KANGLUCHI

KANGLUCHI Support Center

Diesel Heater

MODEL:H1

Model:H1



This is the original instruction manual. Read all instructions carefully before operating the heater. KANGLUCHI reserves the right to interpret this manual. Actual product appearance may vary. Product specifications and software may be updated without prior notice.

	WARNING: To reduce the risk of injury, read the instruction manual carefully.
	This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation.

	This symbol appears before a safety notice to indicate a precaution, warning, or hazardous condition. Ignoring the warning may result in an accident. To reduce the risk of injury, fire, or electric shock, always follow the recommendations below.
	WARNING: Toxic substances. Avoid contact with toxic substances.
	WARNING: Flammable materials. Take care to prevent fire caused by igniting flammable materials.



Liability

KANGLUCHI is not responsible for problems caused by failure to follow this manual or its safety precautions.

KANGLUCHI is not responsible for damage caused by improper repairs or the use of non-genuine parts.

Safety Instructions



WARNING:



Carefully read all safety warnings, instructions, diagrams, and specifications provided with this diesel air heater. Failure to follow all instructions below may result in electric shock, fire, and/or serious personal injury.

1. Do not do any of the following:
   - Replace essential components of the diesel air heater.
   - Use replacement parts from other manufacturers without authorization.
   - Deviate from these instructions during installation or operation.

2. Use only original accessories and replacement parts during installation and maintenance.

3. Do not use the diesel air heater in locations where flammable vapors or dust may be present, including:
   - Fuel storage facilities
   - Coal storage facilities
   - Lumber warehouses
   - Granaries and similar sites

- Diesel/gasoline fueling stations

Keep the diesel air heater away from fuel tanks, compressor tanks, fire extinguishers, clothing, and other flammable items.

4. Do not use an open flame to start the heater.

5. Do not use the diesel air heater in an enclosed or unventilated area.

6. Turn off the diesel air heater before refueling.

7. Do not disconnect the power supply during operation.

8. If the diesel air heater's fuel system leaks or sprays fuel, contact KANGLUCHI for service.

9. Route the exhaust outlet outdoors to prevent exhaust gases from entering the occupied area.

10. Never stop the diesel air heater by disconnecting the power supply during operation.

11. The unit will stop heating if overtemperature protection is triggered. Do not disconnect the power supply. Allow the unit to cool naturally and shut down before restarting it.

12. After turning off the unit, do not disconnect the power supply immediately. Allow 3-5 minutes for the shutdown cooling cycle to finish and the unit to stop completely.

13. After starting the unit, allow 3-5 minutes for normal operation and heat output to begin.

14. This appliance may be used by children 8 years of age and older and by persons with reduced physical, sensory, or mental capabilities or a lack of experience and knowledge, provided they have received supervision or instruction concerning safe use of the appliance and understand the hazards involved. Children must not play with the appliance. Children must not clean or perform routine maintenance on the appliance without adult supervision.

15. WARNING: Flammable Materials

Keep flammable materials away from the exhaust pipe during installation, use, maintenance, and disposal of this unit.

16. WARNING: Toxic Substances



During installation, use, maintenance, or disposal, ensure adequate

ventilation space around the unit to prevent carbon monoxide poisoning. Route the exhaust outlet outdoors to prevent exhaust gases from entering the enclosed area.

17. The fuel tank supplying the unit must meet the following requirements:

a) If a leak occurs, the fuel must drain to the ground without contacting hot parts of the vehicle or load.

b) A fuel tank containing gasoline must have an effective flame arrester at the filler opening, or the opening must be completely sealed with a closure;

18. Do not use in areas where hazardous goods are loaded, unloaded, or transported.

19. Use the product only for its intended use, and be aware of the risk of injury caused by misuse.

20. This product complies with applicable standards and regulations. Install the unit in accordance with all applicable regulations, and use it only in a well-ventilated area. Read the user manual carefully before installing or using the unit.

21. NOTICE: Use only the original power supply.

Maintenance: Continuous black smoke indicates carbon deposits in the combustion chamber, especially from the second year of use onward. Remove the deposits promptly.

NOTICE: If any of the conditions above occurs, replace the air filter and fuel filter promptly.

22. This unit undergoes factory testing. A small amount of white smoke during initial use is normal and is caused by secondary combustion of residual fuel inside the unit.

NOTICE: Because the temperature sensor is built into the LCD control panel, install the LCD control panel within the heated area. Otherwise, temperature control will not operate correctly and may cause abnormal heating.

This component is not an original accessory for a vehicle heater, and this product does not comply with the technical requirements for vehicle heating systems specified in ECE R122.

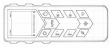
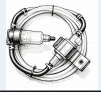


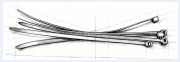
This product is a Class III appliance.

MODELS AND SPECIFICATIONS

Diagram	
Heating Medium	Air
Operating Voltage	12-24 V DC
Rated Heat Output	5 kW (±10%)
Rated Power	2.4-53 W
Fuel Consumption	0.12-0.39 L/h
Fuel	Diesel
Fuel Tank Capacity	10 L
Operating Temperature	-40 to 40 °C
Operating Noise	≤75 dB
Dimensions	386 × 144 × 173 mm

Parts List

Part Name	Diagram	H1
LCD control panel		1
Remote control		1
Battery		2
Combustion air intake pipe		1
Exhaust pipe		1
Hot-air outlet duct		1
Air outlet		1
Air duct Y-connector		1
Air filter		1
Muffler		1
Muffler installation kit		1
Steel mounting plate (with gasket)		1
Rubber heat-insulating pad		1
Wiring harness		1
Fuel line + fuel metering pump assembly		1

Fuel tank		1
Fuel tank fittings		1
Air outlet duct clamp		2
Combustion air intake and exhaust pipe clamps		4
Nylon cable tie-5×250		5
Nylon cable tie-3×150		5
R-type clamp		2
Fuel line clamp		6
Self-drilling screw		6
Double-ended stud		4
M6 mounting nut		5
M6×30 mounting bolt		1
150 mm fuel line		1
M5×20 hex bolt		2
M5 hex nut		2
Hole saw		1
User Manual		1

INSTALLATION GUIDE

Refer to the installation diagram below and carefully read all precautions before installation or use:

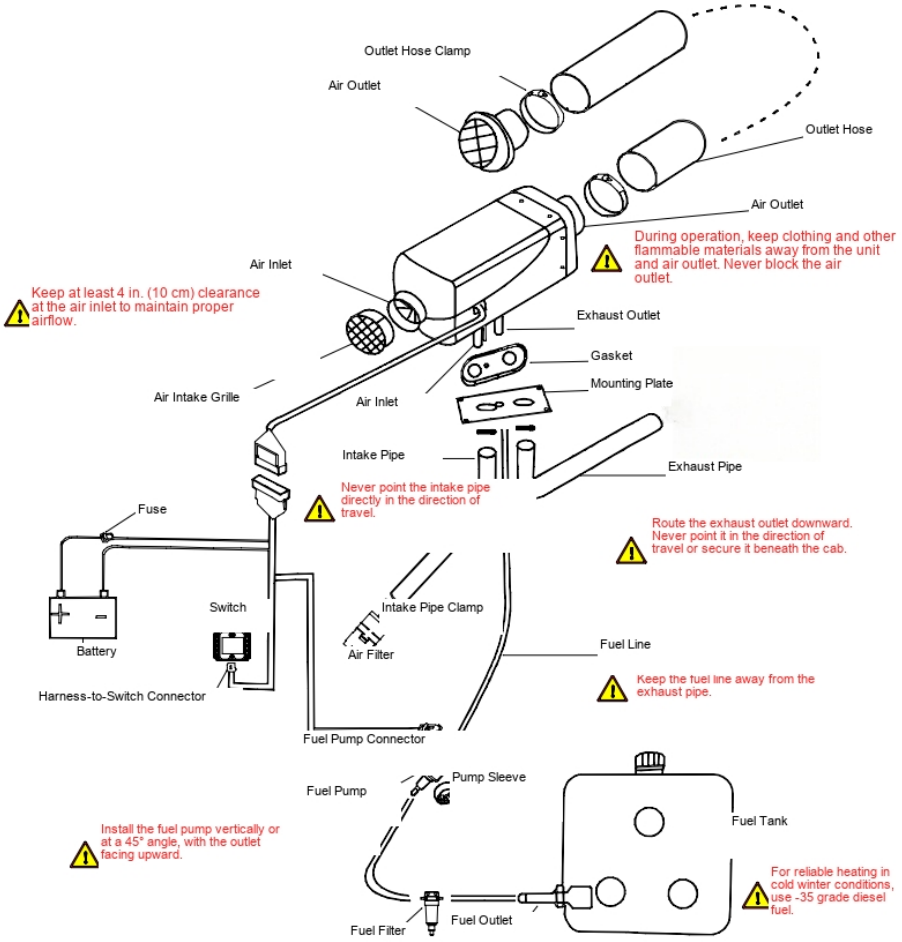
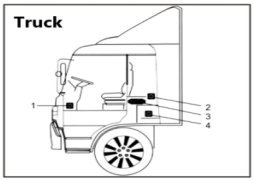
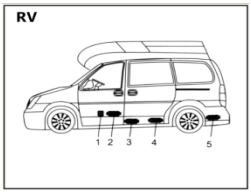


Fig. Installation Diagram

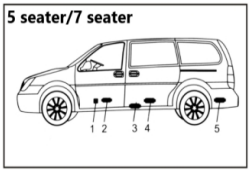
INSTALLATION LOCATION



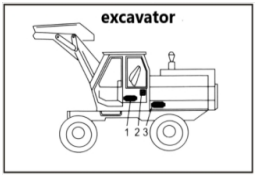
1. In the front passenger footwell
2. On the rear wall of the cab.
3. Under the driver's seat backrest
4. Inside the toolbox.



1. In front of the passenger seat.
2. Between the driver's seat and passenger seat.
3. At locations 3 and 4 beneath the passenger compartment.
4.In the trunk.



Install the diesel air heater primarily in the vehicle's passenger compartment or trunk. If this is not possible, secure it beneath the vehicle floor and protect it from splashing liquids.



1. Inside the driver's seat base.
2. On the rear wall of the cab.
3. Inside the protective enclosure.

⚠ When fueling the diesel air heater, use high-quality diesel fuel. Do not use other fuels (such as kerosene, vegetable oil, gasoline, waste oil, etc.); otherwise, the diesel air heater may emit odors or malfunction during operation.

⚠ Have this equipment installed by a qualified professional.

1. Installation Tips

Protect components near the diesel air heater from excessive heat by taking the following measures:

- Maintain the specified minimum clearances;
- Ensure adequate ventilation;
- Use fire-resistant materials or heat shields.

Installation Location:

- The diesel air heater may be installed inside or outside the vehicle.

Protect it from mechanical impact and other damage;

■ If the heater is within the driver's reach during normal vehicle operation, install a guard to prevent contact;

■ If the diesel air heater is installed outside the vehicle, select a location protected from splashing water;

■ Install the diesel air heater so that water cannot enter it when the vehicle passes through water up to the permitted fording depth.

⚠ DANGER:
Consider the following risks when selecting the installation location:

■ Install the diesel air heater with sufficient clearance between people or components and the hot air to ensure adequate

ventilation and heat dissipation, and ensure surrounding components are fire-resistant and heat-resistant;

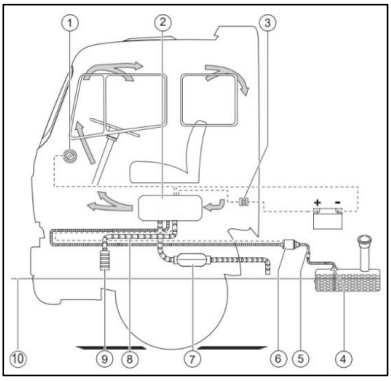
■ Select an installation location and method that prevent direct contact with the heater's outer surface to avoid burns;

■ During installation and use, keep the hot-air inlet and outlet ducts free of any obstructions to ensure proper heat dissipation and

prevent the risk of overheating.

2. Installation Example

The installation example is shown below.



1. Control Panel
2. Heater
3. Fuse
4. Fuel Pickup
5. Fuel Filter
6. Fuel Pump
7. Exhaust Muffler
8. Combustion Air Intake Pipe
9. Combustion Air Intake Silencer
10. Maximum Permissible Fording Depth

Figure. Installation Example

Heater Installation Orientation Diagram

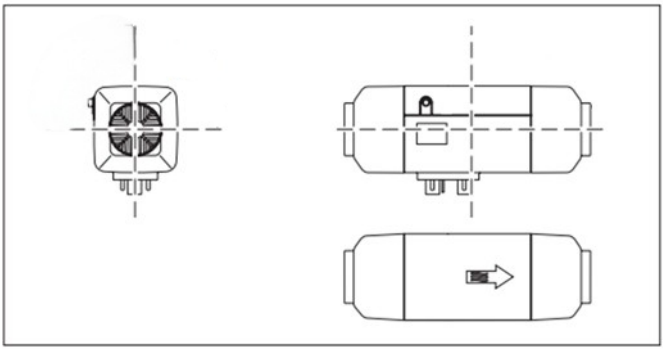


Figure. Installation Orientation (Mount the heater level on its base. Do not tilt it or install it on its side.)

3. Installing the Heater

WARNING: Exhaust leaks can cause poisoning and suffocation:

- After installation, ensure that the housing rests only on the heater base;
- Ensure that the base gasket is installed correctly;
- Ensure that exhaust gases are discharged outdoors only.

When installing the heater, tighten the M6 bolts to 6 N·m (+1 N·m). Install a gasket between the heater and the vehicle body. Replace this gasket each time the heater is installed or removed. The heater-base support area must be flat. The gasket can compensate for surface unevenness of less than 1 mm.

NOTICE:

- After installation, ensure that the housing does not contact any part of the vehicle body; contact may cause the hot-air blower to become jammed;
- Install the gasket between the heater and the mounting surface as shown below.

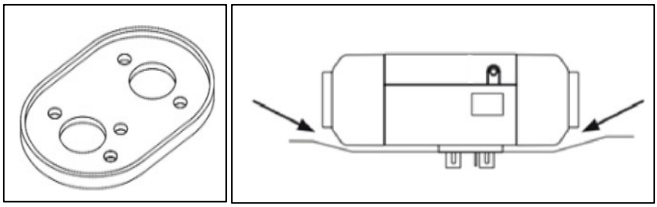


Figure. Heater Base Gasket and Installation

4. Cold- and Hot-Air System

⚠ WARNING:

- Insufficient clearance between the hot-air outlet and occupants can cause burns;
- Ensure that occupants cannot touch potentially hot surfaces;

■ Ensure that occupants are not directly exposed to the heater's hot-air stream;

■ Draw the heater's cold intake air from a clean area to prevent combustion exhaust from entering the cold-air intake duct.

NOTE:

■ Keep the pressure loss between the inlet and outlet ducts below the specified limit of 2 hPa. Exceeding this limit will reduce heating output.

■ Do not integrate the heater with the vehicle's air system.

■ The heater automatically adjusts its output to meet the heating demand.

4.1. NOTE

Do not connect the heater's cold- and hot-air system to an externally controlled air-distribution system, such as the vehicle air conditioner.

4.2. Temperature Control:

The heater adjusts its heating output based on the room-temperature sensor reading and the target temperature set on the control panel.

Installation location requirements: Keep the air inlet and outlet clean, and ensure that debris cannot block the inlet and outlet ducts.

⚠ Hot-Air Intake Installation:

■ Do not draw in hot air from the vehicle's own heating system;

■ Do not draw in exhaust gases from the heater;

■ Select an installation location protected from splashing water and water spray;

■ Install the heater above the vehicle's maximum permitted wading depth.

Hot-Air Outlet Installation:

■ Ensure that occupants cannot touch potentially hot surfaces;

■ Do not allow occupants to remain directly in the heater's hot-air stream;

■ Do not place heat-sensitive components directly in the hot-air stream.

Post-Installation Checks:

■ Check whether the temperature of the cold air entering through the vehicle heater is too high.

■ Check for air recirculation between the heater's cold-air inlet and hot-air outlet (prevent air from the hot-air outlet from flowing directly into the inlet).

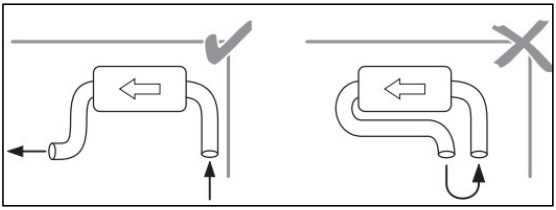


Figure. Cold-Air Inlet and Hot-Air Outlet

4.3. Cold- and Hot-Air Ducts

Hot-air duct material and dimensional requirements:

Continuous temperature resistance	Minimum 130°C (150°C for short periods)
Recommended inside diameter	75 mm

Cold- and hot-air duct installation requirements:

- Ensure that the cold-air inlet, hot-air outlet, and cold- and hot-air ducts are installed in the correct orientation;
- Secure the cold- and hot-air ducts at all connections;
- Install the cold- and hot-air ducts to provide the lowest possible airflow resistance.

5. Fuel Supply

NOTE:

- Install the heater and fuel metering pump at approximately the same height as the fuel tank;
- Fuel may be supplied from the vehicle's fuel tank or a separate fuel tank.
- Affix a safety warning label at the fuel filler opening stating that the heater must be turned off before refueling.

5.1. Fuel Line

Use only steel or plastic fuel lines made of UV- and heat-resistant materials.

- Route the fuel line so that it is as short as possible.
- Protect the fuel line from damage when routing it. Route the fuel line through a low-temperature area
  to prevent heat-induced vapor bubbles.
- High fuel temperatures can cause the heater to malfunction.

5.2. Fuel Line-to-Hose Connection

The correct fuel line-to-hose connection is shown below.

Secure the hose at the specified intervals to prevent sagging. Avoid kinks, keep it

away from heat sources, and use heat shielding if necessary.

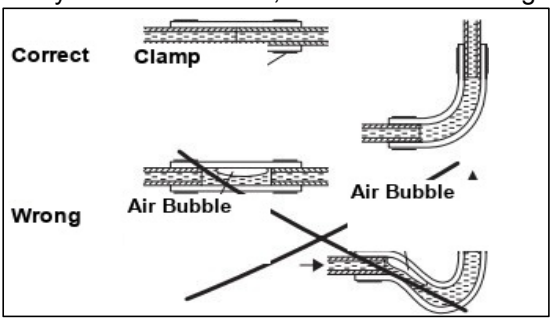


Figure. Fuel Line-to-Hose Connection

5.3. Fuel Metering Pump

The fuel metering pump combines fuel delivery, metering, and shutoff functions. Install it according to the specified requirements, as shown below.

Installation Location and Requirements:

- Install the fuel metering pump in a cool location as close to the fuel tank as possible.
- Do not install the fuel metering pump or fuel line in the heat-radiating area of high-temperature vehicle components. Install protective shielding if necessary;
- Ensure that the installation location is well ventilated;
- Install the fuel metering pump where it will not be damaged by mechanical impact or flying stones;
- Secure the fuel metering pump with a vibration-damping component, such as a rubber-lined clamp;
- Due to the risk of corrosion, use only genuine connectors between the fuel metering pump and wiring harness.

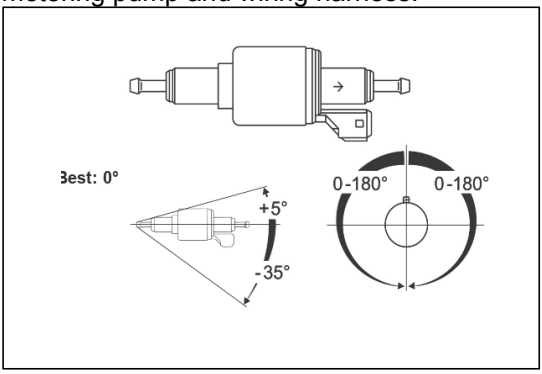


Figure. Fuel Metering Pump Installation Angle

5.4. Fuel Filter

Because the fuel may become contaminated, use only the genuine filter. Install it as horizontally as possible and observe the fuel flow direction.

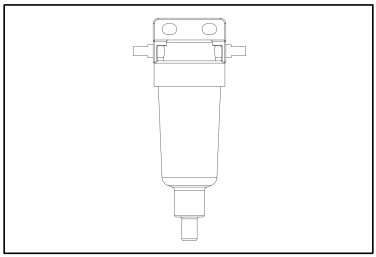


Figure. Fuel Filter

6. Combustion Air and Exhaust Systems

6.1. Combustion Air System

- Do not draw combustion air from an enclosed area occupied by people. The combustion air inlet opening must not face into the direction of vehicle travel. Position the combustion air inlet so that debris cannot block it;
- If the intake pipe is shorter than 0.6 m, installing an intake silencer is recommended;
- Draw combustion air from a cool location protected against splashing water. The combustion air inlet must not be below the vehicle's specified wading depth;
- Use only the supplied intake pipe.

6.2. Exhaust System

- The exhaust pipe must be made of non-alloy or alloy rigid tubing with a wall thickness of at least 1.0 mm, or flexible tubing made only of alloy steel;
- Secure the exhaust pipe to the diesel air heater with the supplied pipe clamp. The recommended exhaust pipe inside diameter is 24 mm. Use corrosion-resistant material.
- If an exhaust muffler is installed, do not attach it to components that are sensitive to high temperatures;
- Maintain sufficient clearance from components that are sensitive to high temperatures. Heat shields may be installed;
- When installing the exhaust muffler, condensate may drain through the exhaust muffler's condensate drain hole. Ensure that the condensate drain hole does not point toward heat-sensitive components.

6.3. Pipe Opening Direction

Route both the combustion air intake pipe and exhaust pipe downward, sloping away from the diesel air heater. Otherwise, drill a condensate drain hole with a diameter of 4 mm at the lowest point of the pipe.

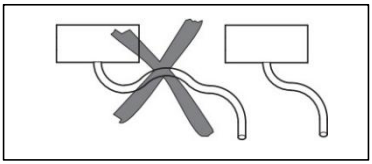


Figure. Preventing Condensate Formation

Do not point the pipe opening in the direction of vehicle travel.

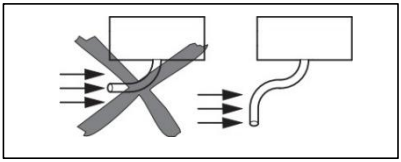


Figure. Pipe Must Not Point in the Direction of Vehicle Travel

Position the pipe so that debris cannot block it.

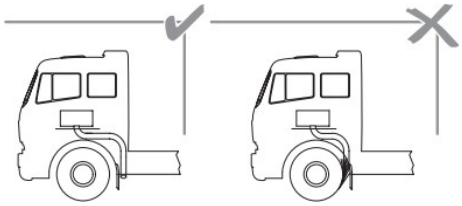


Figure. Preventing Debris from Blocking the Pipe

NOTE:

- The exhaust pipe must extend at least 10 mm beyond the vehicle floor;
- Secure the exhaust pipe no more than 150 mm before the exhaust outlet so that the exhaust gas is directed toward the ground at an angle of 90° ± 10°, as shown below.

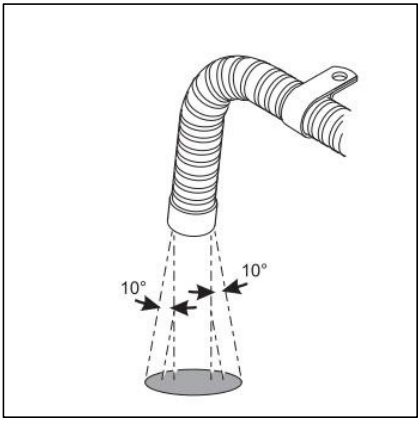


Figure. Exhaust Pipe Outlet Installation Requirements

Total Length of the Combustion Air Intake Pipe and Exhaust Pipe:

- With exhaust muffler: Maximum 2.0 m
- Without exhaust muffler: Maximum 5.0 m

If the exhaust pipe is longer than 2 m, insulate it to prevent the temperature from dropping below the dew point.

Recommended Pipe Inside Diameters:

- Combustion air intake pipe inside diameter: 25 mm
- Exhaust pipe inside diameter: 24 mm
- Minimum bend radius: 50 mm

Total Bend Angle:

- Combustion air intake pipe: Maximum 270°
- Exhaust pipe: Maximum 270°

7. Electrical Connections

NOTE:

- Insulate the ends of all unused wires;
- After the diesel air heater is turned off, the fan will continue to run until the housing temperature drops below 60 °C or for a maximum of 600 seconds to dissipate heat. Ensure that power is not disconnected during this shutdown cooling cycle. A battery disconnect switch or relay may be connected according to the wiring diagram.

7.1. Connecting the Diesel Air Heater

Connect the diesel air heater as follows:

- Connect the power supply to the vehicle's central electrical system;
- Connect the control panel using the existing connector on the diesel air heater wiring harness.

8. Maintenance

To prevent mechanical components from seizing, operate the diesel air heater for approximately 10 minutes every four weeks.

At the start of winter, replace summer-grade diesel fuel with winter-grade fuel, then run the heater at full power for 20 minutes.

Under normal conditions, the diesel air heater requires no routine maintenance. Have a trained technician inspect it at least at the beginning of each heating season, before severe weather makes the heater necessary.

After 3,000 operating hours or 3 years of use, perform the following maintenance to ensure reliable operation of the diesel air heater:

- Check the cold-air inlet and warm-air outlet for dirt and foreign objects. (Dirty or blocked cold- and warm-air ducts may cause overheating.)
- Clean the exterior of the diesel air heater (prevent water from entering the heater).
- Check electrical connectors for contact corrosion and ensure all connections are secure.
- Check the exhaust pipe and combustion air pipe for signs of damage, and ensure they are clean and free of foreign objects.
- Replace the fuel filter, if installed.
- Check the fuel line and fuel filter for leaks.



WARNING:

1. During operation, do not cover the air intake grille on the unit with clothing or other items. Keep the grille unobstructed and clean to ensure proper air intake.

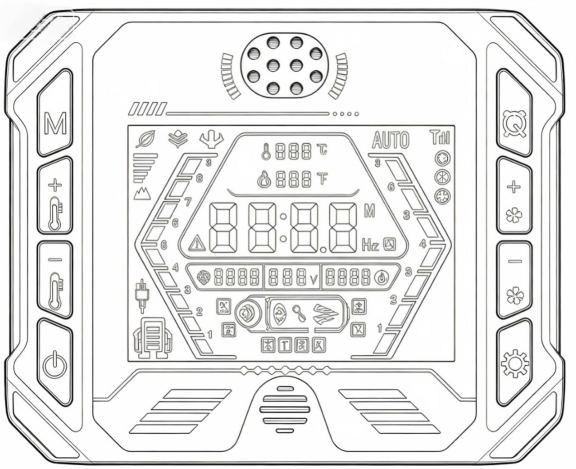
2. After turning off the heat, allow approximately 3-10 minutes for the fan to stop completely. Do not disconnect power at any time during this process! Disconnect power only after the shutdown cooling cycle is complete and the fan has stopped completely. When the control panel turns off, the unit is fully shut down.

3. Keep the exhaust pipe unobstructed. Direct the exhaust outlet away from flammable materials and from goods stored on the ground.

4. For optimal combustion, do not install the exhaust pipe vertically upward. Install

it horizontally or with a downward slope.

Control Panel Display Instructions-LCD Controller



DISPLAY DESCRIPTION			
Icon	Description	Icon	Description
	Diesel air heater operating in "Eco Mode"		Signal indicator
	Diesel air heater operating in "Standard Mode"		Altitude
	Diesel air heater operating in "Boost Mode"		Diesel air heater "Preheating During Startup"
AUTO	Diesel air heater operating in "Auto Mode"		Diesel air heater "Operating"
	Displayed while the fuel metering pump is operating		Diesel air heater "Shutdown Cooling Cycle in Progress"
	Fuel level indicator		Displayed when the diesel air heater malfunctions

	Displayed after timer operation		Displayed while the hot-air blower is operating
	Displayed while the glow plug is operating		Displayed while the combustion blower is operating
	Displayed after successful ignition		Ambient temperature display
	Displayed when the temperature unit is degrees Celsius		Displayed when the temperature unit is degrees Fahrenheit
	Operating parameter display		Housing temperature display
	Hot-air blower speed display		Combustion blower speed display
	Operating voltage display	/	/
	Voice prompts: English		Voice prompts: French
	Voice prompts: German		Voice prompts: Italian
	Voice prompts: Spanish		Voice prompts: Polish
	Voice prompts: Dutch		Voice prompts: Swedish

BUTTON FUNCTIONS			
	M Button		Timer Button
	Temperature "+" Button		Fan Speed "+" Button

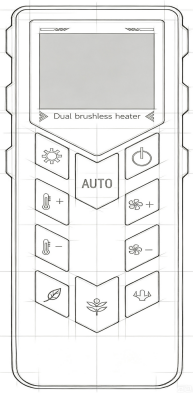
	Temperature "-" Button		Fan Speed "-" Button
	ON/OFF Button		Settings Button

OPERATING INSTRUCTIONS			
Action	**Parameter**	**Operating Method**	**Detailed Operating Steps**
Start	/	Press and hold the "ON/OFF" button	In standby mode, press and hold the "ON/OFF" button to start heating.
Shut Down	/	Press and hold the "ON/OFF" button	While the unit is operating, press and hold the "ON/OFF" button until "OFF" appears to shut down the unit. Do not operate this button during shutdown. Wait until the shutdown cooling cycle is complete and the unit has shut down successfully! NOTICE: Never forcibly disconnect power during shutdown. Otherwise, internal heat cannot dissipate completely, and a large amount of smoke will be produced when the unit is restarted. If this occurs, wait until the fuel inside has burned completely before resuming normal operation.
Mode Selection	/	Press the "M" button	Press the "M" button to cycle through Boost, Standard, Eco, and Auto modes.
Power Level Selection	/	Press the "Fan Speed +" or "Fan Speed -" button	Press "Fan Speed +" or "Fan Speed -" to adjust the power level. Eco Mode supports levels 1-9, Standard Mode levels 4-9, and Boost Mode levels 7-9.
Temperature Adjustment	/	Press the "Temperature +" or "Temperature -" button	In Auto mode, the default set temperature is 21 °C. Press "Temperature +" or "Temperature -" to adjust the temperature from 10-45 °C. (The set temperature is saved in Auto mode.)
View Parameters	/	Press the "Settings" button	When the heater is on, the power level appears by default. Press "Settings" to cycle through fuel-pump frequency, glow-plug power, altitude, total operating

			time, time remaining until scheduled shutdown, and time remaining until scheduled startup. The main screen returns after 20 seconds or when any button is pressed.
Switch Temperature Units	10-45 °C 50-113 °F	Press and hold the "M" button for 3 seconds	When the heater is on, Celsius is displayed by default. Press and hold the "M" button for 3 seconds to switch between Celsius and Fahrenheit. Leave the desired unit displayed for 5 seconds to confirm it automatically. The setting is retained when power is disconnected.
Operating Time	9999 minutes	Displayed during operation	The operating time is displayed during operation, up to 9999 minutes. Timing starts automatically when the heater is turned on, allowing real-time monitoring of operating time. After reaching 9999 minutes, the timer automatically resets to zero; the value is not retained when power is disconnected.
Manual Fuel Priming	Maximum countdown: 200 seconds	Press the "Settings" button 5 times in succession	In standby, press "Settings" 5 times to start the 200-second fuel-priming cycle. The screen shows a countdown. When fuel reaches the glow plug, the heater ignites and starts automatically. Press any button to stop priming early. The heater may continue running briefly after priming stops; this is normal.
Remote Control Pairing	/	Press the "Settings" button 3 times in succession	When power is connected for the first time, press the "Settings" button 3 times to enter remote control pairing mode. The screen displays "315." While "315" is displayed, press the "Settings" button on the remote control to complete pairing.
Timer Settings	Maximum: 24 hours	Minimum operating time: 5 minutes	In standby, press and hold the "Timer" button for 2 seconds to set the scheduled startup time. Press "Fan Speed +" or "Fan Speed -" to select 5 minutes, 10 minutes, 20 minutes, or 30 minutes; each subsequent press adjusts the time by 30 minutes, up to 24 hours. Leave the time displayed for 5 seconds to confirm the startup time automatically. Set the value to 0 to cancel the timer. When the heater is on, press and hold the "Timer" button for 2 seconds to set the scheduled shutdown time. Press "Fan Speed +" or "Fan Speed -" to select 5 minutes, 10 minutes, 20 minutes, or 30 minutes; each subsequent press adjusts the time by 30 minutes, up to 24 hours. Leave the time displayed for 5 seconds to confirm the shutdown time automatically. Set the value to 0 to cancel the timer. Note: When the timer is enabled, the colon in the

			center of the display flashes.
Change Language	Voice prompts for startup, shutdown, and fault codes	Default: English	When the heater is on, English is the default language. Press and hold “Settings” for 3 seconds to enter language selection mode, then press “Settings” to cycle through English, French, German, Italian, Spanish, Polish, Dutch, Swedish, or voice prompts off. Leave the desired option displayed for 5 seconds to confirm it. The setting is retained when power is disconnected.

Remote Control Operating Instructions



When the heater is powered for the first time, press “Settings” on the control panel 3 times to enter remote-control pairing mode. The screen displays “315.” While “315” is displayed, press “Settings” on the remote control to complete pairing.

BUTTON FUNCTIONS

	ON/OFF Button		Settings Button
	Temperature "+" Button		Fan Speed "+" Button
	Temperature "-" Button		Fan Speed "-" Button
AUTO	Auto Mode		Energy-Saving Mode
	Standard Mode		High-Power Mode

Maintenance

1. Routine Inspection

Observe the exhaust while the heater is running. A faint white exhaust plume may be normal; black smoke indicates carbon deposits in the combustion chamber and requires prompt cleaning.

Regularly inspect the fuel system and fuel lines for deterioration, leaks, kinks, or blockages. Keep the fuel tank clean and use winter-grade diesel fuel in cold weather.

Inspect electrical connectors, plugs, and wiring harnesses for looseness, surface damage, or oxidation. Make sure all retaining clips are securely installed.

Make sure the fan operates without unusual noise or stopping. Keep the air inlet and outlet unobstructed and free of foreign objects.

2. Cleaning Carbon Deposits (Maintenance Procedure for Black Smoke)

Turn off the unit, disconnect the power supply, and wait for the diesel air heater to cool completely.
Remove the unit housing.
Use a hex key to remove the main control board mounting bolts.
Remove the four mounting bolts from the fan assembly.
Remove the four combustion chamber bolts, then remove the combustion chamber.
Clean any carbon deposits from the combustion chamber. If carbon buildup is severe, replace the entire combustion chamber assembly with a new one.
Reinstall all components in the reverse order of removal and tighten all bolts.
Then reconnect power and test-run the unit.

3. Periodic Maintenance

Annually or at the start of each heating season: Remove carbon deposits and debris from the combustion chamber, exhaust pipe, and combustion-air intake pipe.
Beginning in the second year of use: Check carefully for carbon deposits and inspect the fuel-filter element; replace the fuel filter and glow plug as necessary.
For long-term storage: Drain residual diesel from the fuel lines, disconnect power, and store the unit in a dry, dust-free location.

Troubleshooting Table

Fault Code	Cause	Solution
E-01	Power Supply Voltage Too High	1. Inspect the power supply and check whether the voltage at the power supply terminals is normal; 2. If the voltage at the power supply terminals is higher than 32V, the power supply is abnormal. Adjust the supply voltage; 3. If the power supply is normal, replace the controller.

E02	Power Supply Voltage Too Low	1. Check the power source. Use 12 V or 24 V DC with at least 15 A available and a rated power of at least 150 W. Minimum startup voltage is 9 V for a 12 V system and 18 V for a 24 V system. Use a suitable power adapter, battery pack, converter, or equivalent source that meets these ratings. Do not use makeshift clamps or fasteners between the battery and wiring; poor contact can cause faults. If extending the harness, use conductors with a cross-sectional area of at least 2 mm^2 to limit voltage drop. If the heater still does not operate, measure voltage and current at both the power source and heater-harness terminals.
E03	Fuel Metering Pump Open Circuit	1、Check the fuel metering pump connector for damage or dislodged terminals, and inspect the fuel metering pump wiring harness for broken wires; 2、Check whether the fuel metering pump plug is loose. Disconnect and reinstall it to confirm. If none of the above issues are present, replace the fuel metering pump.
E04	Fuel metering pump short circuit	1、Check whether the fuel metering pump wiring has been pinched, damaging the insulation and causing a short circuit; 2、If there is no short circuit, replace the fuel metering pump; 3、If replacing the fuel metering pump does not resolve the problem, replace the controller.
E05	Glow plug open circuit	1、Check that the glow plug connector is fully seated and not loose; 2、If it is fully seated, remove the glow plug and check it for damage. 3、If the glow plug is damaged, replace it; 4、If the glow plug is operating normally, replace the controller;
E06	Glow plug short circuit	1、Check the glow plug wiring for damaged insulation that may be causing a short circuit; 2、Carefully inspect the protective sleeves on the center and side electrodes at the base of the glow plug for damage that may be causing a short circuit; **3、**If there is no short circuit, check the glow plug for damage; **4、**If the glow plug is operating normally, replace the controller.
E07	Abnormal hot-air blower speed	1、Check that the entire unit is securely fastened and properly installed; 2、Check whether the hot-air blower is rubbing against the housing and causing abnormal fan speed; 3、If the fan is not obstructed, replace the motor assembly.

E08	Hot-air blower short circuit	1、Check whether the hot-air blower wiring has been pinched, damaging the insulation and causing a short circuit; 2、If the wire harness insulation is intact, inspect the connector housing and the inside of the motor; 3、If no abnormalities are found, replace the controller;
E09	Diesel air heater flameout	1、Check for air in the fuel line and verify that the fuel flow through the line is continuous; 2、Check the fuel line for damage that could cause a fuel leak; 3、Check whether the fuel tank is out of fuel;
E10	Ignition failure	1、Check that fuel is present in the fuel line. 2、If combustion is present but the code remains, inspect the flame sensor and replace it if damaged. 3、If ignition does not occur, blow compressed air through the intake and exhaust openings, clean the combustion chamber thoroughly, and restart the unit.
E11	Overheat Warning	The temperature sensor detects whether the aluminum housing surface temperature has reached or exceeded 295 °C and activates the overtemperature protection mechanism. Carefully check whether the air inlet duct, hot-air outlet duct, or exhaust pipe is bent or excessively long. These conditions can restrict exhaust flow and prevent proper heat dissipation.
E12	Temperature sensor open circuit	1、Check that the temperature sensor connector is fully seated and not loose; 2、If it is fully seated, check the wiring for an open circuit; 3、If no problem is found, replace the temperature sensor; 4、If the problem remains after replacing the temperature sensor, replace the controller.
E13	Temperature sensor short circuit	1、Check the temperature sensor wiring for damaged insulation and a short circuit; 2、If there is no insulation damage or short circuit, replace the temperature sensor; 3、If the problem remains after replacing the temperature sensor, replace the controller.
E14	Communication lost	1、Check the control panel communication wire (blue wire) for damage; 2、Check whether any connector terminals have come loose; 3、If everything is normal, replace the control panel; 4、If the fault remains after replacement, replace the controller.

E15	Air inlet temperature too high	Check the ambient temperature around the control panel. If the fault code remains displayed when the ambient temperature is below 65 °C, replace the control panel;
E16	Abnormal combustion blower speed	1、Check whether the combustion blower impeller is contacting the combustion chamber U-shaped rubber plug/asbestos gasket, causing the motor to stop or operate abnormally; 2、If the combustion blower impeller is not obstructed, replace the motor assembly.
E17	Combustion blower short circuit	1、Check whether the combustion blower wiring has been pinched, damaging the insulation and causing a short circuit; 2、If the wire harness insulation is intact, inspect the connector housing and the inside of the motor; 3、If no abnormalities are found, replace the controller;
E18	Combustion blower open circuit	1、Check that the combustion blower connector is fully seated and not loose; 2、If it is fully seated, check the combustion blower wire harness for broken wires; 3、If there are no broken wires, replace the motor assembly; 4、If replacing the motor assembly does not resolve the problem, replace the controller.
E19	Hot-air blower open circuit	1、Check that the hot-air blower connector is fully seated and not loose; 2、If it is fully seated, check the hot-air blower wire harness for broken wires; 3、If there are no broken wires, replace the motor assembly; 4、If replacing the motor assembly does not resolve the problem, replace the controller.
E20	Combustion blower circuit fault	Replace the controller.
E21	Hot-air blower circuit fault	Replace the controller.
Installation Guide	The exhaust pipe surface temperature is approximately 752°F. During installation, take special care to prevent contact with flammable	1. Ensure that no flammable materials are present around the exhaust pipe or the muffler outlet, and use insulating material for protection. Never drill holes or install mechanical equipment on a wood floor. The exhaust pipe surface temperature is approximately 752°F (400°C). 2. Do not use adhesives that cannot withstand high temperatures. This prevents toxic exposure from fumes. Also prevent flammable materials from igniting and causing a fire. 3. Installation location: ① Leave 4 inches of clearance at the

	materials.	air inlet to ensure unrestricted airflow; ② Keep the bottom exhaust pipe 2 inches above the ground, and prevent fire when the exhaust pipe is hot; do not bend the exhaust pipe excessively, as this may restrict exhaust flow; ④ Do not use an excessively long exhaust pipe or make too many bends, as this can prevent effective heat discharge and cause an overtemperature fault; when adding fuel, prevent fuel from entering the housing. Otherwise, the fuel may flow through the inside of the unit to the exhaust pipe and produce smoke; when refueling, the fuel level should be near the fuel tank opening; do not block the air intake pipe, as this may cause an insufficient oxygen supply or diesel air heater failure.
Accessory Changes	Do not use materials that are not heat-resistant or rubber seals that may produce odors or pose a poisoning risk.	1. Exhaust pipe extension modification: Use pipe made of the same material or a heat-resistant material. Keep the total length within 2 meters and avoid sharp bends to prevent overheating. 2. Exhaust pipe modification and extension: Use pipe made of the same material or heat-resistant stainless steel. Keep the total length within 2 meters and do not use sharp bends. Route the pipe downward to the outside. Never create multiple upward bends that could impair exhaust flow and heat dissipation. (The exhaust pipe can reach an operating temperature of approximately 752°F. Never drill an installation hole through a wood floor or use rubber seals that are not heat-resistant; doing so may cause odors and pose a poisoning risk.)
White Smoke Emission	Unexpected Power Loss/Excessive Manual Fuel Priming	1. Manual priming: Excess fuel inside the unit will prevent ignition and produce white smoke. Prime the fuel inlet, and then stop adding fuel. If too much fuel has been added, disconnect the fuel line and restart the unit 2-3 times. Reconnect the fuel line after normal operation is restored. Alternatively, use a hair dryer to blow air continuously into the fuel inlet line until normal operation is restored. 2. Unexpected power loss during operation: During normal operation, press the "Power Switch Button." The display should show "OFF," and the unit will begin shutting down. Do not operate this button during the shutdown process. Wait until the fan has stopped completely before turning off the unit fully and disconnecting the power. Never forcibly disconnect the power during the shutdown cooling cycle. Otherwise, internal heat cannot dissipate completely, and the unit will produce a large amount of smoke when restarted. If this occurs, wait until the interior has cooled completely before resuming normal operation. 3. Refer to the troubleshooting procedures for fault codes E-01/E-02.
Black Smoke	Insufficient Oxygen Intake	1. Check whether the operating altitude exceeds the calibrated parameter range. Insufficient oxygen intake may

	or Carbon Buildup in the Combustion Chamber	cause ignition failure and black smoke. 2. Check the combustion air intake pipe for blockages that could restrict the oxygen supply. 3. Insufficient clearance around the combustion air inlet will restrict airflow. 4. Refer to the checks for fault codes E-01/E-02. Low power-supply voltage/current prevents the glow plug from generating sufficient heat, causing ignition failure and black smoke. 5. Disassemble the unit's combustion chamber and check for carbon buildup. Replace the combustion chamber promptly if necessary.
Blue Smoke	Poor Fuel Quality	Use only high-grade diesel fuel. Never use blended diesel, other types of fuel, or fuel that is not fresh. In winter, use diesel fuel rated for low temperatures;
Diesel Fuel Leak	Damaged Fuel Tank/Fuel Line or Side-Mounted Installation (Side-mounted installation is prohibited)	1. Inspect the fuel tank and fuel line. Check the fuel tank outlet fitting for damage or cracks that could cause a fuel leak. 2. When adding diesel fuel, do not spill fuel onto the unit housing. Fuel may seep inside and produce smoke due to the high internal temperature during operation. 3. Do not install the diesel air heater on its side. Fuel will flow out through the oxygen port on the glow plug side. Install the heater with the combustion air inlet/exhaust outlet facing downward; 4. Poor-quality fuel can clog the glow plug atomizing screen in the combustion chamber, allowing the ignition mixture to leak through the exhaust pipe. Replace the glow plug atomizing screen and use high-grade diesel fuel.
No Fuel Delivery or Heat Output	Bent Fuel Line	Check the fuel line for kinks or bends that may restrict fuel flow.
Fuel Flows Out of the Exhaust Pipe	Overpriming, Clogged Atomizer Screen, or Abnormal Voltage	1. During manual priming: Excess fuel inside the unit will prevent ignition and produce white smoke. If excessive pumped fuel fills the combustion chamber, it will flow out through the exhaust pipe. Prime the fuel inlet, and then stop adding fuel. If too much fuel has been pumped, disconnect the fuel line and restart the unit 2-3 times. Reconnect the fuel line after normal operation is restored. Alternatively, use a hair dryer to blow air continuously toward the fuel inlet line until normal operation is restored. 2. Clogged glow plug atomizing screen: Remove the glow plug, take out the internal atomizing screen, and check it for blockage. Clean or replace it immediately.
Fuel Flows into the Combustion Air Intake Pipe	Incorrect Orientation or Excessive Priming	1. During manual priming: Excess fuel inside the unit will prevent ignition and produce white smoke. If excessive pumped fuel fills the combustion chamber, it will flow out through the combustion air intake pipe. Add fuel through the inlet, and then stop priming. If too much fuel has been pumped, disconnect the fuel line and restart the unit 2-3

		times. Reconnect the fuel line after normal operation is restored. Alternatively, use a hair dryer to blow air continuously into the combustion air intake pipe until normal operation is restored. 2. Do not install the diesel air heater on its side. Fuel will flow out through the oxygen port on the glow plug side. Install the heater with the combustion air inlet/exhaust outlet facing downward.
Exhaust Pipe Overheats and Glows Red	Combustion Chamber Failure	Shut down the unit immediately. Remove the aluminum housing and check whether the combustion chamber is sealed, or replace the combustion chamber.
Abnormal Noise	Insufficient Exhaust Flow	Foreign objects blocking the exhaust pipe will impair exhaust performance. Shut down the unit immediately and inspect the exhaust pipe, muffler, and exhaust outlet for blockages. Remove any blockage promptly before resuming normal operation.
Diesel Fuel Odor	Fuel Leak/Incorrect Fuel	1. Use only high-quality diesel fuel. Never use blended diesel, other types of fuel, or fuel that is not fresh. In winter, use diesel fuel rated for low temperatures. Other fuels may produce odors. 2. Remove the unit housing and inspect the interior for fuel leaks. Replace the affected components promptly.
Plastic Odor	Use of Third-Party Accessories	1. Use heat-resistant accessories for any extension or modification. If the diesel air heater overheats, it may produce an unpleasant, irritating odor. 2. Do not install tubing with bends or excessive length. Otherwise, heat cannot dissipate effectively, causing excessive internal temperatures and a plastic odor. 3. The exhaust pipe can reach an operating temperature of approximately 752°F. Never drill an installation hole through a wood floor or use rubber seals that are not heat-resistant. Doing so may cause odors and pose a poisoning risk.
Service Required	Smoke/Insufficient Heating	If the diesel air heater produces black smoke or insufficient heat after operating for some time, carbon has built up in the combustion chamber. Clean or replace the combustion chamber promptly.
Blown Fuse	Short Circuit or Power Interruption	1. Remove the fuse and inspect it for damage. Replace the fuse if damaged. 2. Check for a short circuit between the positive and negative terminals. If a short circuit is present and the main control board is damaged, replace the main control board.

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