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ELECTRIC BOOSTER PUMP (EBP®) INSTALLATION INSTRUCTIONS

EBP®15 (PART #9001) & EBP®23 (PART # 9050) & OPTIONS FOR PUMP CONTROL

Congratulations on your purchase of the Davies, Craig Electric Booster Pump EBP®. The EBP®s are compact, versatile suitable for a large range of applications. The EBP® is designed for use with either a EWP® Electric Water Pump or a conventional mechanical water pump to enhance heater and LPG systems. These high-performance brushless, magnetically-driven EBP®s are state-of-the-art technology offering low-current draw, high flow capacity and long life, ideal for a range of applications including:

- Booster for car heater and LPG systems
- Solar and marine applications
- Water-cooled motorcycled applications
- Turbo air/water intercoolers
- Caravans and motor homes
- Household irrigation/fish ponds & tanks

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.

EBP®15 KIT CONTENTS:

Item No.	Part No.	Description	Qty
1.	19012	EBP®15	1
2.	19020	EBP® Adaptors	2
3.	19510	Adaptor Hose	2
4.	19511	Hose Clamps	4
5.	19516	Wiring Harness	1

Figure 1: EBP®15 Kit Contents

EBP®23 KIT CONTENTS:

Item No.	Part No.	Description	Qty
1.	19050	EBP®23	1
2.	19020	EBP® Adaptors	2
3.	19510	Adaptor Hose	2
4.	19511	Hose Clamps	4

Figure 2: EBP®23 Kit Contents

DIMENSIONS:

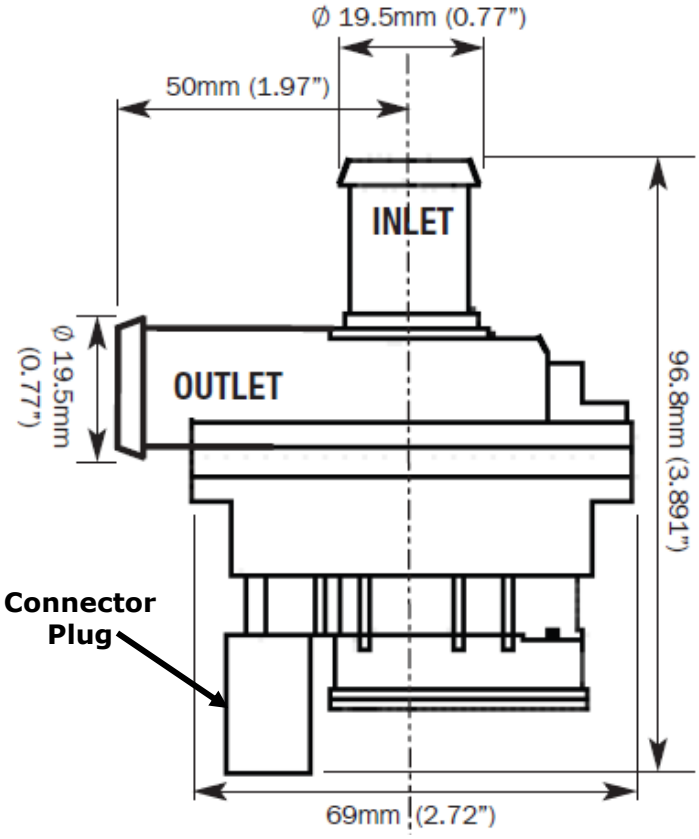

Figure 3a: EBP15 basic dimensions

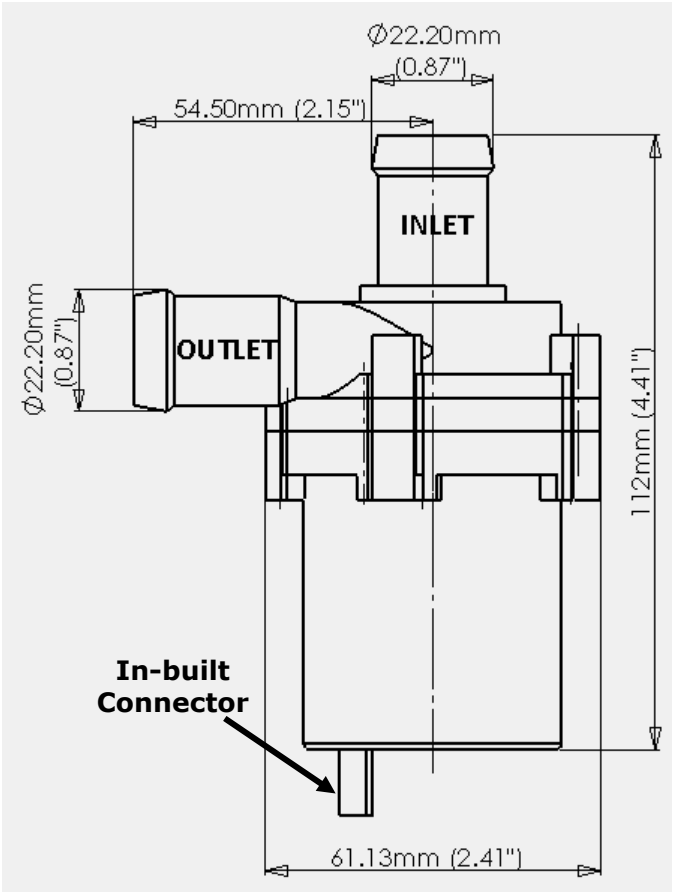

Figure 3b: EBP23 basic dimensions

WIRING DIAGRAM:

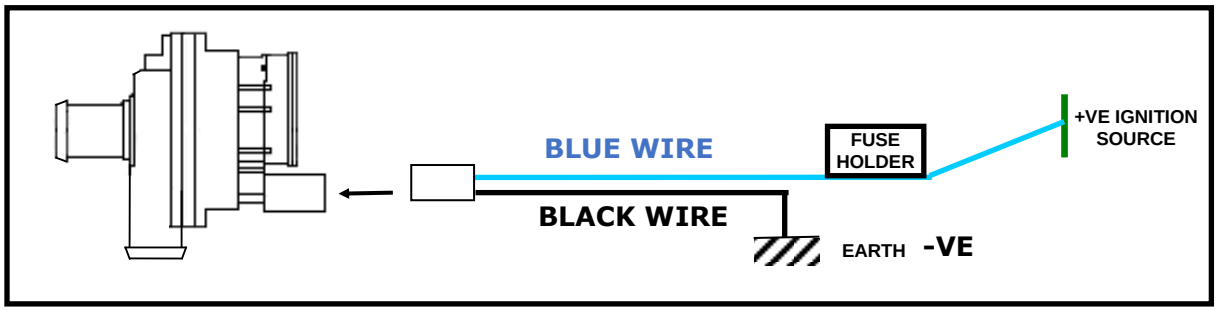

Figure 4a: Wiring diagram for Continuous EBP15® Running.

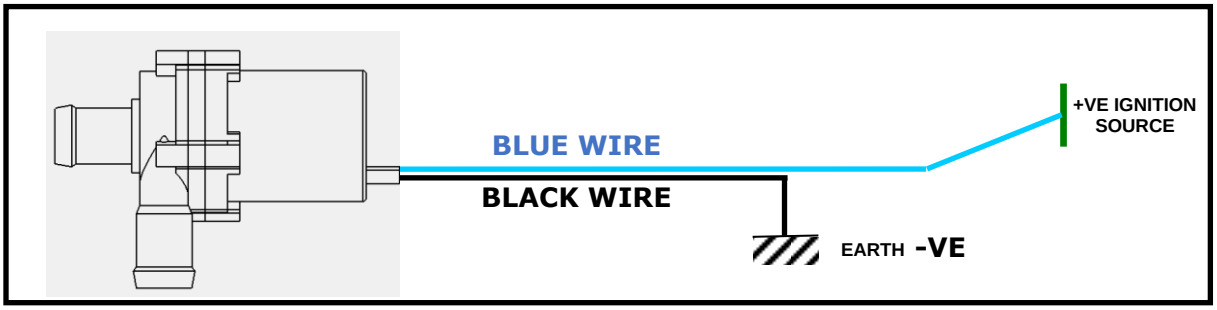

Figure 4b: Wiring diagram for Continuous EBP23® Running.

TECHNICAL SPECIFICATIONS

	EBP®15	**EBP®23**
Motor	12V Brushless	12V Brushless
Operating Voltage	9V – 15V DC	9V – 15V DC
Max Current	1.3 Amps	1.3 Amps
Pump Design	Recirculating Centrifugal	Recirculating Centrifugal
Drive	Magnetic – No Seals	Magnetic – No Seals
Operating Temperature	-40°C to +120°C (-10°F to 248°F)	-40°C to +120°C (-10°F to 248°F)
Burst Pressure	250Kpa (36psi)	250Kpa (36psi)
Flow Rate Maximum	15 L/min (4gal/min) at 1.5 PSI	23 L/min (6 gal/min) at 2.9 PSI
Weight	245g (0.54 lbs)	364g (0.8 lbs)
Self-Priming	No (do not run dry)	No (do not run dry)
Fit Hose Sizes	12mm-19mm (½" – ¾")	12mm-19mm (½" – ¾")

INSTALLING THE EBP®

- Before commencing your installation, identify the coolant circulation direction.

- If the existing hose diameter does not fit the inlet and outlet of the EBP®, the plastic adaptors (Part #19020) and adaptor hose (Part #19510), may be used to configure a diameter that best suits your hose from 12mm – 19mm. Larger adaptors may also be applicable.

- The adaptor is connected to the EBP® by clamping the adaptor hose to the appropriate inlet or outlet of the pump

- For the EBP®15 only, the wiring harness (Part #19516) comes separate to the pump. The EBP®23 has a built in wiring harness. See **Figure 4a** and **4b** for comparison.

- The EBP® should be connected as outlined in the appropriate installation instructions listed below.

- The EBP® has a free spinning impellor and will not impede liquid flow when not powered up.

APPLICATION 1: HEATER BOOSTER PUMP

The EBP® increases heater performance during normal vehicle operation and enables continued heater usage when the engine is off (but IGNITION is ON). Refer to **Figure 4a** and **4b** for the wiring diagram.

APPLICATION 2: CIRCULATION PUMP FOR LPG VEHICLES

The EBP® improves water circulation through the engine block to prevent the LPG converter from icing up. Other advantages include a more consistent engine temperature and improved engine cooling. It is important for the EBP® to be operating whenever the engine is running. The pump should be wired directly to ignition. Refer Figure **4a** and **4b**.

APPLICATION 3: MOTORCYCLE WATER PUMP

The EBP® provides liquid circulation independent of the engine speed to provide cooling at all levels.

Three options are available for the EBP® in liquid cooled motorcycle engines:

1. With a Davies, Craig Thermatic switch (Part#0401) to operate automatically at a set engine temperature (between 40°C-99°C).

2. Fitted as an auxiliary pump with a manual override switch to operate EBP® when extra cooling is required.

3. Replacement for the Mechanical Water Pump.

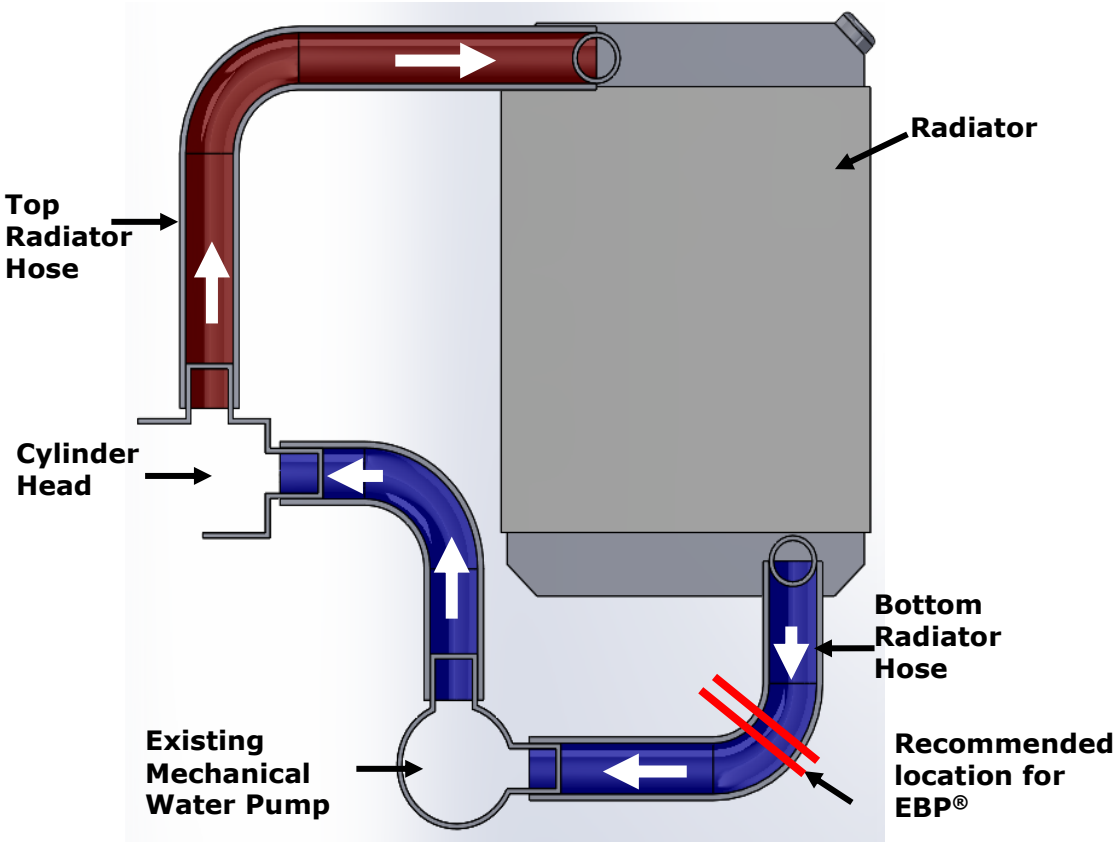

Figure 5: Recommended location for EBP® installation on a Motorbike Cooling System. (Option 1 and Option 2).

OPTION 1: EBP® WITH THERMATIC SWITCH (PART #0401)

This option, when combined with (Part #0401) will activate the EBP® at your set temperature to improve cooling efficiency. Refer to diagram. For installation of the Thematic Switch refer to the #0401 installation instructions.

1. Ensure the Engine is cool and remove the top radiator hose at the radiator end.
2. Mount the Thermatic Switch onto a panel near the radiator with the two large self-tapping screws provided. Ensure the Stainless Steel bulb will easily reach into the top radiator hose and that the adjustment shaft is accessible.
3. Lay the rubber seal along the radiator ferrule and place a section of the stainless steel capillary of the Thermatic Switch down the groove in the rubber seal. Keep the capillary loosely coiled and avoid bending. Do not pass the bulb further down the hose than is necessary as the constant movement of the engine may fatigue the capillary. The seal and tube may be held in place with insulation tape.

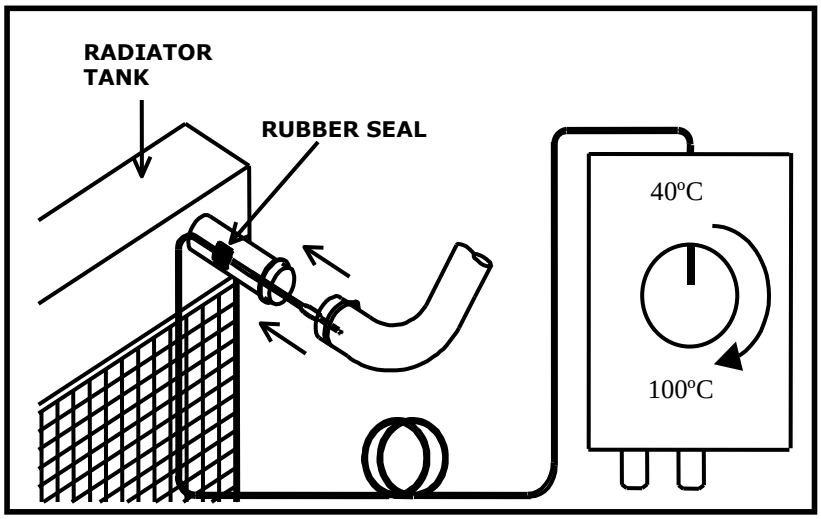

Figure 6: Installation of the Thermatic Switch.

4. Fit the hose and clamp so that the clamp is over the centre of the rubber seal and the clamp screw is in the opposite side of the tube to the capillary and seal. A good silicone type sealant may be used if there is a persistent leak.

5. Connect the pump wiring harness to the pump. Cut the blue wire before the fuse and crimp the spade terminals (from Thermatic Switch packaging) to each end.

6. Connect spade terminals to each pin of Thermatic switch. The connection order does not matter since both pins have the same polarity. The blue wire provided with the Thermatic switch can also be used to increase length of blue wire form EBP®, otherwise this can be discarded.

Note: Should the motorcycle owner wish to mount a fan to the radiator to be used in conjunction with the EBP®, Davies, Craig recommend the use of the Thermatic Switch #0444 for this purpose. When fitted appropriately, this unit will control and EBP® and a radiator cooling fan.

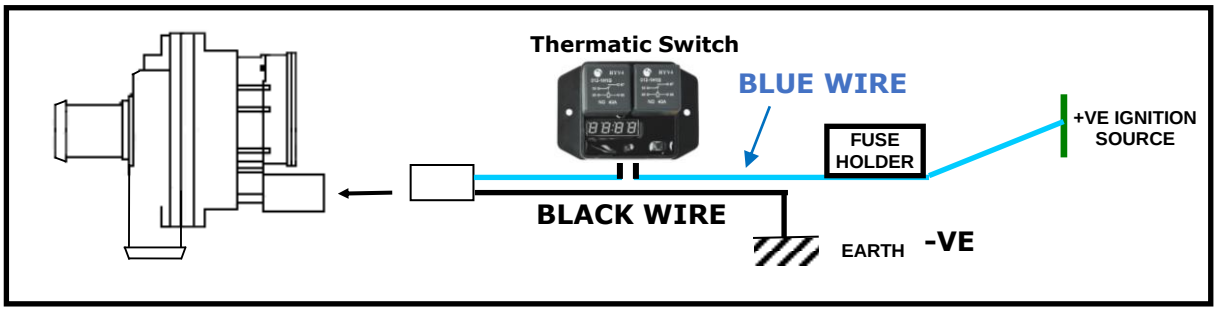

Figure 7a: Wiring diagram for EBP15® Installation with Thermatic Switch.

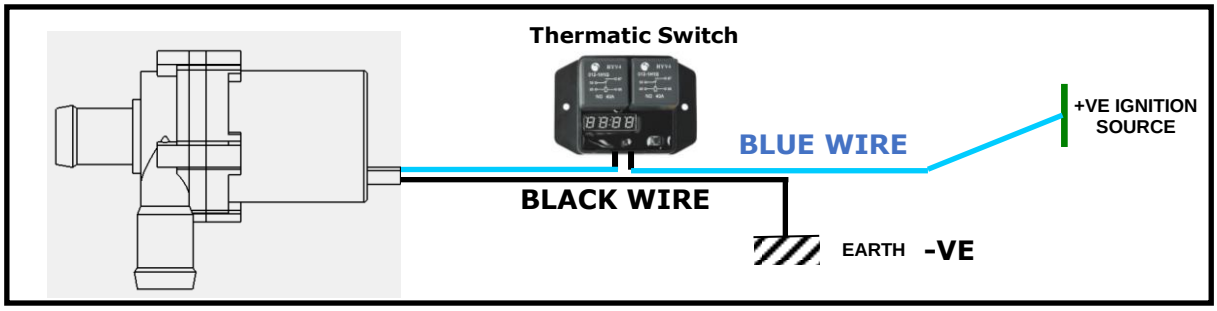

Figure 7b: Wiring diagram for EBP23® Installation with Thermatic Switch.

OPTION 2: EBP® WITH OVERRIDE SWITCH

1. When engine reaches operating temp, turn on the override switch.

2. With the override switch activated, the EBP® can continue running after hot engine shutdown to prevent heat soak. Refer Diagram **8a** and **8b**.

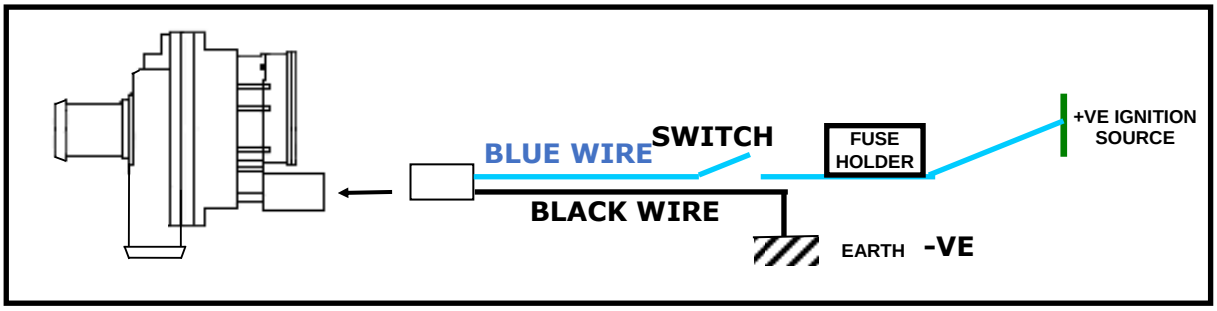

Figure 8a: Wiring diagram for EBP15® Installation with Override Switch.

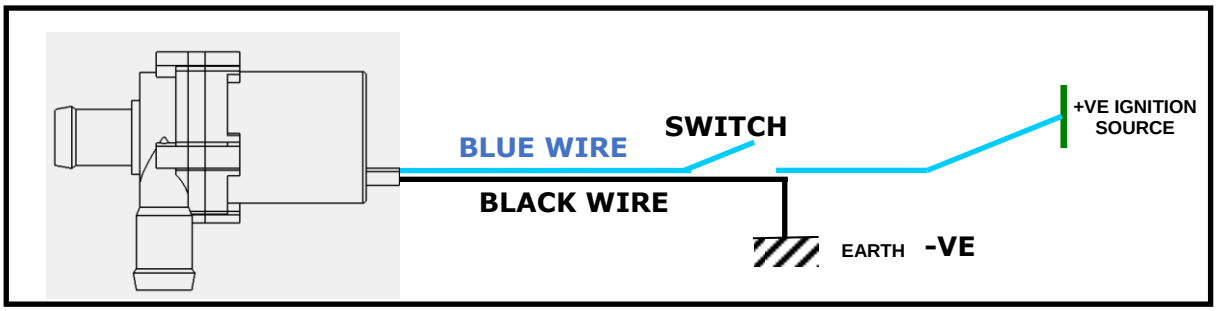

Figure 8b: Wiring diagram for EBP23® Installation with Override Switch.

OPTION 3: REPLACEMENT OF THE MECHANICAL WATER PUMP

1. The EBP® is to be installed in the bottom radiator hose, ensure the EBP® inlet and outlet match the direction of the specific engine coolant flow. The pump inlets and outlets are connected using the hose-clamps provided. Refer Figure **9.**

2. Tighten the hose-clamps after 2-3 hours running at temperature and again after 20hrs running.

3. The EBP® is then to be wired up as described in each appropriate application refer Figure **4a** and **4b**.

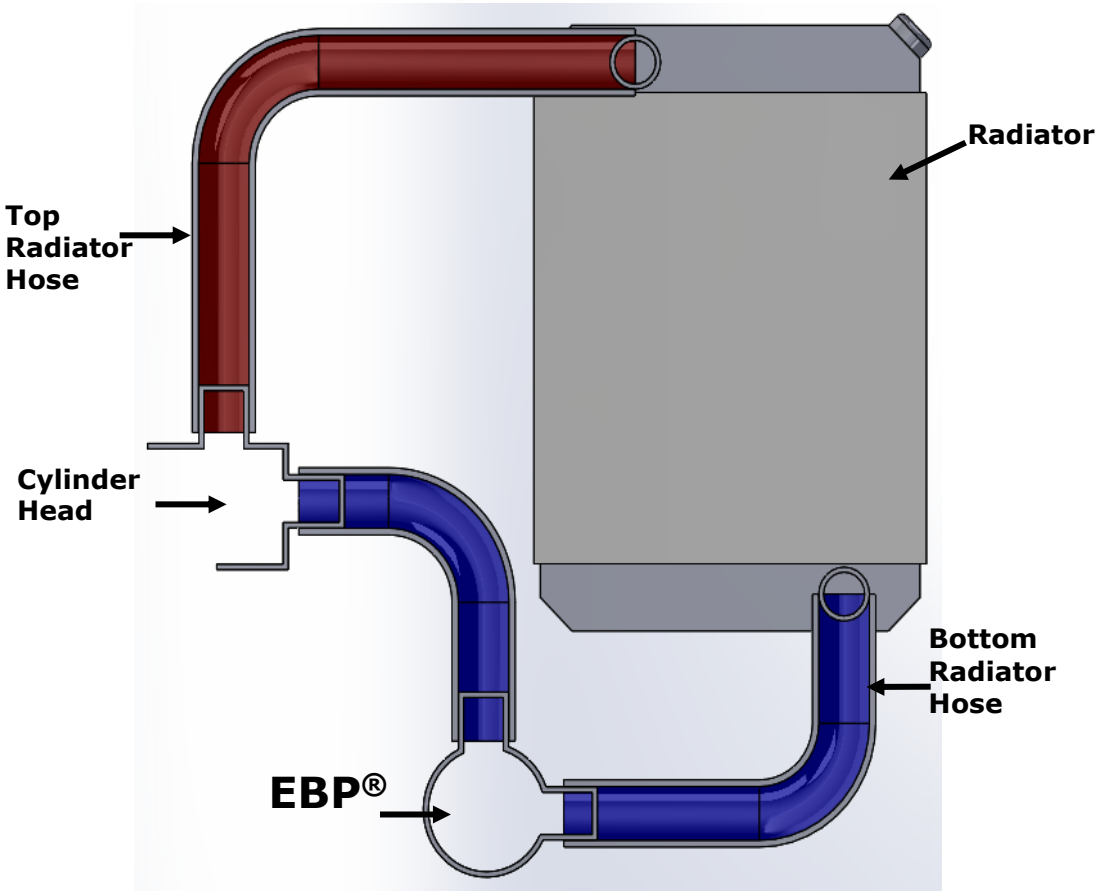

Figure 9: Fitment of the EBP® to replace the Mechanical Water Pump in a Motorcycle application.

APPLICATION 4: MULTI-PURPOSE PUMP

The EBP® may be used in a diverse number of applications where up to 15L/min or 23L/min flow is required, such as irrigation, camping, solar pumps, go-karts, or marine operations.

Go-Kart Water Pump

The EBP® may replace or compliment an existing thermosiphon or mechanical water pump system.

Camping/Caravan/Recreation

The EBP®'s can be used in a variety of arrangements where pumping is necessary: outdoor showers, sinks, toilets, taps etc.

Marine

The EBP® can be used to compliment the existing water pump on inboard motors similar to the automotive needs described earlier; increased cooling and the prevention of heat soak after engine shut down.

Warning: The EBP® is only splash resistant, and should not be fully submerged.

Solar Applications

The EBP® can be used to circulate water through 12V solar hot water systems. It has a lift capacity of approx. 1.8 metres.

Irrigation Applications

The EBP® can be used to pump water through irrigation systems, Refer to the specifications for the appropriate EBP® to suit your application.

WARNINGS

- Engine temperature must be monitored at all times after installation.
- Prior to installation of EBP® we highly recommend the cooling system is flushed.
- Some vehicles may require special bleeding procedures to remove air from the cooling system not described here. The EBP® must be completely filled with coolant at all times to preserve warranty.
- The EBP® is not designed to operate from the vehicle's engine management system as an ignition source because it may cause premature failure, the ignition source must be a steady positive supply of up to 15VDC.
- All wiring must be kept away from potential hot spots, such as exhaust manifolds, during installation to ensure proper EBP® operation and to prevent any subsequent damage caused by wiring failure.

WARRANTY

We warrant 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 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) 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