

GTE Purity™ DPF/Silencer Combination

1. Disable engine and allow enough time for the exhaust system to cool completely.
2. Loosen the bolts or clamps on the access door and remove. Do not worry about preserving the vermiculite tape, as it will be removed and replaced in later steps. Carefully set aside the access door careful not to damage the sealing surface.
3. Reaching through the access door, loosen the v-clamp around one of the filters.
4. Carefully slide the filter and can assembly out of the filter housing (see figure at right). Discard any used gaskets.
5. Repeat steps 2 and 3 until all filters are removed.
6. Using the air nozzle, slowly direct the air into the filter cells in the outlet (clean) side while applying a vacuum on the inlet (dirty) side to collect the ash. Continue this process for approximately 30 to 40 minutes per filter. Larger filters or extremely dirty filters may require additional cleaning time.
7. Position a new or clean graphite gasket ring against the underside of the flanged mounting ring on the DPF filter can.
8. Lift the DPF filter and can assembly and slide into the DPF holster ensuring the gasket ring is pressed tightly between the filter and housing mounting flanges.
9. Place the v-band clamp around the mounting rings and tighten the bolts. Examine to make sure the gasket, clamp, and mounting angles are seated properly. Take care to position the clamps where you will have access to the clamping bolts.
10. Repeat steps 7 through 10 to install each filter.
11. Remove the old vermiculite tape from the access lid and silencer body.
12. Measure the needed strips of new vermiculite tape to seal the access lid, leaving no gaps.
13. Remove the backing from the vermiculite tape to expose the adhesive.
14. Apply the vermiculite tape around the access lid by pressing the tape firmly to the underside of the access lid's outer edge.
15. Replace the access door panel on the Purity™ DPF/Silencer Combination. Tighten all bolts or clamping mechanism.
16. Restart the engine and perform the Start-Up procedure on page 8.

NOTE: Disposal of ash must be in accordance with all Federal, State, and Local laws and regulations. For information regarding ash disposal, contact the California Department of Toxic Substances Control (DTSC) Regional Duty Offices at (800) 728-6942. If you have any additional questions, DTSC's web page can be accessed at: [www.dtsa.ca.gov/HazardousWaste/Index.cfm#Generator Information](http://www.dtsa.ca.gov/HazardousWaste/Index.cfm#Generator%20Information)



**STEPS REQUIRED FOR:
GTE Purity™ DPF**

1. Disable engine and allow enough time for the exhaust system to cool completely.
2. Loosen bolts on clamps and remove, carefully supporting the filter and can assembly.
3. Set aside gaskets and clamps, discarding any used gaskets.
4. Using the air nozzle, slowly direct the air into the filter cells in the outlet (clean) side while applying a vacuum on the inlet (dirty) side to collect the ash. Continue this process for approximately 30 to 40 minutes per filter. Larger filters or extremely dirty filters may require additional cleaning time.
5. Replace filter and can assembly in the exhaust line making sure clean and undamaged gaskets are securely in place.
6. Tighten bolts on mounting clamps.

NOTE: Disposal of ash must be in accordance with all Federal, State, and Local laws and regulations. For information regarding ash disposal, contact the California Department of Toxic Substances Control (DTSC) Regional Duty Offices at (800) 728-6942. If you have any additional questions, DTSC's web page can be accessed at: www.dtsa.ca.gov/HazardousWaste/Index.cfm#Generator Information

SERVICE LOG

For proper maintenance of the GTE Purity™ DPF product, a DPF service record should be kept up to date. We recommend the installer and the customer use a Service Log similar to the one provided below.

GTE Purity™ DPF SERVICE LOG	
Engine	
Unit Installation Date	
GTE Purity™ DPF Serial Number	
Load Conditions	
Back Pressure at Idle	
Back Pressure at Full	
PRESSURE DROP AT FULL LOAD	
Before Cleaning	
After Cleaning	
Hours of Operation Between each Cleaning	
Date:	Hours:
Date:	Hours:
Date:	Hours:

BACK PRESSURE MONITOR SYSTEM

The service and installation manual for the Dwyer Series DH differential pressure controller is included as an attachment to this manual. Additional product information can be found at:

http://www.dwyer-inst.com/Products/Product.cfm?Group_ID=3

CONTACTS

GTE Sales, Technical Questions/Issues

GTE Industries

4121 NW 37th Street

Lincoln, Nebraska, 68524

Contact: Clear Answers +1 (888) 894-3726

GTE Purity™ DPF Service, Cleaning, Installation

Johnson Power Systems

656 E. La Cadena Drive

Riverside, CA 92502

Contact: Highway Truck Service Dept. +1 (951) 683-5960

Peterson Power Systems

2828 Teagarden Street

San Leandro, CA 94577

Contact: Christine Gibney +1 (510) 618-551

Kohler Power Systems

9066 Rosecrans Ave

Bellflower, CA 90706

Contact: Bill Dauley +1 (562) 601-8128

Cummins West, Inc.

14775 Wicks Blvd.

San Leandro, CA 94577

Contact: Service Department. John Bora +1 (510) 347-6676