



*Craft A Camper*

# **DIESEL HEATER**

## **USER MANUAL V1.0**

**Page 1: The Basics**

**Page 2: Dos & Don'ts**

**Page 3: Using the Heater**

**Page 4: Heater Modes**

4:1: Fan Mode

4:2 Thermostat Mode

**Page 5: Timer Functions**

5:1 Setting an "ON" timer

6:1 Setting an "OFF" timer.

**Page 7:1: Alpine Mode**

**Page 7:2: Controller Switch**

**Page 8: Fuel Pump & Priming**

8:1: Priming the Pump

8:2 Replacing the Pump

8:3 Fuel Pickup & Usage

**Page 9:1: Controller Labels**

**Page 9:2: Remote Fob**

**Page 10: Faults**

10:1 Fault Codes

10:2 Common Faults

**Page 11: Contact Info**





# THE BASICS!

## WHAT YOU NEED TO KNOW:

This page should go through the basics of what the install engineer would have explained plus some additional numbers and info. We'd recommend reading the dos and don'ts on the next page (2) too.

Firstly, to turn the heater on, simply hold the power button on your wall mounted controller for 3 seconds or hold the ON button on the little remote fob you will have been given. This'll now begin a start up procedure of the heater, this may take 5 or so minutes.

There are 2 different settings you can run your heater on. The default fan speed setting will display 1 through 6 with the higher number being a more powerful setting. The other setting being a thermostat mode, this setting can be a little tricky to understand but please see section 4:2 for more details on this. To change between the thermostat and fan speed setting, all you have to do is hold the settings button in the top left corner of your wall mounted controller for 3 seconds.

To turn the heater off, hold the power button again until OFF appears on the LCD screen. The heater will now start running a cool down cycle which will usually last 5 minutes. You will not be able to turn the heater on or change any settings during the cool down cycle. Once the heater has fully turned off, the fan will stop, and the display will now show the battery voltage with a little red icon in the bottom left.

Depending on your install, you might have a little black rocker switch. These are used to turn the display off on your wall mounted controller while you're not using the heater. Although these displays do dim down slightly after a few seconds of no input, they can still be quite bright if you're driving or sleeping at night, annoying! Think of this switch like your TV at home with the red standby light, if you want to get rid of that you turn it off at the wall and this switch is basically the same principle. It is not there to save on battery life and it's not something you ever NEED to turn off, it's simply there if the controller backlight is annoying you! Unfortunately, this switch will HAVE to be on if you're using the heater. (See section 7:2)

On your remote fob, you'll have 4 buttons. These are all labelled and should do as they say. You may have to hold the ON/OFF buttons for a few seconds for it to register. If your key fob isn't linked to the controller, you can link it by holding the "ON BUTTON" and "DOWN ARROW" simultaneously until the letter "OC1" appears. Then simply hold the "ON" button for 3 seconds on the remote fob and it should be linked. Please note that this cannot be done while the (heater running. You can link more than 1 remote fob by changing the OC channel. See section 9:2)

You may hear a small clicking noise under the van. This is the fuel pump for the heater and is a normal function and nothing to worry about. Most fuel pumps will be installed with a quieter mounting (depending on vehicle) but the pumps will be heard most if the heaters running on a low setting. The diesel heater is very efficient on fuel, you could leave it running all night and will notice little movement on the fuel tank needle. The heaters should pick up fuel all the way into the red but will always run out of fuel before the vans engine. For the reliability of the heater, try keep the tank above 1/4. (If you run below the level of fuel for the heater, please see section 8:1).

**Please make sure you have a functioning carbon monoxide alarm in your vehicle at all times, even when not using the heater.**

## DOS & DON'TS!

# PRECAUTIONS & MAINTENANCE:

2:1 Monitor Start Up Procedure: After every drive of the vehicle, you must monitor the heater for at least 15 minutes on its first startup. Due to conditions out of our control things might become damaged or loose under the vehicle which could cause various problems on startup. If you hear or smell anything irregular the heater must be inspected further. In the event of dense white smoke please follow step 8:1 below. It's common to fail startup on the first use in a while and the smoking will be a cause of the heater hitting air pockets in the fuel line - this will clear.

2:3 Use regularly: We advise running the heater on full blast once a month for at least 30 minutes. This will help clear any condensation, soot issues and help keep the unit lubricated. This will also help catch any age related issues now rather than your first trip away in the next colder season. Prolonged non-usage is the leading cause to faulty units.

2:4 Safe Usage: Do not use the heater while your vehicle is parked inside a garage or building. It is not advised to use the heater while having an awning rolled out. Carbon monoxide alarms are a must for any unventilated area of living. Do not use the heater while parked on steep inclines of more than 15%, this includes driveways but is nothing to worry about while driving. Use extra care when using the heaters in areas with little to no wind, gases may become trapped under the vehicle and build up to enter through manufactured gaps outside of our control - this is more of an issue on older vehicles.

2:5 Keep Vents Clear: Do not block any heater vents while in use. It's important the intake vent at the back of the heater is kept clear and the heater vent also be allowed free flow. Do not block vents to dry/warm things like clothing, shoes or body parts ect.

2:6 Do Not Disconnect Power: The most important rule is to keep power to the heater unit. Never disconnect the fuse, battery or any part of the heater while running. When the heater turns off, it's a must to allow it to run a cooldown cycle, this can take 5+ minutes. You WILL damage or melt internal parts if this cycle is not performed. If the heater becomes faulty during use, turn off using the display and still wait for the unit to cool before disconnecting power.

2:7 Monitor Battery Level: Do not use the heater on low, discharged or damaged batteries. If the heater displays E2 during startup or usage, you will need to get more charge in your battery before using the heater. The heater does have a built in cut off if the battery level gets too low (under 8v) but factors with the battery can still prevent an adequate cool down of the heater when this cutoff is triggered.

2:8 Refuelling: The heaters can be used while driving in most scenarios, but law prohibits the usage while refuelling the vehicle, this won't damage the unit.

# USING THE HEATER:

# KEEPING IT SIMPLE!



Step 1: Turning the heater on - Hold the power button circled in red above for 3 seconds. You can also hold the ON button on your wireless remote fob.



Step 2: The heater will now begin a start up procedure. This may take 5 mins to generate any noticeable heat and you may notice a fumes smell during this process, this is normal.



Step 3: Choosing your heating mode - See section 4 below for more details on this. Use the Up and Down arrows on the right side to change the fan speed or temperature. The blue bars in the middle of the display represent the speed the units running at. The number in the top left corner will also show the current room temperature.



Step 4: Turning the heater off - To turn the heater off, hold the Power Button again for 3 seconds or until the display shows "OFF". The fan will remain on for 5 minutes or until the unit is cool enough. You will not be able to change any settings or turn the heater back on until this cycle has finished.



Step 5: Once the heater fully turns off, it'll show the above screen, this is your battery voltage, this will always show with the red symbol in the bottom left.



Step 6: More details on this switch in section 7:2. This switch will have to remain on if the unit is running.



# HEATER MODES:

## 4:1 FAN OPERATION



The default setting on your heater will be a fan speed operation. Once you turn the heater on it'll display "H (1-6)" in the middle. Use the arrows (circled in red) to turn the heater up and down. The system will run from 1-6, with the higher number being a faster speed. This is a very basic setting and is what the majority of people tend to use. The heater will continue on your set fan speed until you turn it off or tell it otherwise. It will take a moment to adjust to any change.

## 4:2 THERMOSTAT OPERATION

To change between the thermostat mode and fan speed, simply hold the settings buttons in the top left of your wall mounted controller for 3 seconds (Circled in red on the right). Now you should see a temperature displayed in the middle. Using the same arrows will change the vans set temperature instead of the fan speed. There is a temperature range of 5oc to 40oc. The temperature in the middle is the preset and the temperature displayed in the top left is the current temperature.



There is a few misconceptions with the thermostat mode. It's an always on system, so the heater WON'T turn itself on/off automatically but it will speed up and slow down as the temperature fluctuates inside the vehicle. Once the heater reaches the temperature you set, it'll start to slow down and basically idle at the very lowest setting until the temperature falls below your set temperature where it will slowly speed up again. In the warmer months or even on the warmer winter nights, you might find that even when the heater has reached the set temperature and is running at the lowest setting it may still be generating more heat than the vans losing. We'd advise adding some airflow by opening a few windows or roof vents but if it's too hot inside, you may need more user input and turn the heater off and on yourself. The reason it doesn't turn itself on and off automatically is because on startup the heater uses the most battery power, if it had to turn on 15 times a night, you'd likely end up with a flat battery and it's just not the most efficient way of working. The thermostat will function better the colder it is outside and will perform best in the larger vehicles. Smaller vehicles may not lose heat quick enough for the heater to reasonably control.

You as the user will learn what suits your van, you'll learn how quick it warms up and how the heater performs with different external temperatures. Some people choose to have the heater preset on the maximum fan speed (as seen in section 4:1) and turn the heater off when they're comfortable and others may choose to run the heater on a thermostat 24 hours a day for the entire winter season. It is up to you to find what's best for your needs.

# TIMER FUNCTION:

## 5:1 Setting A Turn On Timer:

The timer function on these heaters can be tricky to understand. It might not be valuable for everyone but perfect for customers who use their vans regularly and want the vehicle to be warm before you wake up in the morning without the need to run the heater overnight. Now, the way the timer works is on a countdown rather than entering a specific time. For example: if its currently 23:00 and you want the heater to turn on at 08:00 you will need to enter how many hours and minuetts it is until 08:00. So, using the instructions below you'd enter 09:0 into the heater because in 9 hours time it'll be 08:00. A very useful trick is to ask Siri (or google) "how long until \*time you want the heater to turn on\*" and it'll tell you the exact time to enter into the controller. This may all make more sense after reading through the step by step guide below.



Step 1: With the heater OFF - Hold the "OK" and "DOWN ARROW" simultaneously until ##.##H appears. You should see a clock flashing with "ON" at the top of the screen.



Step 2: Now input the countdown timer. Cycle through the digits using one tap of the power button. How the numbers work are Hours:then the third number is decimal hours, so each "1" represents 6 minuets.



Step 3: Press the OK button to save the time you input. This will take you back to the Home Screen. You've now set the timer but still need to put the heater in timer mode.



Step 4. The countdown will only begin once you set the heater to timer mode. Hold the "SETTINGS BUTTON" and "UP ARROW" at the same time until a little clock appears next to the temperature, this should flash "ON".

Now the heater will begin a countdown timer to turn on. Note from above in step 2 that inputted was 08.0. This means the heater is set to come on in 8 hours time from whatever time its activated. The heater will remember the last time inputted so on the next setup you can jump straight to step 4. Remember that the number after the decimal is a decimal hour. So .1 would be 6 minuets, .2 would be 12 minuets, .3 would be 18 minuets and so on. The turn on timer can only be activated while the heater is not running.



# TIMER FUNCTION:

## 6:1 Setting A Turn Off Timer:

The timer function on these heaters can be tricky to understand. It might not be valuable for everyone but perfect for customers who use their vans regularly and want to leave their heaters running to turn off automatically after a preset time. Now, the way the timer works is on a countdown rather than entering a specific time. This differs to the turn on timer as you set this one while the heater is running. For example: regardless of what time it currently is, you simply enter the amount of hours you want the heater to run for before it'll turn off. So using the instructions below you'd enter 01:0 into the heater to turn off in 1 hours time. This may all make more sense after reading through the step by step guide below. This is separate to the turn on timer and they unfortunately can't be combined to work together.



Step 1: With the heater ON - Hold the "OK" and "DOWN ARROW" simultaneously until ##.## appears. You should see a clock flashing with "OFF" at the top of the screen. If it flashes with "ON" press the settings button once to change.



Step 2: Now input the countdown timer to turn off at. Time can be done when the heaters running too, and the time input works the same as step 2 on the previous page. This OFF timer will start from whenever its activated in step 4.



Step 3: Press the OK button to save the time you input. This will take you back to the Home Screen. You've now set the timer but still need to put the heater in timer mode.



Step 4: With the heating running. Repeat step 4 from the previous page and the clock will now flash with "OFF". This has begun your timer. To turn off.

Now the heater will begin a countdown timer to turn off. Note from above in step 2 that inputted was 01.0. This means the heater is set to turn itself off in 1 hours time. The heater will remember the last time inputted so on the next setup you can jump straight to step 4. Remember that the number after the decimal is a decimal hour. So .1 would be 6 minutes, .2 would be 12 minutes, .3 would be 18 minutes and so on. The ON/OFF timers are separate and cannot be run together.

# 7:1 ALPINE MODE:

## 7:1 What does alpine mode do?

Alpine mode is designed for use at high altitude. Nowhere in the UK or even Europe will require you to use this mode. It can severely damage the unit if used incorrectly. What it does is reduce the amount of fuel sent to the unit to compensate for the thinner air. If this fuel to air ratio is modified when it's not needed, the unit won't be burning cleanly and will eventually soot up causing a smokey exhaust, unusually high levels of carbon monoxide and have the potential to damage the unit beyond repair. If this mode is accidentally activated, please deactivate alpine mode.



Step 1: Hold the "Settings Button" and "Ok Button" simultaneously until the mountain symbol has disappeared.



Step 2: The mountain symbol should've disappeared. This can be done with the heater on or off.

# 7:2 CONTROLLER SWITCH:



Most installations will come with a switch next to the controller. This switch is like a "summer switch". The purpose is to cut the power to the display when you're not using the heater. This use is optional and its mainly to prevent the bright LCD light when you're driving or sleeping at night. It's not necessarily there for the battery drain. It never has to be turned off, it's just an option. Think of it like your TV at home with the red standby light, if you want to get rid of that, you turn it off by the wall, this is the same principle. This switch will unfortunately have to remain on if you are using the heater but it will prevent the remote from working or the heater turning on with accidental input.

Not all installs will come with a switch. There are different ways of installing this switch but the installer will have explained if it differs from the above. Please seek advice from your installer if you have any questions or concerns regarding this.



# FUEL PUMP INFORMATION:

The fuel pump is a little cylindrical silver/gold component under the vehicle. The heater communicates to the pump to provide the correct amount of fuel for the setting you're currently running on. You may hear a ticking noise from this, this is a normal function but may be heard more when the heaters running on a low setting.

## 8:1 Priming the fuel pump:

If you're having a E:8 fault with the heater, it's likely the heater has air in the fuel line. The best way to prime the fuel lines would be to make sure the vans parked flat, you have enough fuel and then turn the heater on 4-5 times and let the start up cycle prime the fuel itself. You might get some white smoke from the exhaust, but this will clear. You can manually prime the fuel by holding down the "UP ARROW" and "DOWN ARROW" at the same time BUT this is never advised. Doing this can risk over priming the heater resulting in flooding the unit with fuel making it difficult to restart. Manual priming will only stop when you let go and has no automatic cut off. If the previous advice doesn't work, please just get in touch with us directly.

## 8:2 Replacing the fuel pump:

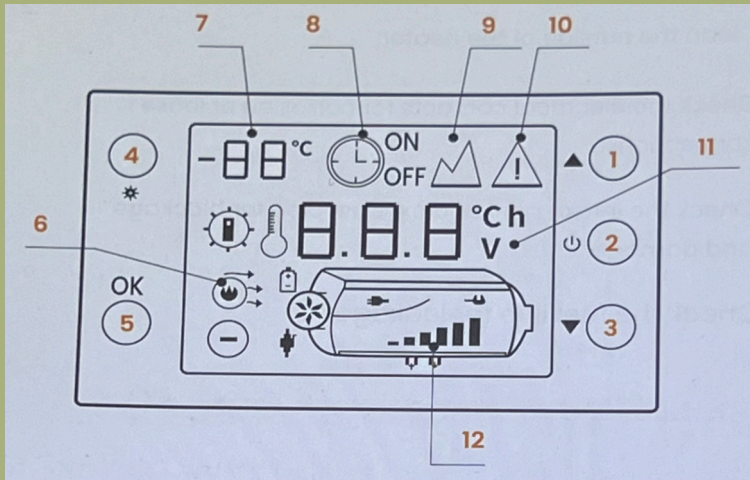
The fuel pumps are very reliable and rarely need replacing. They're held on (on most vans) with a rubber bracket which will likely need to be replaced before the pump itself. This is easy to replace. Undo the rubber hose connectors to the fuel pump with a 7mm socket or flat screwdriver and press the metal spring in to release the plug, you should then be able to slide the pump out the bracket. There will also be a 10mm nut and large washer holding the bracket in place.

## 8:3 Fuel Pickup and Usage:

These heaters are very efficient when it comes to their fuel consumption. Most won't even notice the fuel needle drop after usage and they can easily run all night using as little as 1 litre of diesel, even with the price of fuel at the time of writing this, that's good. To go through more detailed numbers: The heater would use around 130ml fuel an hour on its lowest setting (1), climbing to around 500ml on the highest (6).

The heaters are connected to the vehicles fuel tank with a separate pickup pipe (on most vans), keeping it completely separate to any feeds or return from the vehicle's engine. The heaters should pick up fuel all the way into the red but will always run out of fuel before the van - giving you the peace of mind it won't run the tank dry and you'll still be able to start the van after use. If the van isn't parked flat, the level of fuel pickup may differ, obviously when you're sleeping in the vehicle, you're going to try be on a flat surface anyway. For those keeping their vehicles on sloped driveways, it's advised to park flat or facing uphill if you're wanting to use the diesel heaters while low on fuel.

# 9:1 DISPLAY LABELS:



- |                    |                           |
|--------------------|---------------------------|
| 1. Up Arrow        | 7. Ambient Temperature    |
| 2. Power Button    | 8. Timer Symbol           |
| 3. Down Arrow      | 9. Alpine Mode            |
| 4. Settings Button | 10. Fault Active          |
| 5. OK Button       | 11. Display Option        |
| 6. Heater Mode     | 12. Running Part Graphics |



Normal Heater Off Screen



Running On Thermostat



Running On Fan Speed

While the heater is running you can change the display info by pressing the OK button to cycle through the modes. Pressing it once will show the internal case temperature of the heater. This will range from ambient all the way up to 220oc. Pressing again will show the supply voltage while running, similar to the Home Screen when the heaters not in use.



Case Temperature Display



Supply Voltage Display

# 9:2 REMOTE FOB:










Linking new fobs: While the heater is turned off. Hold the "Power Button" and "Down Arrow" simultaneously until the letters "OC#" appear. The number represents the channel, you can have more than one fob linked by changing the channel of each. While "OC#" shows, hold the "ON BUTTON" on the fob and it should link.



You will have to hold the ON/OFF buttons for 2 seconds for the remote fob to register your input. The fob has a range of up to 50 meter but this depends on obstructions and signal strength. The range may reduce with age. To replace the battery, undo the 3 small Philips screws and you'll see a small 27A battery - available widely in shops or on Amazon.



## 10:1 ERROR CODES:

CODE	ERROR MESSAGE	LCD	POSSIBLE FIX
E:1	Over Voltage		This usually means the battery being over charged either by a faulty solar charge controller or wrongly configured split charge system.
E:2	Under Voltage		Your battery is likely too low to safely run the heater. Try again with the engine running if you have a split charger or charge/replace the battery by other means.
E:3	Glow Plug		Sometimes relates to a low battery but if not will either be a glow plug or heater control board fault. Unlikely to be an immediate fix without replacement parts.
E:4	Fuel Pump		Try disconnecting the fuel pump and cleaning the connections by blowing. Could also be a faulty pump itself or on rare occasions a faulty controller.
E:5	Overheating		A rare fault either caused by a faulty temperature sensor or because the heater vent/s is blocked or needs cleaned. Make sure intake is clear of clutter.
E:6	Fan		If the fan doesn't turn on at all, it's either jammed on the heater housing or a replacement control board is needed. If the fan does turn it, it may be a faulty temperature sensor.
E:7	Controller		Try disconnecting power for 30 seconds, if not a new controller may be needed.
E:8	Fuel		The heater isn't receiving fuel, please see section 8:1 on a previous page.
E:9	Temperature Sensor		Can sometimes be related to a low battery, if not a new temperature will be needed.
E:10	Repeat Error		Usually a repeat of E:8 after multiple failed start ups. Follow advice in E:8.
- - -	Controller		The controller isn't receiving a signal from heater control board. Check blue wire at plugs. New controller/control board may be needed.

## 10:2 COMMON FAULTS:

**E8/E10 (FUEL ISSUE):** By far the most common fault this is usually easily fixed (See section 8:1). This error can be caused by a handful of reasons but more often than not its due to recent low fuel or prolonged driving without usage of the heater. Air can get trapped in the heaters fuel line as the fuel sloshes around in the fuel tank, this isn't something to worry massively about but can be prevented by keeping the fuel tank above 1/4 at all times. The heaters fuel pickup pipe is cut to length and reaches to about 1cm from the bottom of your fuel tank. As the fuel in the tank sloshes around, if the pickup pipe isn't in diesel it will lose its vacuum and fuel will slowly fall back in the tank. This fault code can also be caused by a faulty fuel pump, blocked fuel lines or low voltage.

**E3 (GLOW PLUG ISSUE):** Less common but more so with age, the glow plugs inside the unit can become old and trigger a fault due to low performance. These are required to start the heater up. These can also be caused by electrical faults with the heater control board due to power surges or extreme low voltage. They're easily replaced but do require a special tool - sometimes its just a faulty control board and not a faulty glow plug.

**E4 (FUEL PUMP FAULT):** The fuel pumps are normally pretty invincible, they're mounted externally and are designed to withstand the road elements. This is most commonly caused by bad fuel quality or loose wiring. For a possible quick fix, disconnect the fuel pump plug by pressing in on the metal spring and blowing into the connections in an attempt to clean.

**E5 (OVERHEATING ISSUE):** This rarely does any prolonged damage to the unit but is triggered due to a lack of air flow, blocked or dusty intake fan or its simply too hot inside the vehicle.

**E9 or FAN RUNNING CONSTANTLY:** If your heaters fan is running constantly, even while not in use, this will be a fail safe from a faulty temperature sensor. These can be replaced with ease with a pair of pliers. Even though the sensor is faulty, it may not always throw an error code. It's suspected that low battery voltage causes this to trigger, the only fix is a replacement sensor.

**FUSE BLOWING:** This is extremely rare and most likely caused by bear wiring from the heater catching the vehicles chassis. Other causes are faulty fuel pumps, glow plugs or circuit boards.





Craft A' Camper

**CRAFT'A'CAMPER**

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