

# ELECTRIC WATER PUMP (EWP®) KIT INSTALLATION INSTRUCTIONS

## EWP80, EWP115, EWP130, & EWP150 Kits

PLEASE READ ALL THESE INSTRUCTIONS THOROUGHLY BEFORE YOU START WORK.  
DON'T RUSH - ENSURE YOU HAVE FULL UNDERSTANDING OF THE WORK AHEAD BEFORE YOU  
COMMENCE. ENSURE YOU HAVE ALL TOOLS AND COMPONENTS REQUIRED.

Congratulations on your purchase of the Davies, Craig EWP® Electric Water Pump Kit which is designed to replace or complement the existing belt driven mechanical water pump. In addition with a Davies, Craig Digital Controller your thermostat can be replaced. The major benefits of an Electric Water Pump (EWP®) are, removal of the parasitic power losses running a mechanical water pump at any speed, reduction of engine warm-up time and elimination of heat soak by running the EWP® after a hot engine shut down by operating the EWP® with the EWP/Fan Digital Controller, or one of the Davies, Craig Thermatic® Switches. Your new EWP® has the advantage of providing the best coolant flow rate independent of engine speed.

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# EWP KIT CONTENTS

## EWP130 (12V/24V)

EWP Components			Hardware Bag Components		
Part #	Description	Qty.	Part #	Description	Qty.
8180 or 8181	EWP Pump Short (12V) EWP Pump Short (24V)	1	N/A	Scotch Lock	1
8515	Wiring Harness	1	N/A	Ring Terminal	1
18301	L Adaptor 35mm (Alloy)	1	N/A	Self-Tapping Screw	1
18302	Straight Adaptor 35mm (Alloy)	1	N/A	Adaptor M5 Bolt	12
8509	O-Ring	2	N/A	Relay	1
18510	EWP Rubber Sleeve 3mm	2			
18512	Hose Clamps	2			
8909 / 8910	Hardware Bag	1			

## EWP150 (12V) - EWP115 Alloy (12V) - EWP115 Nylon

EWP Components			Hardware Bag Components		
Part #	Description	Qty.	Part #	Description	Qty.
8160 or 8140 or 8125	EWP150 Pump Short EWP115 Alloy Pump Short, EWP115 Nylon Pump Short	1	N/A	Scotch Lock	1
8515	Wiring Harness	1	N/A	Ring Terminal	1
18510	EWP Rubber Sleeve 3mm	2	N/A	Self-Tapping Screw	1
18512	Hose Clamps	2	N/A	Relay	1
8526	EWP Hardware Bag	1			

## EWP80 Nylon (12V)

EWP Components			Hardware Bag Components		
Part #	Description	Qty.	Part #	Description	Qty.
8105	EWP Pump Short	1	N/A	Scotch Lock	1
8515	Wiring Harness	1	N/A	Ring Terminal	1
8309	Elbow Adaptor 35mm (Nylon)	1	N/A	Self-Tapping Screw	1
8307	Straight Adaptor 35mm(Nylon)	1	N/A	Adaptor M5 Bolt	6
8509	O-Ring	2	N/A	Adaptor M5 Nut	6
18510	EWP Rubber Sleeve 3mm	2	N/A	M5 Cap Screw Long	6
18512	Hose Clamps	2	N/A	Relay	1
8908	EWP Hardware Bag	1			

## Optional Accessories

Part #	Description	Suitable for	No.
1025	Flanged Adaptor	All EWPs	1
1024	90 Degree Adaptor	EWP115 (Alloy Only), EWP150	2
8700	EWP Mounting Bracket	EWP115 EWP115 EWP130	3
8000	Digital Controller	All EWPs	4



## **SECTION 1: INSTALLING YOUR EWP®**

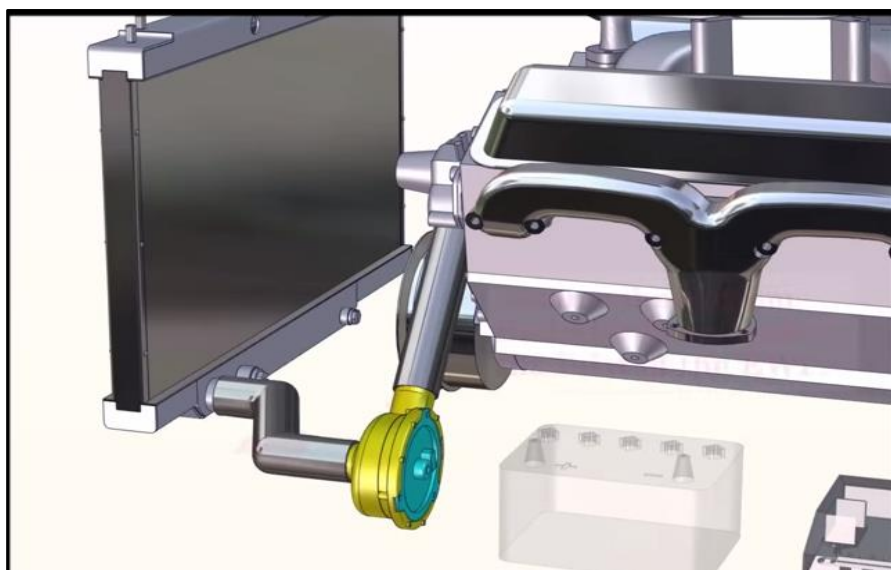
- 1.** Your EWP® Electric Water Pump is best fitted in the lower radiator hose which connects the radiator to the existing mechanical water pump housing. In conventional vehicle operating conditions, the hose will carry the weight of your EWP® and insulate the EWP® from engine vibration. Check the area for available space. Further radiator hose or adaptors may be required. Position the EWP® in the lower hose so the inlet, in the centre of the pump is connected to the radiator side and the outlet is connected to the engine's mechanical water pump housing or your EWP® Header Adaptor (not supplied). The EWP® should be positioned as low as possible to maximise the gravity feed from the radiator and to avoid air entering and remaining in the pump.

Alternatively, the EWP® may be fitted in the upper radiator hose. In this case, coolant level is critical and bleeding of all air from the cooling system essential. Follow instructions above for correct EWP® fitment ensuring the pump outlet is connected to the hose going into the top of the radiator. The pump can be installed in any orientation but to assist air bleeding try to mount the outlet pointing upwards. (See Section 8 for bleeding instructions). Ensure your cooling system is kept full of coolant.

- 2.** If you have either an EWP130 or EWP80, assemble the provided EWP Straight and L Adaptors to suit the configuration and space available. Ensure that the Straight and L Adaptors have the O-Ring fit securely between them and the flange faces on the EWP body. Six of the shorter Adaptor M5 Bolts (Part # 8507) should be used to attach the Adaptor to the EWP outlet. The remainder M5 bolts (Part # 8507 for EWP130) or (Part # 8514 for EWP80) can be used to attach the Adaptor to the EWP Inlet.

If necessary, add the rubber sleeves to the inlet and outlet of the EWP® to suit your particular hose diameter. If you require thicker sleeves, contact Davies, Craig for supply free of charge.

- 3.** Cut out the not required section of the radiator hose. Connect the pump inlet and outlets to the appropriate hose ensuring hose clamps are very firmly tightened.



## **SECTION 2: OPTIONS FOR PUMP CONTROL**

### **1. With EWP<sup>®</sup> Fan Digital Controller, Part #8000 or Part #8020:**

We highly recommend the use of the EWP<sup>®</sup> & Fan Digital Controller for maximum cooling efficiency. The EWP<sup>®</sup> & Fan Controller will vary the EWP<sup>®</sup> speed in response to the coolant temperature. You set the temperature desired for maximum power or fuel efficiency. The Digital Controller has an in built function that allows the EWP<sup>®</sup> to run on after hot engine shutdown to eliminate heat soak. We further recommend the removal of the engine's thermostat and disabling of mechanical water pump. The pump belt may need to be modified or the pump pulley left as an idler. The vehicle's heater may take a little longer to warm up and to improve the heating, we recommend the fitment of an Electric Booster Pump (EBP) to the heater line if necessary.

### **2. With Davies, Craig Thematic<sup>®</sup> Switches, Part #0401 or Part #0444:**

Combine the EWP<sup>®</sup> with either of the approved Davies, Craig thermal switches listed here when the EWP<sup>®</sup> is used as a booster pump to assist the existing mechanical water pump cool an overheating engine.

Connect the thermal switch directly to the battery and your EWP<sup>®</sup> will run on to eliminate heat soak. You may leave the thermostat in place, but ensure the EWP<sup>®</sup> operates only when the thermostat is fully open.

### **3. Continuous running:**

Wire the EWP<sup>®</sup> direct to the ignition for maximum cooling (race vehicles, very hot climates). This option requires the removal of the engine thermostat and the mechanical pump impeller or pump belt. This option may also be used for road cars with the thermostat in place with a small hole (suggest 5mm), allowing a small amount of flow to circulate even when the thermostat is closed.

**WARNING:** When using the Electric Water Pump (EWP<sup>®</sup>) on vehicles using LPG, it is recommended that an EBP be fitted to circulate coolant through the LPG converter.



**Part #8000 – LCD Controller**



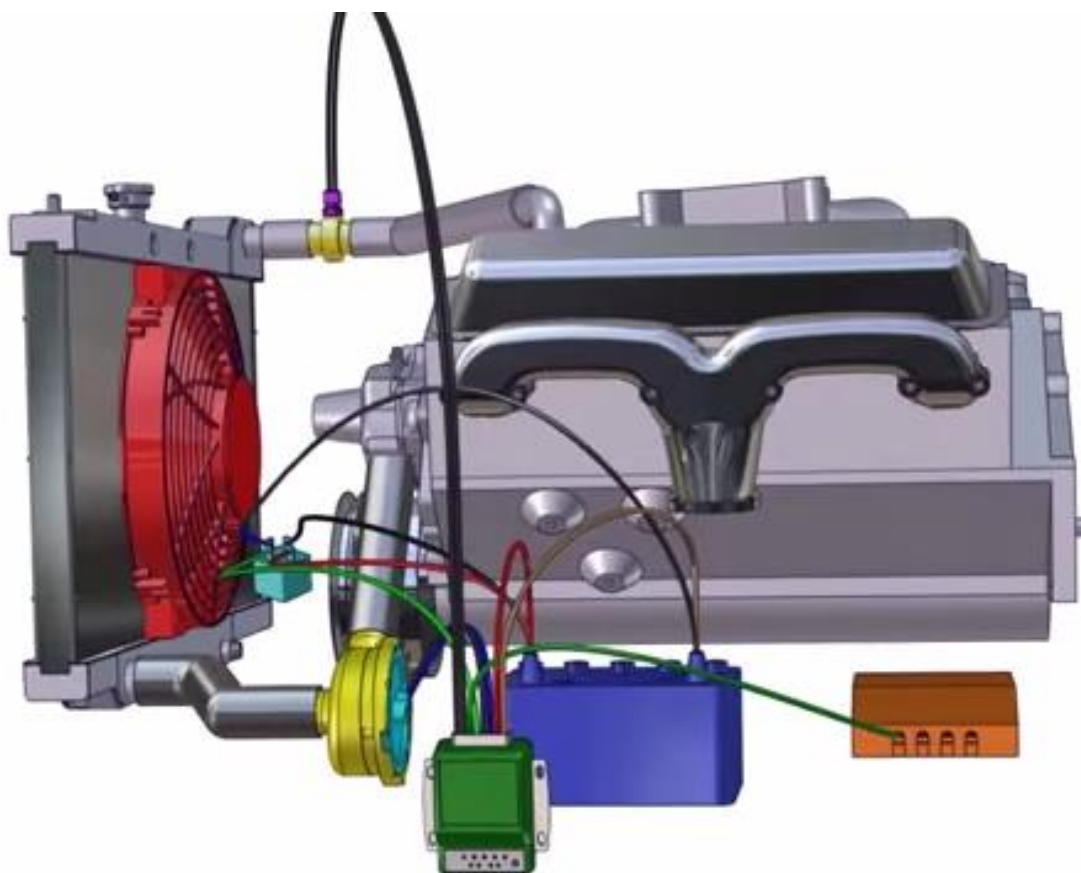
**Part #0444 – Thematic Switch**

## OPTION 1: INSTALLING EWP<sup>®</sup> & FAN DIGITAL CONTROLLER

Part #8000 or Part #8020

**NOTE: Wiring from EWP<sup>®</sup> kit will not be required however retain for hard wiring the EWP<sup>®</sup> during bleeding.**

1. The Digital Controller must be fitted inside the passenger compartment.
2. Connect the wiring harness to the Digital Controller and mount the Controller in an appropriate position --- **avoid mounting the controller where it may be exposed to direct sunlight.**
3. An additional screw is provided for mounting Digital Controller fuse holder where necessary.
4. Mount 'Remote Test Light' in a location, which will be visible. The 'Test Light' may be fitted by inserting it through a 4.6mm hole drilled in a plastic area of the interior/dashboard or simply with adhesive tape.
5. For installation of the sensor in the position of the thermostat refer to the Digital Controller instruction booklet.
6. Bleed the EWP<sup>®</sup>. Refer to SECTION 4: BLEEDING THE EWP<sup>®</sup>(Page 9). After bleeding the EWP<sup>®</sup> continue with the installation process.



Part #8020 Above



Part #8000

## OPTION 2: USING THE EWP® AS A BOOSTER PUMP

### Part #0401 or Part #0444

**NOTE:** This option when combined with a Davies, Craig Thematic® Switch, Part #0401 or Part #0444, will turn the EWP® on at the temperature you set, to give additional flow to an overheating cooling system.

#### INSTALLING THERMAL SWITCH (Part #0401 OR #0444)

1. Install the Thermo Switch (Part #0401 or Part #0444) - Refer Wiring Diagrams (Figure 1 and Figure 2) below.
2. For detailed instructions on installing switches, please refer to 0401 & 0444 instruction sheets.
3. Bleed the EWP®. Refer to SECTION 4: BLEEDING THE EWP® (Page 9). After bleeding the EWP® continue on with the next stage.

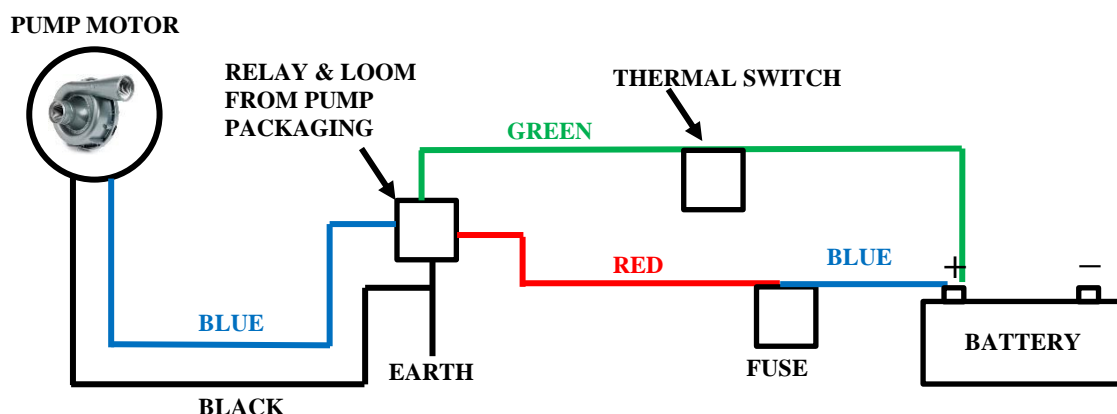


Figure 1: Wiring Diagram: EWP® With Thermal Switch - Part #0401

**WARNING:** ENSURE IGNITION SOURCE IS NOT CONNECTED TO THE ENGINE MANAGEMENT SYSTEM

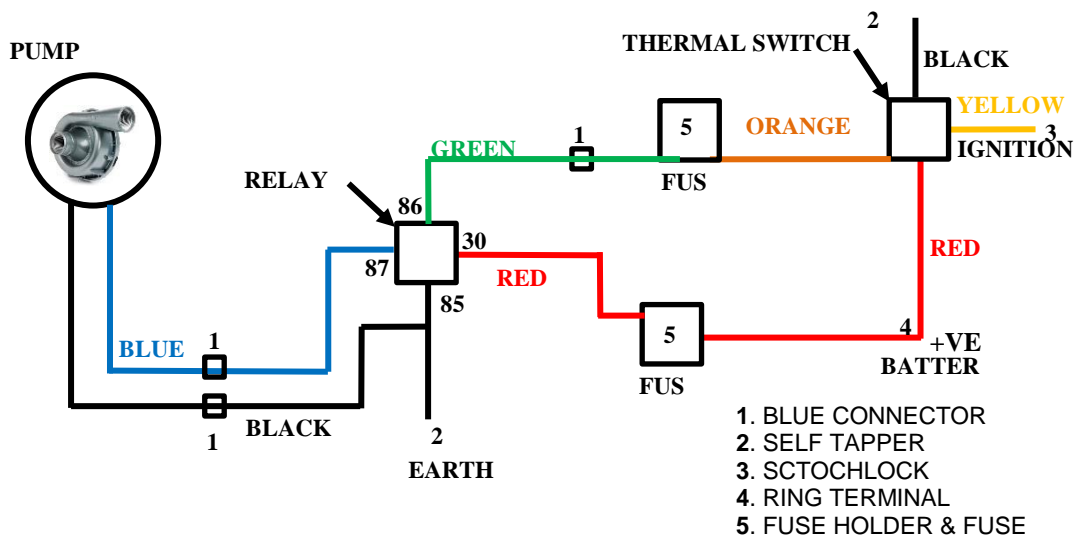


Figure 2: Wiring Diagram: EWP® with Thermal Switch - Part #0444

### OPTION 3: CONTINUOUS RUNNING

(Recommended for race vehicles, very hot climate & cars running on LPG.)

Continuous EWP<sup>®</sup> operation may be required for some road or race engine applications, in some very hot climatic conditions and engines fitted with liquid petroleum/butane gas (LPG) conversion.

This option will provide maximum flow from your EWP<sup>®</sup> under all operating conditions without a Digital Controller or a Thematic Switch fitted. Should you choose this method you should retain the engine thermostat and drill one or two holes (suggest 5mm) in the plate to allow some coolant flow when the thermostat is closed.

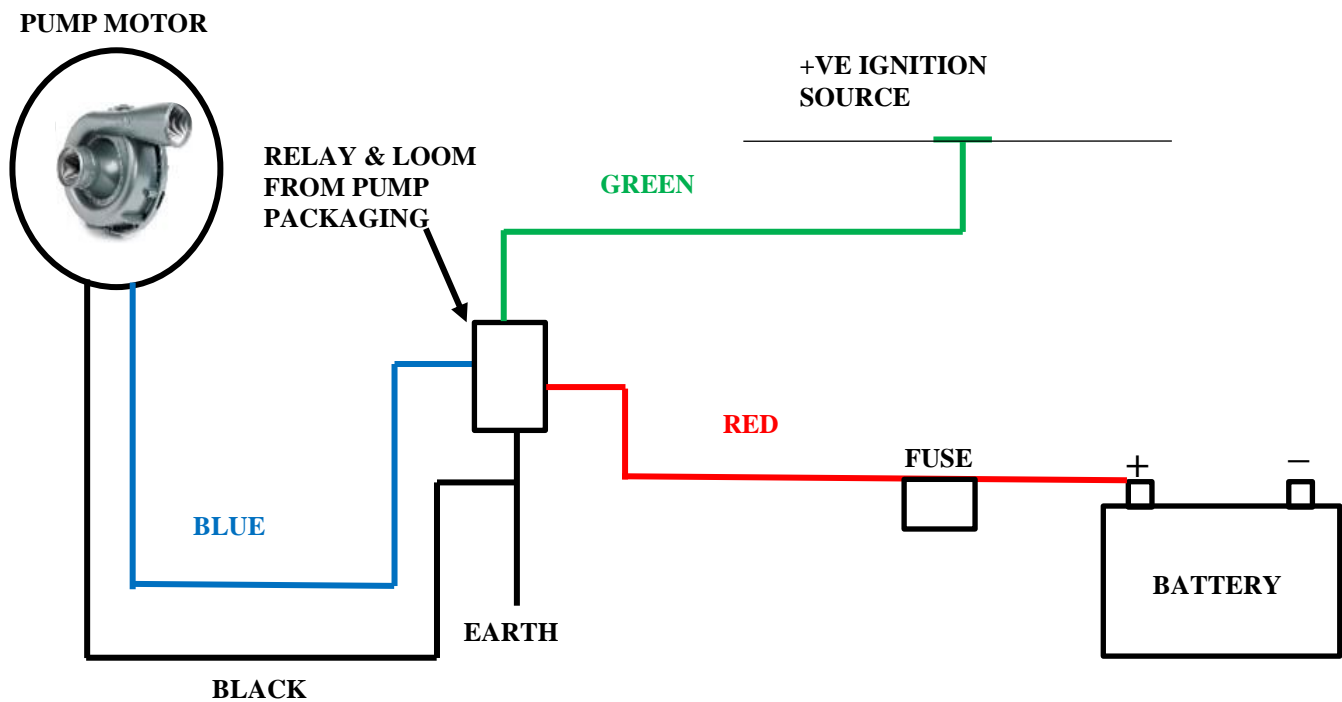


Figure 3: Wiring Diagram: EWP<sup>®</sup> Continuous Running

## **SECTION 3: DISABLE EXISTING MECHANICAL WATER PUMP**

**Davies Craig has tailor made EWP Header-Adaptor Kits – visit the website for details, see image below (Part#8630).**

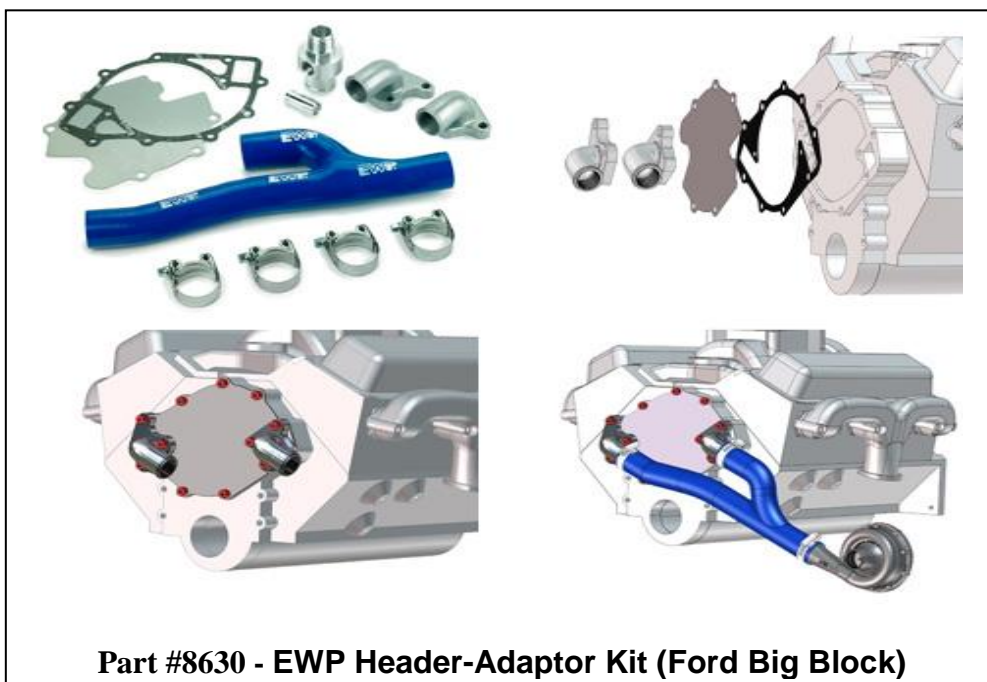
1. You may choose to by-pass the belt-driven water pump pulley by installing a shorter belt. This option may not be possible if the crank pulley drives a belt-driven power steering and fan or unless you replace the mechanical fan with a Davies, Craig Thematic® Fan. For example see *Figure 4* below:
2. Remove the thermostat from the thermostat housing.
3. Re-fit the thermostat housing ensuring that there is no damage to the thermostat-housing gasket.



*Figure 4: Belt Orientation Diagram*

**OR**

1. Remove the existing belt-driven water pump housing.
2. Remove the water pump impeller from the pump shaft. (NOTE: You may need to drill holes through the impeller close to the drive shaft.) Alternatively, remove vanes from impeller. Mechanical water pumps differ from engine to engine and you need to take appropriate action that suits the specific water pump to disable the pump.
3. Re-fit the water pump housing without the impeller ensuring that there is no damage to the water pump gasket and the pump seal is still retained. Re-fit the water pump belt and tighten to manufacturer's specifications.

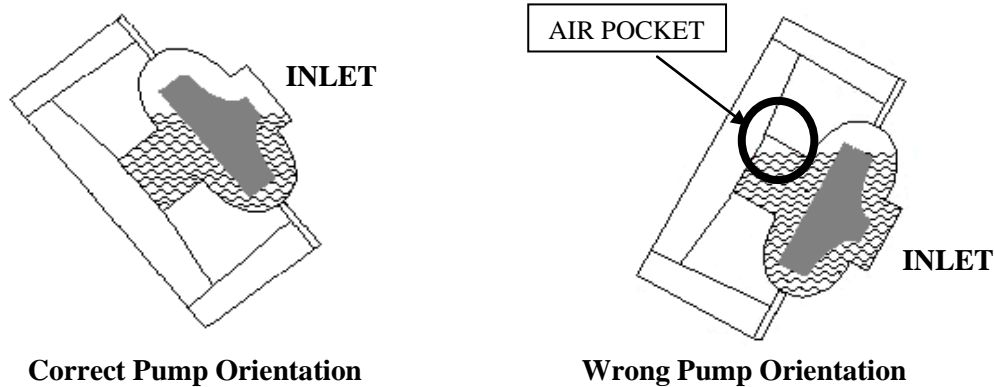




## **SECTION 4: BLEEDING THE EWP®**

**For the EWP®80** ensure it is orientated correctly as shown below before continuing.

NOTE: This orientation is a temporary requirement for the purpose of bleeding the pump and ensuring there is no air entrapped within the seal housing of the pump. The pump can be set-up in another orientation upon completion of the bleeding procedure.



*Figure 5: EWP80 Pump Orientation Diagram*

### **FOR ALL EWPS:**

- 1.** Fill the engine cooling system with appropriate coolant.
- 2.** Turn heater on full.
- 3.** With the radiator cap off, hardwire the EWP® directly to the vehicle's battery or a 12v power source. Air trapped in the cooling system will exit at the top of the radiator.
- 4.** Turn on engine and idle.
- 5.** Top up the radiator with coolant with the EWP® running until all air is eliminated. Waterless coolants increase the load on an EWP and may reduce pump life.
- 6.** Turn off engine.
- 7.** Replace the radiator cap and reconnect the EWP® to the wiring system supplied.

## **SECTION 5: OPERATING YOUR EWP® ELECTRIC WATER PUMP**

Start engine, confirm no leaks at radiator hoses and re-torque radiator hose clamps if required. Monitor the engine temperature, which should take longer than usual to reach steady state. If the ignition is left on (or if a turbo timer is connected) after a hot shut down, the pump will continue to run and prevent engine heat soak. Re-tighten the hose clamps after a few hours running at temperature and again after 20 hours running. Check for leaks. NB: The heater circuit may take longer than normal to warm up.

## **SECTION 6: EWP® INSTALLATION RECOMMENDATIONS**

To ensure maximum life and optimum performance from your new EWP®, Davies, Craig recommends:

- **Storage** - If a EWP® is installed in your vehicle's engine cooling system, stored and/or not started or driven for more than 3 months, e.g. a show/static display or race car, it's strongly recommended the EWP® is operated for approximately 5 mins constant running every month. This will minimise the build-up of any sediment in the EWP® and also lubricate all parts within the pump.
- **Heater** - For improved heater performance on vehicles which have the heater inlet (return) and outlet ports in the mechanical pump housing (referred to in "Warnings"), Davies, Craig suggests the fitment of the EBP®. This unit fits into the heater hose and boosts coolant flow through the heater circuit and/or cylinder heads. Check out website [www.daviescraig.com.au](http://www.daviescraig.com.au)
- **LPG (Liquid Petroleum Gas or Butane)** vehicles require constant flow through the LPG converter and if the EWP® is used in conjunction with the EWP®/Fan Digital Controller, we recommend the installation of an EBP® to overcome the converter body freezing at start-up. As a preventative measure, we strongly recommended you flush out your engine's cooling system every 6 months or 10,000kms to help remove any build up of sediment.

## **CAUTIONS**

- **Do not operate your EWP<sup>®</sup> dry as seal damage may occur and your warranty may be jeopardised.**
  - Use of the EWP<sup>®</sup> after removing the pump impeller or deleting the mechanical pump pulley from the belt system will increase maximum engine speed. Running an engine at higher than normal speeds may affect other engine components.
  - Engine temperature must be monitored closely at all times more especially after installation and until your EWP<sup>®</sup> operational procedures have been confirmed.
  - The EWP<sup>®</sup> can handle most rust particles, shale, and sludge found in cooling systems but large rust particles should be flushed from the radiator before the EWP<sup>®</sup> is installed.
  - Some engines may require special bleeding procedures to remove all air from their cooling system. The EWP<sup>®</sup> must be completely full of coolant at all times to achieve the life expectations of your EWP<sup>®</sup> and to ensure your warranty is not jeopardised.
  - Do not use the vehicle's engine management system or wiring connected to the vehicle's engine management system (ECU) as an ignition source as it may cause failure of the management system and/or the electrical system. The ignition source for your EWP<sup>®</sup> and EWP<sup>®</sup>/Fan Digital Controller Combo Kit must be a steady positive supply of 12-14V or 24-27V DC.
  - Vehicles with both heater circuit inlet (return) and outlet ports in the mechanical pump housing will suffer reduced heater performance unless the heater returns position is relocated.
  - The engine cooling system must use coolant as specified by the vehicle's manufacturer.
  - The EWP<sup>®</sup> is a 'circulation' pump ideal for most 'closed circuit' pressurised automotive cooling systems.
  - The EWP<sup>®</sup> is not a 'self-priming' water pump and therefore will not produce its full flow without a positive 'head' in an 'open' system.
  - The EWP<sup>®</sup> 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<sup>®</sup> housing causing a slight noise. This sound will cease within a very short time after the impeller has bed-in.
  - Waterless coolants increase the load on an EWP and may reduce pump life.
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**These installation instructions will suit most vehicles but there are circumstances surrounding some engine designs, environments, and the nature of motoring involved, which may require other installation arrangements not outlined here. Frequently Asked Questions are listed on our website [www.daviescraig.com.au](http://www.daviescraig.com.au) Davies Craig Pty Ltd appreciates customer feedback. Emails can be directed to [info@daviescraig.com.au](mailto:info@daviescraig.com.au) or telephone +61 (0) 3 9369 1234.**

# WARRANTY

We warranty that for a period of two years or 2000 hours continuous running (whichever is the lesser) from the date of purchase, we shall carry out, free of cost, any repairs that are reasonably necessary to correct any fault in the operation of your Electric Water Pump provided that such a fault is directly attributable to a defect in the workmanship or materials used in the manufacture of the part(s) and is not due to installation other than described in these instructions. Labour and consequential costs are excluded.

**DAVIES, CRAIG PTY. LTD.**

**REGISTER YOUR WARRANTY AT:**

[www.daviescraig.com.au](http://www.daviescraig.com.au)



## OUR PRODUCT RANGE

