

OWNER'S MANUAL

DPF THERMAL OVEN

FILTERTHERM[®]



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PRODUCT RECORD



Record the information from your Filtertherm® DPF Oven's serial number label here for easy product reference.

Part Number:

Serial Number:

Save these instructions and your sales receipt for future reference. Use the information above to complete your Warranty Registration. You can register your Filtertherm® via online, email or fax. For email or fax, complete the registration instructions listed in the back of this manual. Register your Filtertherm® DPF Thermal Regeneration System Oven within 45 days of purchase online to activate your warranty.

WARRANTY REGISTRATION

[web] www.filtertherm.com/warranty

[email] warranty@filtertherm.com

[fax] 530-241-0870

TECH SUPPORT

[web] www.filtertherm.com

[USA/Canada] 888-792-2922

[International] 00-1-530-241-3950

MANUFACTURED BY

Diesel Emissions Service

Redding, CA 96001

IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE INSTALLING THIS SYSTEM



THIS IS A SAFETY ALERT SYMBOL

This symbol alerts you to hazards that can cause death or serious injury to you and others. All safety messages will be preceded by the safety alert symbol and the word **"DANGER"** or **"WARNING"**. These warnings mean:



DANGER: Death or serious injury will occur if you do not follow instructions.



WARNING: Death or serious injuries can occur if you do not follow instructions.



Failure to comply with these warnings could result in serious personal injuries.



WARNING: To reduce risk of fire, electrical shock, or injury to persons when using this Filtertherm® system, comply with the basic warnings listed below.



DANGER: High voltage present. Ensure all electricity is turned off prior to work on the Filtertherm®. Only a certified electrician, adhering to all standard safety procedures, should open the enclosure after they have verified there is no electricity present.



WARNINGS CONTINUED



WARNING: The Filtertherm® should be properly grounded and any wiring, plugs and/or extension cords attached to the system during the initial installation should include grounding.



DANGER: VERY HOT. The Filtertherm® interior and items inside can reach temperatures of 700°C (1300°F).



WARNING: Do not operate the Filtertherm® near flammable materials or fumes.



WARNING: Only properly trained operators that have read and understand the owner's manual should use the Filtertherm®.



WARNING: Once any Error Message has been displayed by the Filtertherm®, the problem should be properly repaired by a certified technician before the system is used again. Contact your local dealer for details.



FILTERTHERM® INSTALLATION

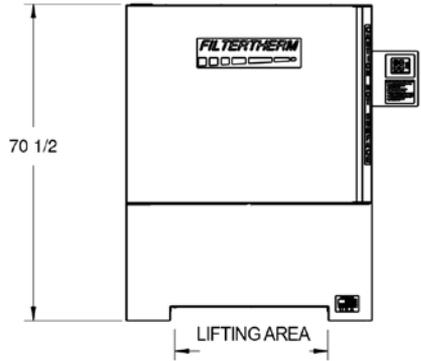
LOCATION

- There should be at least 12" of space around the sides of the oven. It is recommended that enough space is available for an operator to remove the back of the control panel to reach the manual door over ride.
- There should be a minimum of 36" of overhead clearance unless a vent is installed.
- All flammable items and materials should be removed from the area of the oven.
- A Class C fire extinguisher should be located nearby.
- The area should be well ventilated.
- The Filtertherm® should be placed in a dry environment.

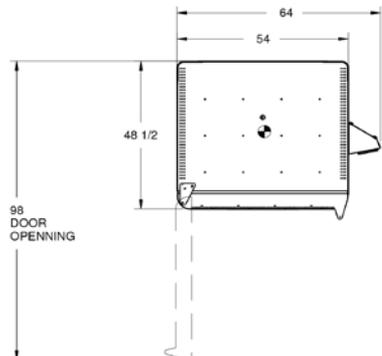


MOVING & PLACEMENT

- Remove the Filtertherm® from the pallet.
- The Filtertherm® can be moved with a forklift or pallet jack.



- Level the Filtertherm® using the adjustable feet. The Filtertherm® must be level front-to-back and side-to-side for the door to operate correctly.
- Leave enough room for the door swing.
- The door must be closed and latched before any moving or lifting is attempted.

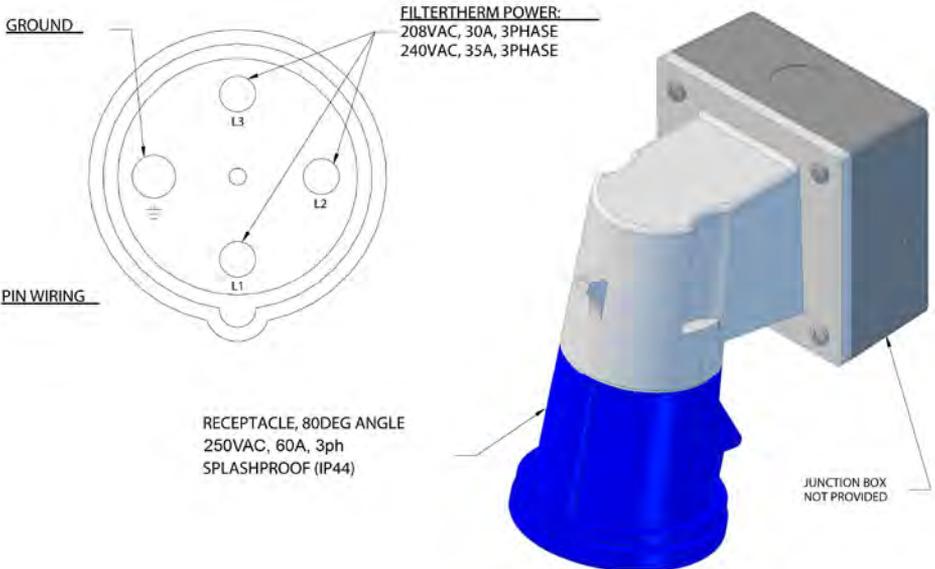


FILTERTHERM® INSTALLATION CONT.



ELECTRICAL CONNECTIONS

- The Filtertherm® requires 208/240VAC, 3phase, 50/60hz and draws 11000 Watts.
- For a 208 volt supply a 40 Amp breaker is required, and for 240 volts a 45 Amp breaker is required.
- A 4 pin, 250V 60A outlet is provided with the Filtertherm®. It should be installed by a licensed electrician.
- The Filtertherm® has a 6ft cord. It should be located so that the cord can reach the outlet without stretching or creating a tripping hazard.
- A disconnect should be installed within 10ft of the Filtertherm® by a licensed electrician.
- The outlet should be installed so that the 6ft cord on the Filtertherm® can be connected.



BEFORE FIRST USE



- ✓ **Inspect oven for obvious signs of shipping damage inside and outside, if any is noted contact tech support before starting the oven.**
- ✓ **Vacuum out the interior to remove any dust from shipping.**
- ✓ **Remove the packaging from the grate and install the grate inside the Filtertherm®. (See SYSTEM OVERVIEW for the mechanical door override if there is no power.)**



SYSTEM OVERVIEW

The Filtertherm® is an oven used for the heating cycle of a DPF cleaning system. It uses a touchscreen interface to maintain the internal temperature at DPF manufacturer requirements. The Filtertherm® correctly heats and cools the DPFs and also protects the user from damaging the filter.

The user selects the appropriate DPF type from the on-screen list and the system chooses the correct heating cycle. Multiple filter types can be selected during one cycle and the Filtertherm® will choose the heating cycle which will accommodate all loaded filters without voiding any of the manufacturer's warranties.

The Filtertherm® uses heating elements to bring the oven up to the temperatures required to reduce the soot trapped in DPFs into ash. These temperatures can reach 700° C (1300° F). The brick and fiber insulation, along with an air gap keep the outer skin at a safe temperature for the user.

Two circulation fans draw a small amount of air into the Filtertherm®. The fresh air helps the process of reducing the soot to ash. Once the heating cycle is complete the fans stay on and help to safely cool the DPFs.

The system uses an electronic latch to lock the oven at high temperatures. This safety feature keeps the typical user from opening the oven when the temperatures are over 150° C. For emergencies or loss of power situations, there is a mechanical override. To access the mechanical override a trained supervisor or lead worker must remove the back of the display mount and turn the lock with a key. This should only be used under extreme caution as the oven will be hot.

The interior stainless steel grate keeps the DPFs off of the floor of the oven. This allows for better air circulation and protects the soft bricks from damage.

THE DISPLAY SCREEN

TOOLBAR

The tool bar will display at the bottom of the screen with buttons that are appropriate for the screen.



COMMON BUTTONS

BACK: Goes to the previous screen.

DOOR: Releases the latch and opens the door. The door release has a temperature limit on it. Use caution when opening the door during baking cycle.

- **Below 150°C (300°F):** Door button will release door.
- **150°C (300°F) – 350°C (660°F):** The system will ask for a user ID before releasing the door.
- **Above 350°C (660°F):** The door button will not release the door. (The mechanical override can still be used, See SYSTEM DESCRIPTION.)

HELP: Provides information for the screen being displayed.

NEXT: To the next screen.

HELP

Certain items require more than explanation.

The help button will pop-up extra information on that item.



SELECTION BUTTONS

When items are selected they will change from a darker to a lighter color.



SCREENSAVER

When the user interface is not in use a screen saver will appear. Touch the screen to return to the previous screen.

TEMPERATURE UNITS

When the internal temperature is displayed on screen, the units (F° or C°) can be changed by touching the temperature readout.

DISPLAY SETUP

The first time the Filtertherm® is turned on the user will be asked to setup the system. Follow the onscreen instructions.

DATE AND TIME

Enter the 2 digit year, month and day. The hour and minutes are entered using the 24 hr format. As each item is changed the updated date and time will show at the bottom of the screen.

USERS

The Filtertherm® requires a user ID to run heating cycles. The user ID is displayed during the cycle to let others know who started the cycle. The ID requirement also makes sure that trained users are running the cycles. For this reason users should not share their passwords with other users. Future users can also be added in the settings menu.

Every day users are level 1 users. Level 1 users can run heating cycles. Level 1 users cannot add or change other users. User IDs and passwords can be 1-8 characters long. A level 2 user ID is supplied with each oven so that a supervisor can add users. See the loose page of the manual for the level 2 user ID. Contact tech support if it is lost or missing.

RECOMMENDATIONS:

- The supervisor should make a Level 1 ID for themselves and use the level 2 ID to only add users.
- IDs should be easily identifiable by others, such as a name or initials (John Doe Smith could be "JohnS" or "JDS"). The User ID is displayed during the cycle, so that other users know who has started the system.
- Users should be added after they have completed and passed the Filtertherm® training requirements. Contact dealer or tech support for more information.

PRIMARY UNITS

The temperature can be displayed in degrees Fahrenheit or Celsius. The primary unit will be the standard display. Alternately, when the internal temperature is displayed on screen, the units (degrees F or C) can be changed by touching the temperature readout. The primary units can also be changed in the settings menu.

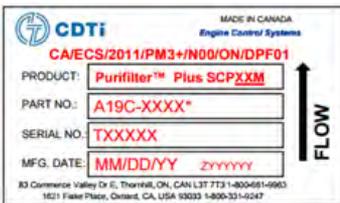
RUNNING A CYCLE

This information can also be found under the Training Menu on the user interface.

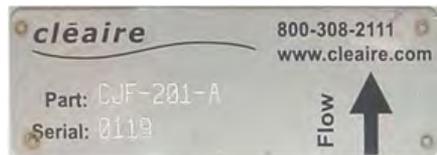
1. Press DOOR button to open the Filtertherm®.
2. Inspect the interior of the oven. It should be dry and clean. Remove any dust, soot or ash.
3. From the main screen choose LOAD DPFS.
4. Enter a user ID and password. If the user stops using the interface for more than 4 minutes the user ID will be requested again.
5. As you load in each filter, choose the manufacturer of the filter. Retrofit and Aftermarket DPFs often have a tag on them indicating the Make and Model of the filter. Filters for OEM systems (Cummins, CAT, Detroit, etc.) commonly do not have a tag. Multiple manufactures can be selected.



- a. The OEM/OTHER option is for filters that do not have a tag on them. If there is no tag on the filter. The type of filter is identified by the material, or substrate, used for the filter.
 - SILICON CARBIDE is identified by segments of substrate cemented together. It can be heated to a higher temperatures.
 - CORDIERITE is identified by a single brick with a waffle or honey comb pattern. It must be heated to lower temperatures.
 - METAL MESH and unidentified substrate type should not be heated in the Filtertherm
- b. The retrofit manufacturers will have a tag that identifies the Make and Model.



MAKE: CDTI MODEL: PURIFILTER PLUS



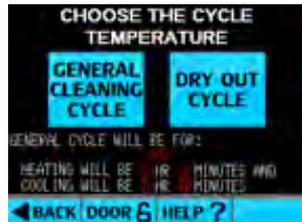
MAKE: CLEARIE MODEL: CJF-2XX

RUNNING A CYCLE CONT.

6. Choose the model of the filter
7. Once all of the filters are loaded press NEXT. (This button is not shown if there are no filters selected.)
8. If multiple filters types are selected, the system will indicate that the safest temperature will be chosen and may not meet the cleaning requirements of all of the filter which are loaded.
9. The Cycle screen offers the option of a general cleaning or a dryout cycle.



The GENERAL CLEANING CYCLE will heat to the temperature requirements set by the DPF manufactures. At the bottom of the screen the system will display the cycle which is chosen and the time of the cycle. If you wish to change the combination of filters in the Filtertherm[®] so a different cycle is run, you may press the back button to return to the filter selection. You can then remove the loaded filters, unselect them and select the new combination.



If a filter is heavily loaded with soot or needs a low temperature cycle to remove dampness from oil, fuel or coolant. Run the DRY OUT CYCLE. If a filter is damp and you are unsure, do not heat it. Ask a supervisor, who is trained on the Filtertherm[®], for instructions.

10. The Start Screen reminds the user:



THERE SHOULD BE NO EXCESS OIL IN THE FILTER.



THE FILTER SHOULD BE BLOWN OUT BEFORE HEATING.



THE FILTER SHOULD BE PLACED WITH THE FLOW ARROW FACING DOWN. THE DIRTY INLET SHOULD BE FACING UP.

Close the door and press START CYCLE to begin the heating. If the door is not closed the cycle will not start and the user will be warned.

RUNNING A CYCLE CONT.

When stacking filters, make sure there is at least a 3/4" air gap between the top and bottom filters. (Use material that will handle temperatures of 700C or 1300F. i.e. stainless steel).

11. The Filtertherm® will run the heating cycle. Followed by the cooling cycle. Both screens display the same information.



TIME LEFT: The total remaining time for the entire cycle, includes heating and cooling time.

TEMP: The internal temperature of the Filtertherm®.

USER: The user ID which started the cycle.

STOP: Stops the cycle and returns to the main menu.

12. **CYCLE COMPLETE** will be displayed when the cycle is finished. Touching **OK** will return to the Main Menu. The circulation fans will continue to run until the door is opened.



MENUS

SETTINGS

ADD USER: Users can be added. See the loose page of this manual for the Level 2 user ID and password to setup every day (Level1) users.

SET DATE & TIME: Set the Date and time, See DISPLAY SETUP.

TEMP UNITS: The primary units can be set, See DISPLAY SETUP.

LAST 5 USERS: The last 5 user IDs are displayed.

TRAINING

RUNNING A CYCLE: An onscreen walk though of running a cycle.

SAFETY: User safety training when operating the Filtertherm®.

CERTIFY USERS: Web link to user training for the Filtertherm®.

MANUALS: Web links and contact info for Filtertherm® Manuals.

HELP & SUPPORT

TECH SUPPORT CONTACT: Contact information for tech support for the Filtertherm®.

INSTALL INFO: Information on installing and locating the Filtertherm®.

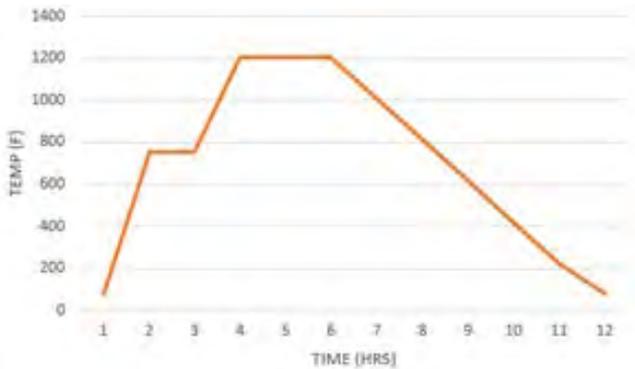
FUNCTION TEST: Test the individual components of the system, for troubleshooting.

MANUALS: Web links and contact info for Filtertherm® Manuals.

ABOUT HEATING CYCLES

Each DPF manufacturer has a requirement for the heating cycle that should be applied to clean their DPFs. The common feature of the cycles is heating segment to a specific temperature, followed by holding that temperature for a few hours. Some manufacturers require 2 or more heat and hold steps. After the heating cycle is complete the DPFs are allowed to cool.

AN EXAMPLE OF A 2-STEP HEAT & HOLD CYCLE



To accommodate for lower temperature requirements, manufacturers increase the hold time of the step to allow the soot to reduce to ash. Below is an example of how manufacturers balance the temperature and the time of the cycle.

COMPARISON OF MANUFACTURE CYCLE TIMES AND TEMPERATURES



ERROR CODES

CYCLE ERROR

OVER HEATING

More than 50°C (122°F) over the cycle temperature. The system will stop the cycle, including the fans. Let the internal temperatures cool naturally. This may be due to a DPF which is having an exothermic reaction.

DOOR OPENED DURING CYCLE

If the door is opened while the heating cycle is running the system will stop the cycle. This will usually occur when the manual door override is used while the cycle is running. The Filtertherm® will require the cycle to be restarted from the beginning.

SYSTEM ERRORS

NO TEMPERATURE READING

The system is not getting a reading from the thermocouple. The Filtertherm® cannot be used until this is fixed. Contact your dealer.

NO DOOR SIGNAL

The system is not getting an indication from the latch that the door is either open or closed. The Filtertherm® cannot be used until this is fixed. Contact your dealer.

BAD DOOR SWITCH

The system is getting an indication from the latch that the door is both open and closed. The Filtertherm® cannot be used until this is fixed. Contact your dealer.

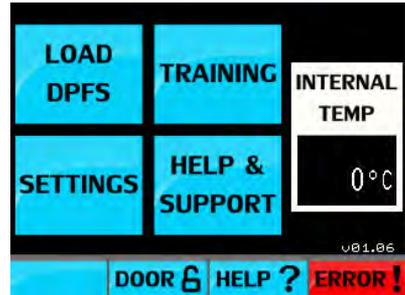
NO USB MEMORY

The interface uses a USB memory card for the program. Reseat the USB flash drive in the controller. The USB flash drive is located in the back of the display mount. See the diagram in the troubleshooting section.



VIEWING AND RESETTING ERRORS

Once an error has occurred, the error needs to be reset from the ERROR menu shown in the main screen. The ERROR button will flash red to indicate that there are errors to be reset.



Press RESET to reset errors. If the problem has been resolved, the indicator by the error will go out. If the error has not been resolved, the indicator by the error will remain lit, even if the reset button is pressed.

The INFO button will display a detailed log of errors.

The screenshot shows the error log displayed in the INFO menu. It has a black background with white text. The log is organized into columns for 'DATE (mm/dd/yy)', 'TIME', and 'COUNT'. The entries are as follows:

DATE (mm/dd/yy)	TIME	COUNT
08/16/17	14:35	1
EVENT: POWER ON		
08/16/17	14:35	1
ERR: NO DOOR OPEN/CLOSED SIGNAL		
08/16/17	14:37	1
ERR: DOOR BOTH OPEN/CLOSED SIGNAL		
08/16/17	14:37	1
ERR: NO USB		
08/16/17	14:37	1
ERR: DOOR OPENED DURING CYCLE		

At the bottom, there is a navigation bar with four buttons: 'BACK', a blue up arrow, a blue down arrow, and a blue right arrow.

TROUBLESHOOTING

BRICKS ARE CRACKING

Hair line cracks in the bricks are a normal occurrence caused by heating and cooling cycles. The cracks are cosmetic and do not affect the insulation properties of the bricks or oven.

ELEMENT IS COMING OUT OF THE GROOVE

Elements will expand and contract with the heating and cooling cycles. An element can be used normally if it not in danger of contacting a DPF. The elements are held into a groove by pins. The elements become brittle the more they are used. Under no circumstance should the Filtertherm® be turned on with a element touching a DPF or the grate. Contact your dealer or tech support about questionable elements.

ELEMENT IS BROKEN

Any broken element will need to be replaced. The elements in the Filtertherm® are designed to last many cycles but all elements have a usable life and are consumable components. The time between replacements is effected by many variables. Elements that break from no obvious impact or contamination are most often at end of life. Any sign of contamination from oil or metals will require the section of brick that touches the element be removed before a new element can in used. If the contamination is not removed, the new element will fail at the contamination site. Contact your dealer for replacement elements and instructions. Never use non-OEM elements as incorrect parts may cause system failures.

DOOR DOES NOT LATCH

If mechanical override for the door latch is left on, it will not allow the latch to catch in the closed position. Make sure the manual override key is not holding the latch open. Open the back of the control panel, behind the display, and turn the override key back to the lock position and remove it from the override.

TROUBLESHOOTING CONT.

OVEN DOES NOT HEAT

Check the elements are heating. This is simply checked by putting a small strip of paper on each element and turning the element on to see if it creates a burn mark on the element. To turn on the elements go to the **HELP & SUPPORT** menu. Select **FUNCTION TEST**. On the Function test screen press the heater button to turn on the heaters. The heaters will only stay on for a limited amount of time. Check the paper to see if the element created a burn mark. If it did, the element is working. If it did not burn the paper check the internal fuses (see diagram on page 19).

Checking the internal fuses for the heating elements. The fuses are located in the electrical control box, in the lower portion of the Filtertherm®. Unplug the Filtertherm® from the wall to remove power. Remove the lower front skin. Open the electronic control box and check the fuses. See the diagram of the electronics on page 19. If the fuse are bad, replace them and repeat the element testing above. If the fuses are good, replace the elements. Contact your dealer for parts and procedure to replace broken elements.

LONGER THAN NORMAL HEATING CYCLE

See the troubleshooting steps for OVEN DOES NOT HEAT

DPF OIL SPLATTER

If a DPF is not properly cleaned out before it is heated excess oil can splatter on the elements and burn them out. Contact your dealer for parts and procedure to replace broken elements.

DOOR DOESN'T OPEN

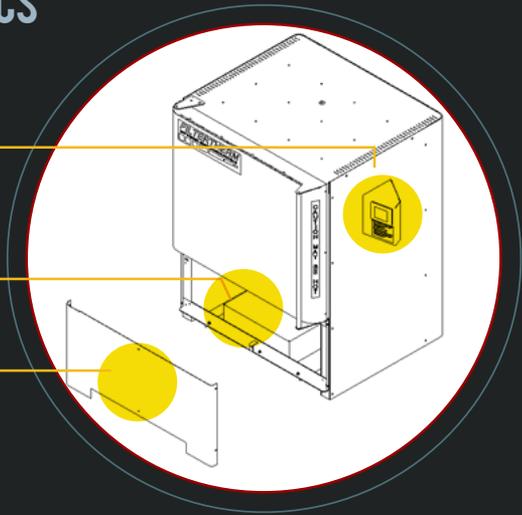
The system uses an electronic latch to lock the oven at high temperatures. This safety feature keeps the user from opening the oven when the temperatures are dangerous. For emergencies, there is a mechanical override, remove the back of the display mount and turn the key. (See diagram on page 19).

DIAGRAM OF ELECTRONICS

DISPLAY MOUNT

ELECTRONIC CONTROL BOX

LOWER FRONT SKIN

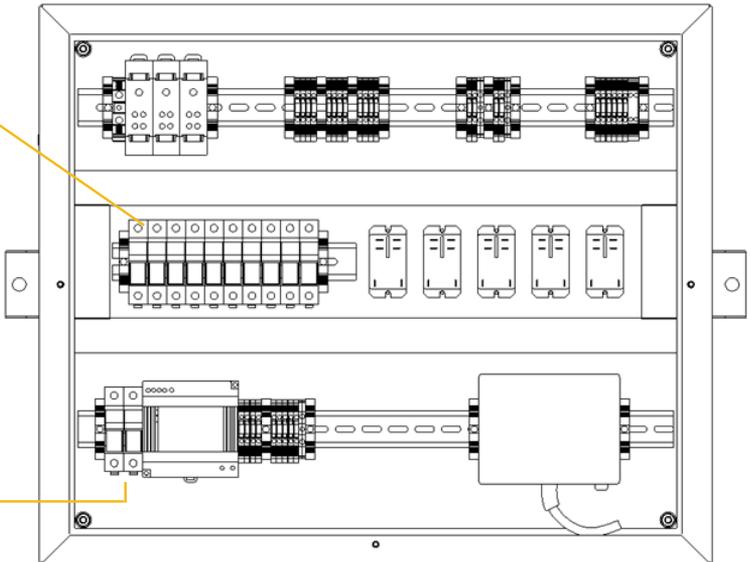


Remove the lower front skin to access the electronic controls.

DIAGRAM OF ELECTRONIC CONTROL BOX

FUSES FOR HEATING ELEMENTS

FUSES FOR TOUCH-SCREEN



Diesel Emissions Service ("Seller") warrants to the original purchaser of the Filtertherm® Thermal Regeneration System ("product"), subject to all of the terms and conditions hereof, that the Product and all components thereof will be free from defects in materials and workmanship for the following period(s) of time, measured from the date of purchase:



Diesel Emissions Service warrants the Filtertherm® Thermal Regeneration System for a period of ONE (1) YEAR.

Seller's obligation under this warranty is specifically limited to repairing or replacing, at its option, the product or any part thereof which is determined by Seller to be defective during the applicable warranty period.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty is made to the original purchaser of the Product only, and is not transferable or assignable. This warranty applies only to components of the Filtertherm® system. This warranty does not apply to any unauthorized or improper installation, alteration or repair of the Product, or to any Product or component which has been damaged or deteriorated due to misuse, neglect, accident, failure to provide necessary maintenance, normal wear and tear, or acts of God or any other cause beyond the reasonable control of Seller, missing or damaged parts due to clearance, repairs, and maintenance to components.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE APPLICABLE WARRANTY PERIOD REFLECTED ABOVE. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED.

Some states do not allow limitations on how long an implied warranty lasts. **IN NO EVENT SHALL DIESEL EMISSIONS SERVICE OR ITS AFFILIATES BE RESPONSIBLE FOR, OR LIABLE TO ANYONE FOR, SPECIAL, INDIRECT, COLLATERAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES**, even if Seller has been advised of the possibility of such damages. Such excluded damages include, but are not limited to, loss of use, cost of any substitute product, or other similar indirect financial loss. Some states do not allow the exclusion or limitation of incidental or consequential damages. Claims under this warranty must be made promptly after discovery and within the applicable warranty period.

To obtain warranty service, you must contact DIESEL EMISSIONS SERVICE customer service and provide proof of the date and location of purchase and identification as the original purchaser. Call (DES) Customer Service toll free at 1-888-792-2922 to speak with a trained representative.

Purchaser must allow seller a reasonable opportunity to inspect Product claimed to be defective prior to removal or alteration of its condition. Upon determination by Seller that the Product or any part thereof is defective during the applicable warranty period (which may require purchaser to return the Product to Seller at purchaser's expense), Seller will supply the purchaser with replacement parts or, at its option, a replacement Product. Seller may use new or reconditioned parts, or a new or reconditioned Product of the same or similar design.

PURCHASER'S WARRANTY RESPONSIBILITY

- Warranty form submitted within 45 days of purchase - submit online, fax or email
- Detailed description of failure
- Pictures of failure
- Contact *Diesel Emissions Service* within 24 hours of failure

Complete registration and return via email, fax, mail or online (at www.filtertherm.com/warranty) within 45 days of purchase to activate your warranty.

Name**Email Address****Company Name****Phone Number****Address****Model Name****Address 2****Serial Number****City****Date of Purchase****State****Dealer Purchased From****Zip****Date of Installation**

FILTERTHERM® DPF OVEN

THE INDUSTRY'S FIRST "SMART TOUCHSCREEN"



Autoselects correct temperature profile for single or multiple filters



Manufacturer-Approved Temperature Profiles with Safe & Effective Ramp Rates



Temperature-Controlled Auto Door Lock



Multiple Sizes & Power Options Available



Powder-Coated for Durability



Employee Pass Codes Lock Out Untrained Users



Pre-Programmed for all DPF Substrates



On-Screen Operator's Manual & Training Aids



Auto Shutoff for Over-Temp Conditions



High-Voltage Plug & Receptacle Included