DAVIES, CRAIG
World's best auto cooling

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Certified System Quality ISO 9001

BRUSHLESS ELECTRIC WATER PUMP KIT INSTALLATION INSTRUCTIONS

Suits: 12V and 24v Brushless EWP160 and Brushless EWP180

Digital Installation instructions located here: daviescraig.com.au/instructions

BEFORE COMMENCING INSTALLATION, PLEASE READ THESE INSTRUCTIONS THOROUGHLY. FAILURE TO COMPLY MAY VOID YOUR WARRANTY

KIT COMPONENTS:

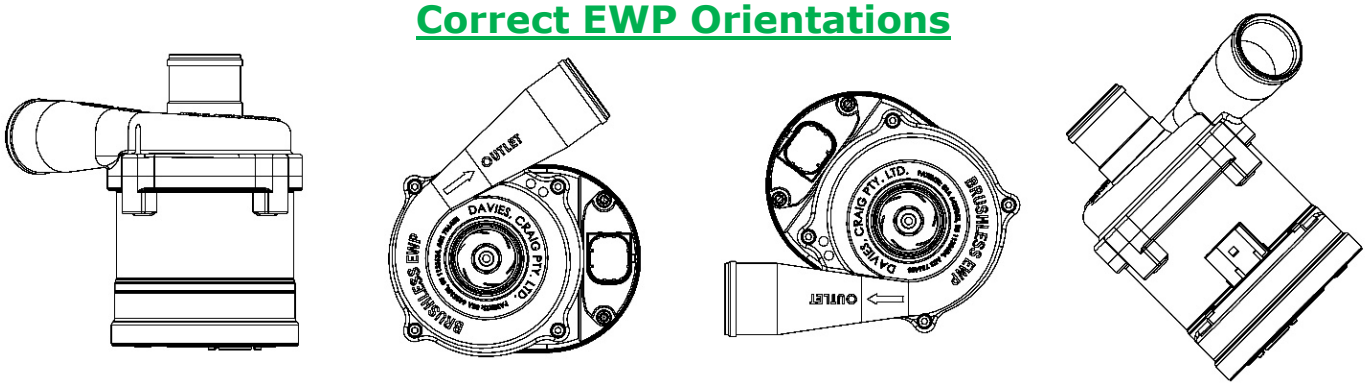
- 1 x Brushless EWP® assembly
- 1 x Brushless EWP® Wiring Harness
- 1 x T bolt Clamps
- 2 x Rubber Isolators
- 1 x Brushless EWP mounting bracket

EWP ORIENTATION

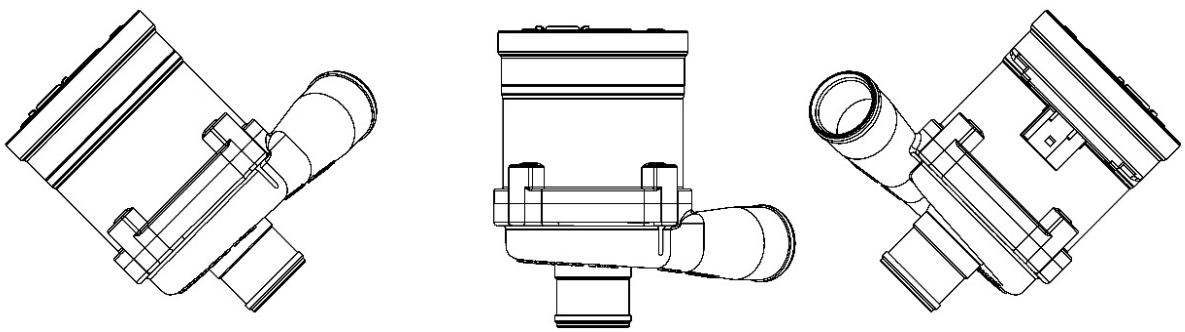
NOTE: The EWP® has built-in dry-run protection. When activated, the pump will run slowly until the pump is completely free of air.

- When installing the EWP® ensure the inlet is positioned horizontally, vertically upward, or on an upward angle.
  - **NOTE:** When the EWP® is pointed downward, this can lead to airlocks within the pump.
  - For the best results, position the outlet at the highest point to aid bleeding of the pump.

Correct EWP Orientations



Incorrect EWP Orientations



Intercooler Pump Installation

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

- Select a suitable installation location for the EWP®.
  - For best results, the EWP® should be located low in the system and close to the outlet of the intercooler heat exchanger, or tank for rear mount systems.
  - The outlet of the EWP® should be no higher than the inlet on the intercooler.
  - To avoid air locks, avoid creating high points in the hose (i.e. having the hose go up and then back down). This will aid with bleeding the pump.
- Install the EWP in the selected location, fill and bleed the system. Run the system and check for leaks.

General Cooling Brushless EWP® Installation

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

- Identify the coolant circulation direction of the system.
  - For engine/battery/motor cooling systems, the EWP® should be installed such that **coolant circulation direction remains unchanged.**
- Select a suitable installation location for the EWP®.
  - For best results, the EWP® should be located low in the system and close to the outlet of the radiator. (i.e. In the lower radiator hose).
  - The outlet of the EWP® should be no higher than the inlet on the engine/battery/motor.
  - To avoid air locks, avoid creating high points in the radiator hose (i.e. having the hose go up and then back down). This will aid with bleeding the pump.
  - To ensure proper heater function, the heater return must be re-routed to the EWP® **INLET**.
  - Systems with an expansion/header tank require the return line routed to the EWP® **INLET**.
  - The thermostat bypass should be blocked or re-routed to the EWP® **INLET**.
  - If applicable, when using a thermostat, you must drill two approx. 3 mm (1/8") holes in the thermostat plate to allow some constant coolant circulation.
- Install the EWP in the selected location, fill and bleed the system. Run the system and check for leaks.

Auxiliary EWP® For Water Cooled Engines

- Leave the mechanical water pump in place and install the EWP® into the bottom hose.

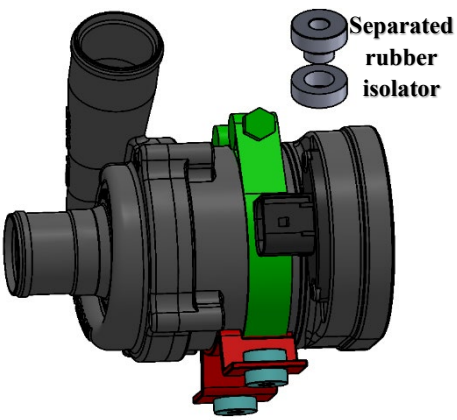
Primary EWP® For Water Cooled Engines

- Remove the mechanical water pump and install suitable Adapter or disengaged water pump.
  - To disengage the water pump, remove the impeller from the shaft and retain the housing. The water pump pulley can be kept as an idler to avoid re-routing the belt.
  - If required, you can also cut down the mechanical water pump housing to increase available clearance for electric fans.

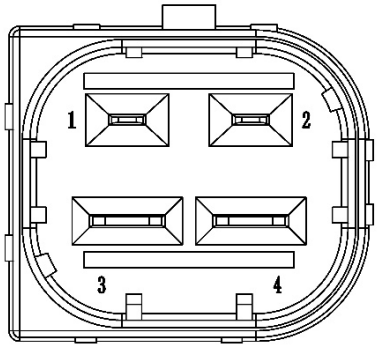
Installing The Mounting Bracket

NOTE: The EWP® must be soft mounted to protect against vibration.

- Before installing the EWP® into the mounting bracket, decide on the final mounting location to ensure there is sufficient space for the assembly in the engine bay.
- Separate the rubber isolators and install into the holes of the steel mounting bracket.
  - The ring sections of the isolator needs to be located on the underside of the bracket.
- Secure the mounting bracket in the desired location, ensuring both rubber isolators are in place.
  - The rubber isolators are designed for use with M6 or 1/4" bolts.
- Remove the nut from the T-bolt clamp and place it over the body of the pump.
  - Ensure the nut and bolt can be accessed once the pump is installed.
- Screw the nut back onto the T-bolt clamp, but do not fully tighten.
- Install the clamp band into the slot in the mounting bracket. Orient the pump to the desired position and fully tighten the nut.



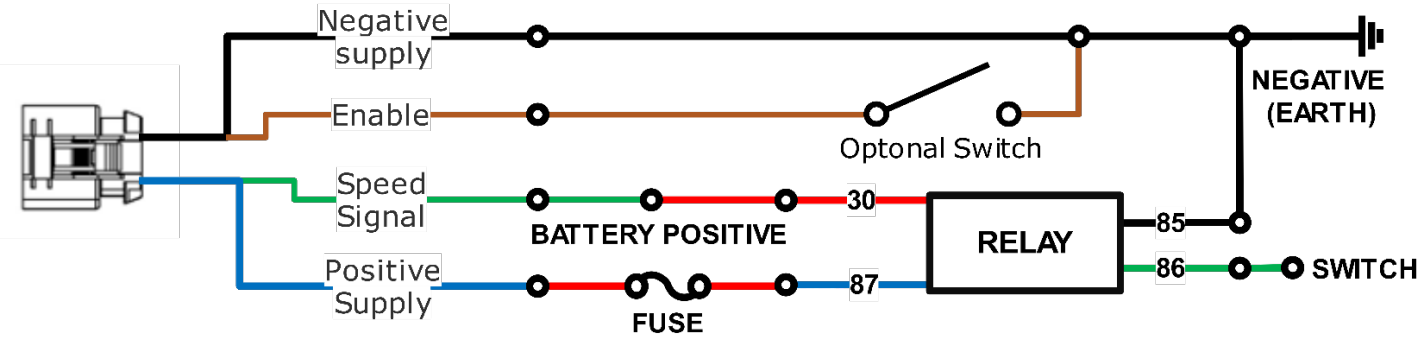
BRUSHLESS EWP® WIRING



Pin Number	Wire Colour	Description
1	GREEN	Speed Signal (+VE)
2	BROWN	Enable (-VE)
3	HEAVY BLUE	Positive Supply
4	HEAVY BLACK	Negative Supply

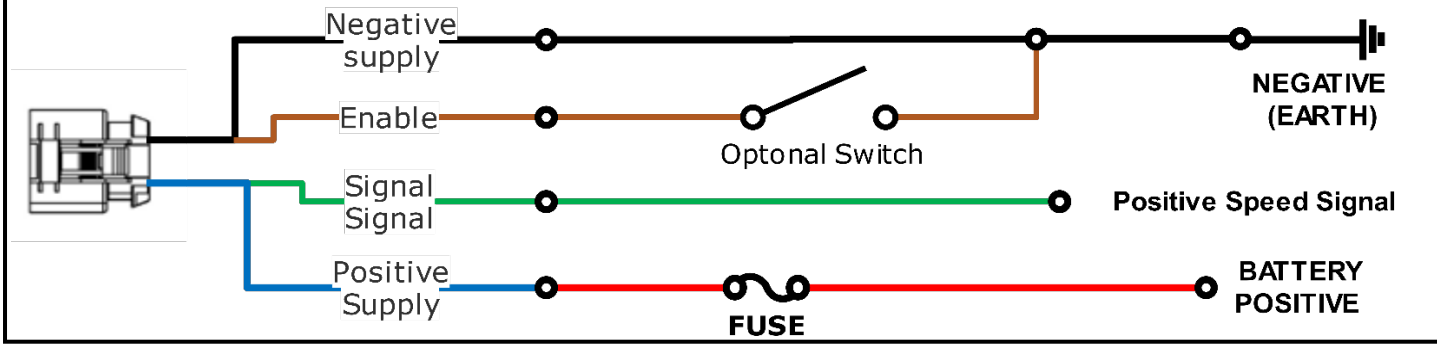
***NOTE: Wire colours are based on Davies, Craig's Brushless EWP wiring harness.**

Full Speed Operation Wiring Diagram



Speed Control Operation Wiring Diagram

***NOTE:** A relay can be wired to the positive supply as per above diagram to switch power to the pump via ignition, temperature switch or manually.



CONTROLLING THE BRUSHLESS EWP®

For optimum coolant management, Davies, Craig recommends the installation of Brushless Variable Speed Fan and EWP® Controller (Part #0550 or #0551).

Davies, Craig has a full range of Digital Thermatic® Fan Switches for when on/off control of the EWP® is desired (Part #0480, #0481, #0482, #0485, #0488 & #0500).

The Brushless EWP® can also be controlled using an aftermarket ECU.

SPEED CONTROL PARAMETERS

PWM Frequency Range	PWM Duty Cycle Range
100 **Hz** – 1000 **Hz**	0%-100%
PWM Voltage Range 12V pump	**PWM Voltage Range 24V pump**
6 **V**- 19 **V**	5 **V** - 32 **V**
Analogue Voltage Input 12V Pump	**Analogue Voltage Range 24V Pump**
2.5 **V** - System Voltage	2.5 **V** - System Voltage

INSTALLATION RECOMMENDATIONS

- It is highly recommended the EWP® is operated for at least ***5 minutes of continuous running***. This will minimise the build-up of any sediment in the EWP® and lubricate internal pump components.
- In cold climates or when running the EWP® continuously you may require the use of a thermostat to help control coolant temperature. In these instances, you will need to drill 2 x 3 mm (1/8") holes in the thermostat.
- 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 the EWP® passing directly back to the radiator without circulating through the engine.

WARNINGS

- **DO NOT ATTEMPT to tamper with the EWP® including loosening or removing any bolts or screws as this will void the warranty. If you suspect a fault or defective product please contact Davies, Craig.**
- **Do not operate your EWP® dry, as damage may occur, and your warranty will be void. Ensure the EWP is always completely full of coolant to achieve the expected life and performance.**
- **Do not use and leak or crack repair additives, as pump damage may occur and your warranty will be void.**
- **Avoid mounting your EWP® close to high heat sources, like exhaust manifolds.**
- **The EWP® is not rated for submersible use. (i.e. submerged in an intercooler tank). Temporarily submerging to pump in water (i.e. water crossing) is acceptable.**

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 emails can be directed to 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