

## EWP® COMBO PACK















### Remote Electric Water Pump and EWP® / Fan Digital Controller Installation Instructions

Congratulations on your purchase of the Davies, Craig EWP® and Controller Combo Pack. This package is designed to replace or complement the existing belt driven mechanical water pump, thermostat and control your electric Thematic® Fan.

**PLEASE READ ALL THESE INSTRUCTIONS THOROUGHLY BEFORE YOU START WORK.**

- 1) DO NOT RUN THE PUMP DRY OR YOU WILL DAMAGE THE SEALS**
- 2) DO NOT HARD MOUNT THE PUMP – FIT TO RADIATOR HOSE OR USE PART #8700 MOUNTING BRACKET (sold separately)**



### COMBO KIT COMPONENTS

- |   |   |
|---|---|
|  1 - EWP® Assembly  |  2 - O-Ring ( <b>EWP80 &amp; EWP140 Only</b> )     |
|  1 - EWP® & FAN Digital Controller                                |  4 - Hose Clamps                                   |
|  1 - Inline Adapter  |  1 - Ring Terminal                                |
|  1 - Wiring Harness w/ Fuse                                     |  1 - Self-Tapping Screw                          |
|  4 - Rubber Sleeve 3mm ( <b>EWP80</b> )                         |  1 - Thermal Sensor                              |
|  1 - Straight Flange Fitting ( <b>EWP80 &amp; EWP140 Only</b> ) |  12 - M5 Bolt ( <b>EWP80 &amp; EWP140 Only</b> ) |
|  1 - Elbow Flange Fitting ( <b>EWP80 &amp; EWP140 Only</b> )    |  Assorted mounting and hardware                  |




### EWP® INSTALLATION OPTIONS

**NOTE:** Before the EWP® is installed it is recommended that the cooling system is properly flushed.

#### INSTALLING AN EWP® AS AN AUXILIARY PUMP

-  Leaving the mechanical water pump in place, install the EWP® into the bottom radiator hose.
-  Remove the thermostat and drill two approx. 3mm (1/8") holes in the thermostat plate to allow some coolant circulation when the thermostat is closed. Re-install ensuring that the thermostat housing is clean, and a new gasket is used if required.

#### DISABLING MECHANICAL WATER PUMP

-  Leaving the mechanical water pump in place, install the EWP® into the bottom radiator hose and remove the manufacturer's thermostat.
-  You will need to bypass the water pump pulley by installing an appropriate length belt (not supplied). This method makes for an easy installation.
-  If running the pump continuously remove the thermostat and drill two approx. 3mm (1/8") holes in the thermostat plate to allow some coolant circulation. Re-install ensuring that the thermostat housing is clean, and a new gasket is used if required.

In both these cases, the EWP will pump past the impeller of the mechanical water pump.

**In most cases EWP® will be adequately supported by the radiator hose. Where mounting is required, the EWP® must be soft mounted to protect against vibration. For the EWP115, EWP140 and EWP150 Part #8700 Mounting bracket is recommended.**

## **DISENGAGED MECHANICAL WATER PUMP (RECOMMENDED)**

- ⊕ Remove the mechanical water pump and remove the thermostat.
- ⊕ Then remove the impeller from the mechanical pump shaft. Retain the mechanical water pump using the pump pulley as an idler to avoid re-routing the drive belt.
- ⊕ Block any bypass passages and re-install the disengaged water pump ensuring that all gasket surfaces are clean, and the new gaskets are properly fitted to prevent leaks.
- ⊕ Install the EWP® into the bottom radiator hose.

## **REMOVED MECHANICAL WATER PUMP (IDEAL)**

- ⊕ Remove the mechanical water pump and thermostat from the engine.
- ⊕ Install a Davies Craig EWP® Block Adapter or blanking plate (not supplied). Ensuring the gasket surfaces are clean and the appropriate gasket or sealant is used to prevent leaks.
- ⊕ Install the EWP® into the bottom radiator hose. This method will require you to modify or replace the standard radiator hose.
- ⊕ Install an appropriate length belt (not supplied) to drive the accessories.

## **THERMAL SENSOR INSTALLATION OPTIONS**

**The Thermal Sensor provided MUST be used. The use of any other sensor will result in Thermal Sensor errors and incorrect operation.**

Ensure all wiring is protected from rubbing on bare metal or other sharp edges.

### **INLINE ADAPTER INSTALLATION (RECOMMENDED)**

- ⊕ Install the Thermal Sensor into the Inline Adapter, making sure not to over tighten or damage the sensor.
  - You may require some thread tape or sealant to achieve a watertight seal.
  - Rubber sleeves (supplied) may be required to accommodate larger ID hose sizes.
- ⊕ Cut approximately 20mm out of the top radiator hose and install the Inline Adapter assembly using the hose clamps provided.

### **THREADED PORT INSTALLATION (ALTERNATIVE)**

For installing the Thermal Sensor into the thermostat housing, engine block, or directly into the radiator.

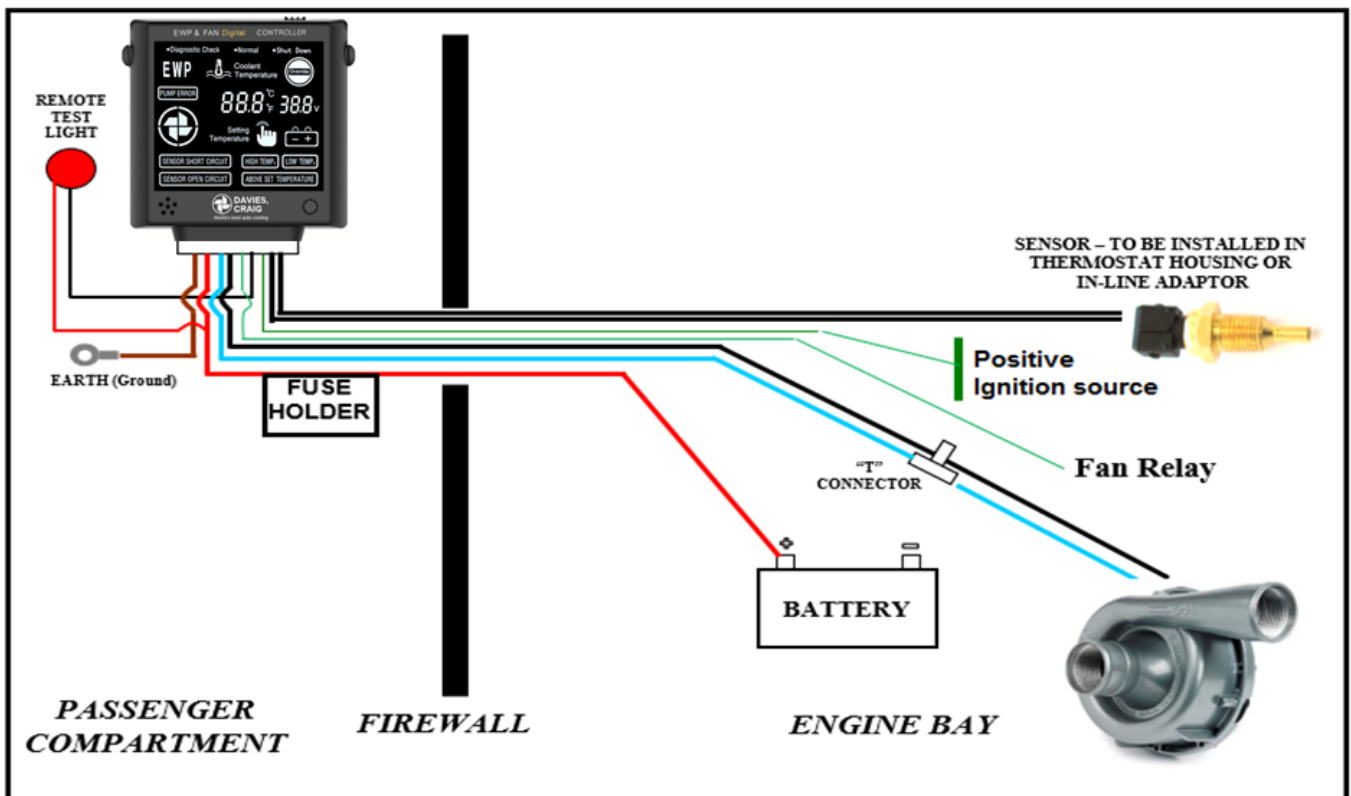
- ⊕ The Thermal Sensor provided has a male ¼" NPT thread that allows installation into a threaded port within the cooling system. Adapter fittings (not supplied) may be required.
  - You need to be mindful that the location of the Thermal Sensor can affect the temperature reading and adjustments may be needed when setting the target temperature.
  - When a port is not available, it is possible to drill and tap a hole for locating the Thermal Sensor. When tapping a custom port, you need to be certain there is a minimum wall thickness of 3mm.
  - When tapping a hole is not possible, a weld-on fitting can be installed.
- ⊕ Install the Thermal Sensor into the port, making sure not to over tighten or damage the sensor.
  - You may require some thread tape or sealant to achieve a watertight seal.
  - If a threaded port cannot be made available, then install the Thermal Sensor using the Inline Adapter.

# EWP® & FAN DIGITAL CONTROLLER MOUNTING

- ⊕ The Controller **MUST** be mounted inside the passenger compartment. Ensure the unit is mounted allowing easy access to the set button and minimise exposure to direct sunlight.
- ⊕ The Controller has 2 solid mounting options and Velcro to assist with your installation.
  - U-Bracket – ideal for under dash mounting.
  - Mounting plate – Ideal for mounting to dash or custom brackets.
- ⊕ Locate a hole in the firewall (approx. 20mm in diameter) and pass the wiring harness through (including the sensor & pump T-connector) from the passenger cabin to the engine bay. **Thermal Sensor wire MUST NOT be cut in ANY circumstances.**

# EWP® & FAN DIGITAL CONTROLLER WIRING

- ⊕ Plug the 'Temperature Sensor' wiring into the installed Thermal Sensor.
- ⊕ Connect the **RED** 'Battery +VE' wire to battery positive (+).
- ⊕ Connect the **BROWN** 'Earth' wire to the chassis using the self-tapping screw.
- ⊕ Connect the **GREEN** 'Ignition' wire to a +12V/24V ignition source.
  - **DO NOT** connect the 'Ignition' wire to the ECU or the ignition coils as this can cause operational issues with the Controller.
- ⊕ To control the electric fan/s, connect the **GREEN** and **BLACK** striped 'Fan Relay' wire to the fan relay. The Controller will earth the 'Fan Relay' wire not power it.
- ⊕ Mount the 'Remote Test Light' in a location where it will be easily visible.
  - The 'Remote Test Light' may be mounted using a 4.6mm diameter hole.
  - Connect the **RED** and **BLACK** wires to the **RED** and **BLACK** wires on the wiring harness.
- ⊕ Connect the T-connector from the EWP® to the 'Pump' T-Connector.
- ⊕ Plug the wiring harness into the socket of the Digital Controller.



**For positive earth systems wire 'Earth' to battery negative not the chassis**

# THERMATIC® FAN INSTALLATION AND WIRING

Thermatic® Fan wiring and installation hardware not included. For wiring Davies Craig Thermatic® Fan/s to the EWP®/FAN Controller we recommend using Part # 1000, #1001 for single 12V or 24V fans and Part #1002 or #1003 for dual 12V or 24V fans.

**Although we recommend the use of Davies, Craig Thermatic® Fans our Controller is able to control any single speed 12V or 24V electric cooling fan.**

## THERMATIC® FAN INSTALLATION

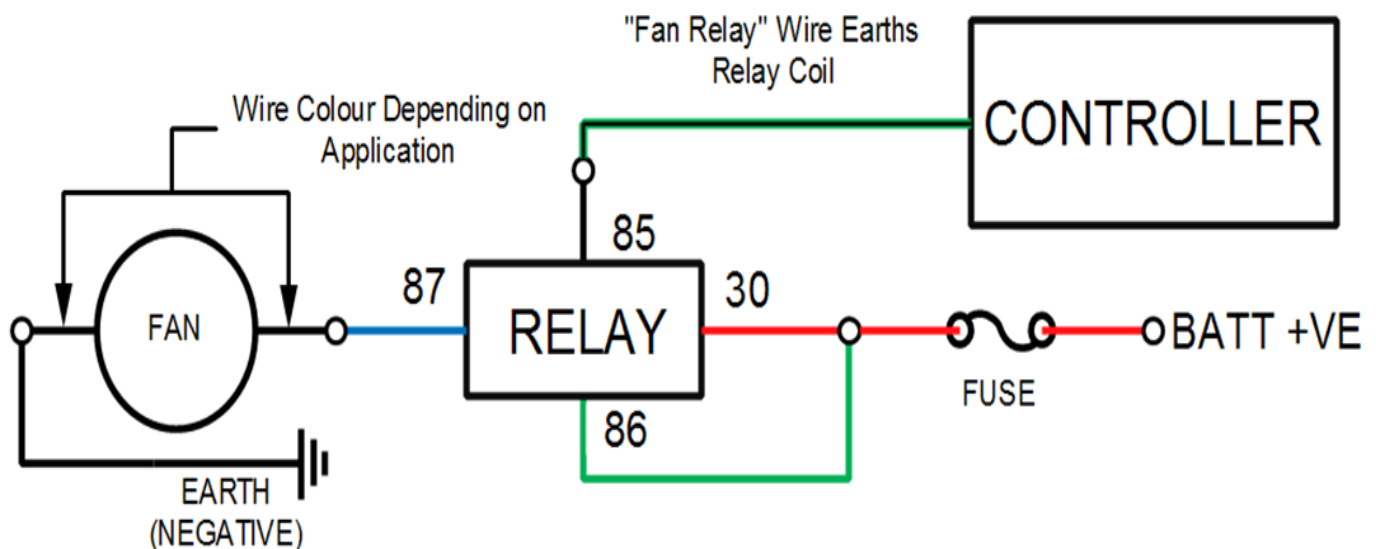
- 🔧 Install your fan/s as per the instructions included with your fan/s.
- 🔧 To wire your fan/s relay please follow wiring instructions provided below.
  - For correct operation ensure the fan/s blade is rotating in the correct direction.

## THERMATIC® FAN WIRING

**Wire colours are based on Davies, Craig's standard fan wiring harness.**

- 🔧 For single fan applications refer to wiring connections below.

Relay Pin	Connection location
<b>85</b>	<b>GREEN</b> and <b>BLACK</b> 'Fan Relay' wire
<b>86</b>	<b>Battery Positive or Pin 30</b>
<b>30</b>	<b>Fused Battery Positive</b> a fuse and holder may need installing
<b>87</b>	<b>Fan wire**</b>



\*\*Check direction of rotation before making permanent connections.

- 🔧 For dual fan applications repeat the above wiring connections. You need to be mindful of the total current draw as the fans will start up at the same time.
- 🔧 When using the Davies, Craig fan wiring harness from Part #1000, #1001, #1002 or #1003 the ring terminal on the **BLACK** wire connecting to **Relay Pin 85** should be removed before the **GREEN** and **BLACK** 'Fan Relay' wire is attached.
- 🔧 To allow proper control over the fan/s when not installing an EWP®, connect the '**Remote Test Light**' to the wires labelled "PUMP". The **RED** wire must go to the **BLUE** "PUMP" wire.

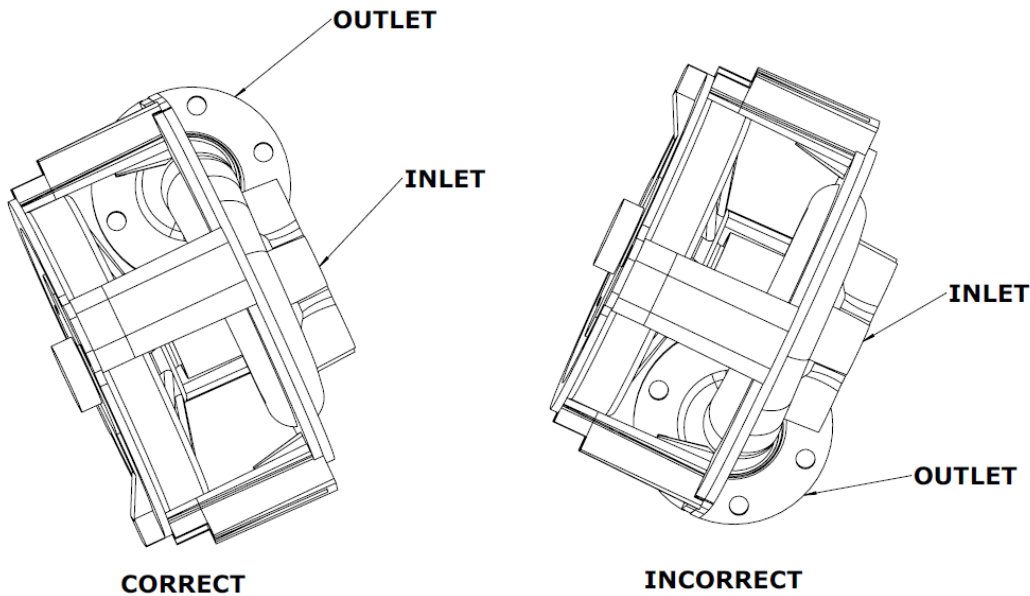
## EWP® PREFERRED ORIENTATION

**Note: The EWP® is not a self-priming water pump.**

The EWP can be installed in any orientation once it is completely bled of air. the preferred orientation will assist with bleeding the pump and preventing air becoming trapped in the pump.

### FOR THE EWP80

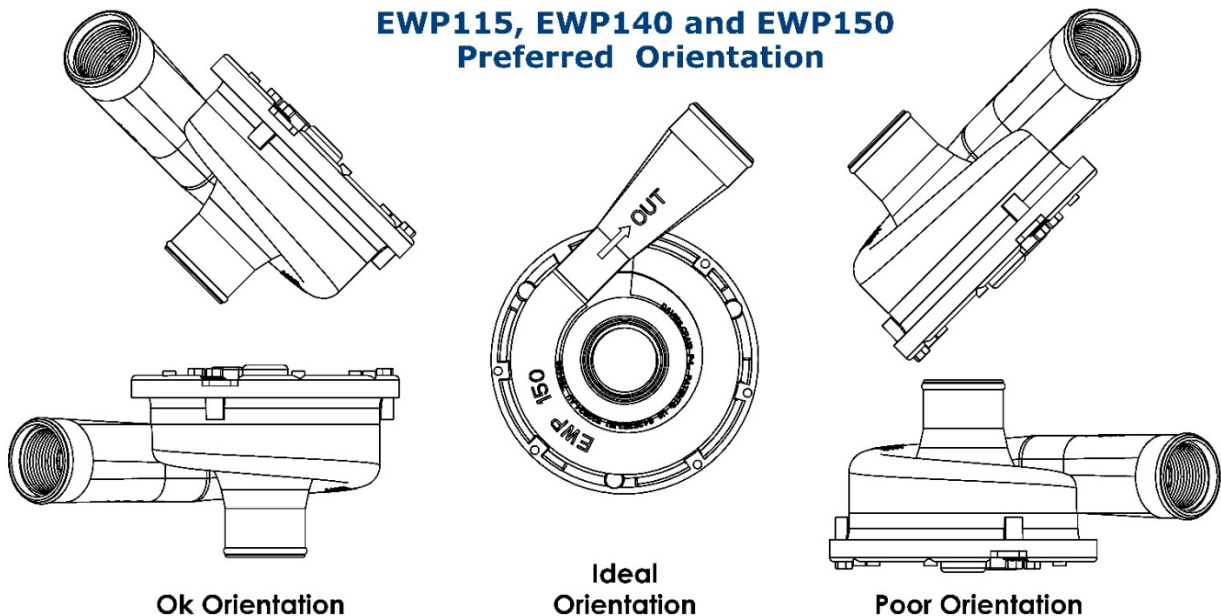
- ⊕ Avoid installing the EWP80 with the Inlet pointing vertically downward, where air can be trapped in the seal chamber.
- ⊕ The preferred orientation for the EWP80 is with the inlet horizontal or on an upward angle with the outlet at the highest point.
  - This orientation is a temporary requirement for the purpose of bleeding the pump and ensuring there is no air trapped within the pump housing. The pump can be set-up in another orientation upon completion of the bleeding procedure.



**EWP80 PUMP ORIENTATION DIAGRAM**

### FOR THE EWP115, EWP140 AND EWP150

- ⊕ The preferred orientation for the EWP115, EWP140 and EWP150 is with the inlet horizontal or on a downward angle with the outlet at the highest point.
- ⊕ Avoid installing the EWP115, EWP140 and EWP150 with the Inlet pointing vertically Upwards. in this orientation, air can be trapped in the seal chamber.





# EWP®/FAN DIGITAL CONTROLLER OPERATION

## ADJUSTING TARGET TEMPERATURE SETTING factory set to 85°C (185°F)

- Push the **'Set Button'** once to indicate the present temperature setting.
- Push the **'Set Button'** repeatedly until the desired set temperature is displayed and then hold down the button to confirm. If the new setting is not confirmed within 2 seconds, the Digital Controller will revert to previous set temperature.
- We recommend setting the target temperature to at least 5°C/9°F more than the rated temperature of the factory thermostat.

## EWP® SYMBOL

FLASHING = EWP® operating in pulse mode.

ON = EWP® running continuously.

## FAN SYMBOL

- Rotating = fan triggered.

## DIAGNOSTIC CHECK

- The Digital Controller will perform a system check every start-up.
- If a system warning has been triggered. **'Remote test light'** (RED LED) will flash and the **'Diagnostic Check'** indicator will be on. Refer to Diagnostic Chart.



## SHUT DOWN MODE

- Controller will continue to operate your EWP® and fan/s for three (3) minutes or until the coolant temperature has reduced to 10°C/18°F below your set temperature.

## OVERRIDE

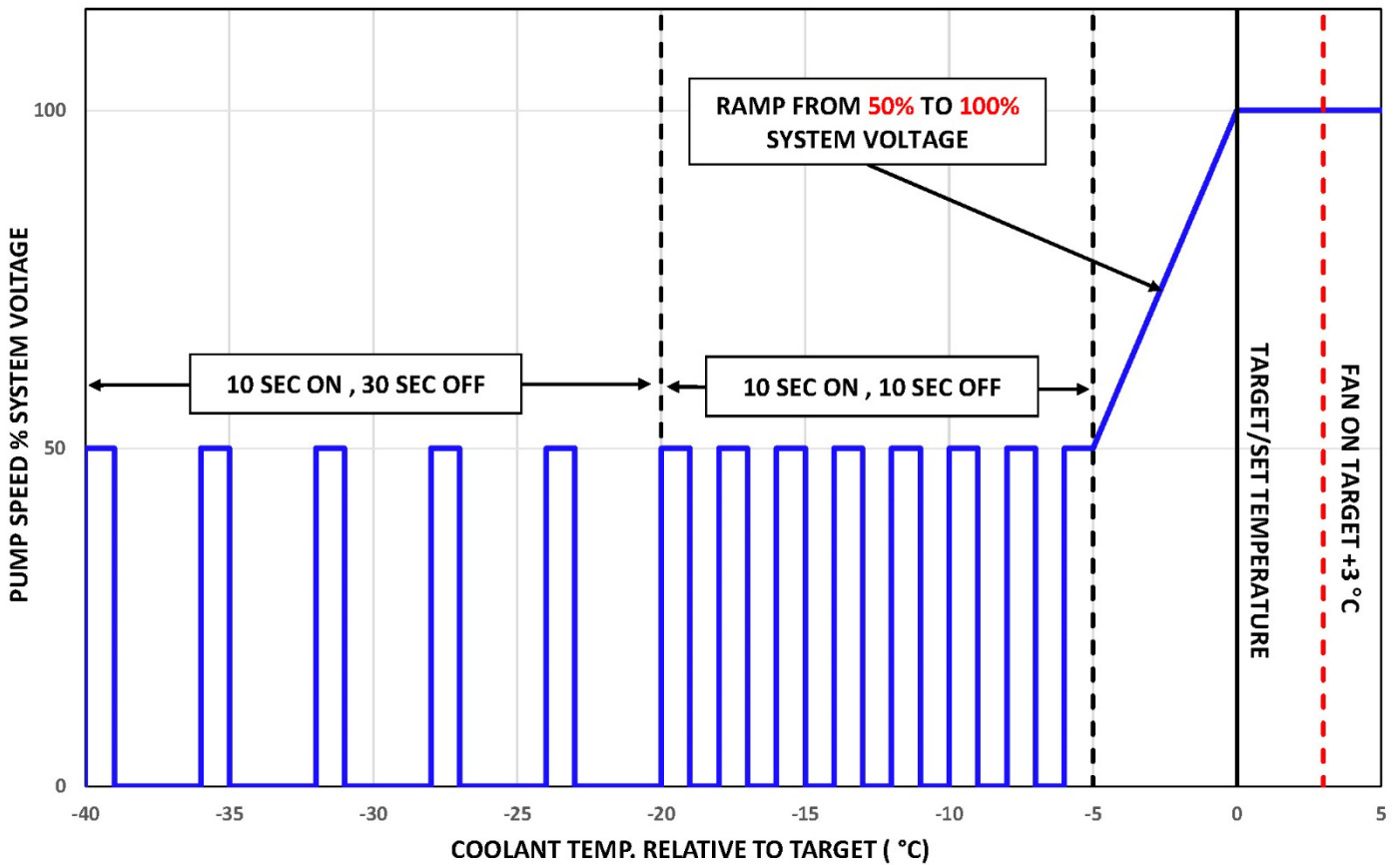
Override function will override the Controller's program and turn on the EWP® &/or Fan.

- Press & hold the **'Set Button'** for 5 seconds to run the EWP®.
- Press & hold the **'Set Button'** for 7 seconds to run the EWP® & Fan.
- Press & hold the **'Set Button'** for 5 seconds or switch off the ignition to cancel override.

## CHANGING TEMPERATURE UNITS BETWEEN °C & °F

- Press & hold the **'Set Button'** for 3 seconds to toggle between °C and °F.

# EWP® & FAN DIGITAL CONTROLLER OPERATION CHART



# EWP® & FAN DIGITAL CONTROLLER DIAGNOSTIC CHART

Condition	Troubleshooting
<b>Controller does not operate</b>	<ul style="list-style-type: none"> <li>⚙️ Blown fuse</li> <li>⚙️ Check all the wire connections</li> </ul>
<b>12V voltage indicator flashing</b>	<ul style="list-style-type: none"> <li>⚙️ Controller receiving low voltage &lt; 10.5V</li> <li>⚙️ Controller receiving high voltage &gt; 17.5V</li> </ul>
<b>24V voltage indicator flashing</b>	<ul style="list-style-type: none"> <li>⚙️ Controller receiving low voltage &lt; 21.5V</li> <li>⚙️ Controller receiving high voltage &gt; 27.5V</li> </ul>
<b>Sensor open circuit</b>	<ul style="list-style-type: none"> <li>⚙️ Check sensor wiring for any open circuits</li> </ul>
<b>Sensor short circuit</b>	<ul style="list-style-type: none"> <li>⚙️ Check sensor wiring for any short circuits</li> </ul>
<b>Low Temp &lt;40°C (104°F) after 5 Minutes</b>	<ul style="list-style-type: none"> <li>⚙️ Check engine temperature</li> </ul>
<b>Above Set Temperature</b>	<ul style="list-style-type: none"> <li>⚙️ Sensor temperature is at least 10°C (18°F) above the set temperature.</li> </ul>
<b>Pump Error</b>	<ul style="list-style-type: none"> <li>⚙️ Check pump wiring for open/short circuits</li> </ul>
<b>Override ON</b>	<ul style="list-style-type: none"> <li>⚙️ EWP® manually overridden by the user.</li> <li>⚙️ To turn OFF, Press &amp; hold the set button for 5 to 7 seconds or switch OFF &amp; ON the IGN.</li> </ul>
<b>Temperature doesn't increase or has constant high reading</b>	<ul style="list-style-type: none"> <li>⚙️ Thermal Sensor Open or Short circuit</li> </ul>

# INSTALLATION RECOMMENDATIONS

- ⊕ It is highly recommended the EWP® is operated for at least 5 minutes constant running every month. This will minimise the build-up of any sediment in the EWP® and also lubricate all parts within the pump.
- ⊕ For some vehicles, cold climates or when running the EWP continuously you may require the use of a thermostat to help control the coolant temperature. In these cases, you will need to drill 2 x 3mm (1/8") holes in the thermostat plate.
- ⊕ The installation of an EWP® may affect coolant flow through auxiliary coolant loops and the heater core. This change in flow may affect the performance of these loops unless the return line is relocated to the EWP Inlet.
- ⊕ Block the Thermostat bypass passage, to prevent flow from your EWP passing directly back to the radiator without passing through the engine.

## WARNINGS

- ⊕ Do not operate your EWP® dry as seal damage may occur, and your warranty may be jeopardised.
- ⊕ Waterless coolants increase the load on an EWP® and may reduce pump life.
- ⊕ Do not use 'stop leak' or similar leak or crack repair additives as pump damage may occur and your warranty may be jeopardised.
- ⊕ The EWP® must be completely full of coolant at all times to achieve the life and performance expectations of your EWP®.
- ⊕ The EWP® impeller tip clearance has been designed to achieve maximum efficiency and is therefore very close to the housing. When new and bedding in, the impeller may touch the internal wall of the EWP® housing causing a slight noise. This sound will cease within a very short time after the impeller has bedded in.
- ⊕ The installation of an EWP® may affect coolant flow through auxiliary coolant loops. This change in flow may affect the performance of auxiliary systems like the heater, LPG converter and Turbo cooling. In these cases, you may require an Electric Booster Pump (EBP) to provide constant flow to these systems.
- ⊕ **DO NOT ATTEMPT to tamper with the EWP including loosening or removing any bolts/screws as this will void any warranty. If you suspect there is a fault or defective product please contact Davies, Craig IMMEDIATELY.**

These installation instructions will suit most applications but there are circumstances surrounding some engine designs, environments, and the nature of the system involved, which may require other installation arrangements not outlined here. Frequently Asked Questions (FAQ) are listed on our website [www.daviescraig.com.au](http://www.daviescraig.com.au) Emails can be directed to [info@daviescraig.com.au](mailto:info@daviescraig.com.au) or Telephone +61 (0) 3 9369 1234 during business hours.

## WARRANTY



Davies, Craig Pty Ltd warrants for a period of three years or 2000 hours continuous running (whichever is the lesser) from the date of purchase. Davies, Craig shall carry out, free of cost, any repairs that are reasonably necessary to correct any fault in the operation of your Davies, Craig product provided that such a fault is directly attributable to a defect in the workmanship or materials used in the manufacture of the part(s). This warranty is void if the product is misused, altered, tampered with or is installed or used in a manner that is inconsistent with Davies, Craig's written recommendations and/or installation instructions. Labour and consequential costs are excluded. **DAVIES, CRAIG PTY. LTD.**

To make a warranty claim, go to: [daviescraig.com.au/warranty](http://daviescraig.com.au/warranty)