

# ELECTRIC WATER PUMP INSTALLATION

WORDS: MARCUS GIBSON PHOTOS: MARCUS GIBSON / ADAM CROY



## THE SOLUTION

We purchased the Davies Craig 'Triple Treat' package, which is available through BNT branches nationwide. The package included a 2120cfm 16-inch electric fan — the biggest we could fit on the radiator; an EWP150 alloy water pump and control module — think electronic thermostat; and a small-block Chev header adapter kit. The EWP150 is Davies Craig's new big-capacity pump for those with serious power, serious capacity, or, like us, a tendency to overkill everything. The Triple Treat is also available with smaller flowing EWP80 and EWP115 pumps. You can purchase each component separately,

but we strongly recommend you run the controller with the EWP, as it will have things working the way they've been designed to. Each component comes with absolutely everything you will need for installation, apart from the tools, making it a very simple bolt-in job — especially for us, as we combined it with a Chev small block-specific header kit, which removes the need for any custom work. If you have a less common motor, it's still easy enough to install the kit at home over a weekend; it's just slightly more time consuming to install than with the header kit.

# HOT AND COLD

AS STUBBORN AS THE OWNER OF THIS GMC IS, AN OVERHEATING ISSUE NEARLY HAD HIM GIVING UP AND BUYING A MODERN PLASTIC TRUCK FOR RACE-CAR HAULING DUTIES. THANKFULLY, WE HAD JUST THE CURE IN THE FORM OF SOME DAVIES CRAIG TECHNOLOGY

## THE PROBLEM

With the pickup used primarily to haul a big, heavy race-car trailer to and from the owner's local racetrack, two parts of the 150km round trip from Auckland's North Shore to Hampton Downs raceway always wreaked havoc on its 350ci small-block Chev's cooling system: first, Auckland's volatile traffic that often slows to a crawling bottleneck; and, second, the climb up the Bombay Hills after a hard day's racing. Add situation A after

situation B, and you were guaranteed a classic roadside situation with a pissed-off girlfriend sitting in the passenger seat giving the owner the 'this piece of shit has to go' look. It had got to the point at which enough was enough; either the cooling needed to be sorted, or the truck would be replaced with something new, boring, and reliable — yuck! Luckily, we were able to provide the owner with a simple solution before it was all too late.

## LATEST TECHNOLOGY

Since we fitted this kit, Davies Craig has released an updated electronic water pump controller. Essentially, this has all the same features as the one we installed, but in an easier to use and more attractive interface. It offers the ability to select among nine preset temperatures (140°F to 212°F) and is suitable for both 12 and 24 volt systems. Like all Davies Craig products, the new controller is Australian designed and comes complete with a two-year warranty.



## HOW THE CONTROLLER WORKS

The controller is the brains of the outfit, and replaces a traditional thermostat, controlling the coolant flow to reduce engine warm-up times and maintain a predetermined running temperature. The electric pump goes about its business ignoring your engine rpm, unlike a traditional mechanical pump; so, if the engine is at low rpm — say, in traffic or towing up a hill — and you reach that preset temperature, the pump will be working at full capacity to maintain that constant temperature, which should solve our problem of not enough coolant flow at low rpm. You can adjust the target operating temperature with the push of the button — colder equals more power; hotter equals more fuel mileage. The controller also controls the electric fan, switching it on once you are three degrees over your set temperature. Another awesome feature is the overrun, which will see both the EWP and the fan running after shut-down to avoid heat soak.



# FITMENT



## PUMP

There are two options to fitting the system — one with the header kit, which removes the factory water pump, and the second leaving the factory pump but removing the impeller and having it as just an idler pulley. The EWP itself does not require a solid mount, and is happy just hanging off the silicone radiator hose, which makes installation very easy.

To fit the kit with the header kit, which is essentially two short elbows that bolt to the stock water pump bolt holes and a specific piece of hosing, first we removed the stock pump. Then it was a matter of bolting on both water outlets with the provided cap screws, not forgetting to insert the rubber O-rings provided — there is no need for sealant. Depending on your vehicle, you may need to shorten the silicone hose as we did. A sharp blade or Stanley knife will make short work of this.



With the two top lines trimmed, we fitted the pipe to the outlets and sized up the lower piece with the EWP, making sure it was suspended in mid-air and not fouling on the chassis rail. Once happy, we secured it with the provided T-bolt clamps. The key thing was to make sure we removed the standard thermostat, as it was no longer needed.

To link the pump and lower radiator inlet, there are a few options. You can use a silicone hose, chop down the factory radiator hose to length, or, like us, use a short length of alloy pipe with the silicone offcuts as joiners. There is no real advantage of one way over another. We have also installed a large alloy radiator, but the lower outlet matched the original copper one, so nothing crazy in terms of pipe orientation was needed. Once all clamps were tightened, we filled the system with coolant, paying close attention to all joints for leaks.



4

## FAN

Getting the fan mounted could not be easier. While the Triple Treat comes with a 16-inch item, Davies Craig also offers smaller 8-inch through to 14-inch items. Just remember — you want as much fan as possible, and opting for a large 16-inch single over a smaller item is going to provide better cooling capability.

The supplied 16-inch Davies Craig fan can be mounted either forwards of or behind the radiator. Just make sure the fan blade is placed on the correct way. It's simple to swap direction: simply remove the clip that holds the blade in place, rotate the fan, and push the clip back on. You will find the orientation printed on the blade centre. Once it's wired up, just check that it's blowing air in the direction you require it.

To mount the fan, we used the clips provided, placing them in the location on the fan that best suited our situation. Once happy, we used a small screwdriver to carefully poke four holes through the radiator's cooling fins. The kit comes with four bolts, which are extra long to allow for thick-core radiators. We made sure to trim these to suit our core thickness, rather than have long sharp bolts hanging out the back. We also ensured, when bolting it on, that we had the supplied fibre washer against the radiator, then the steel one over top. It'd be easy to over-tighten these and damage the core, so a bit of care was required not to do so.



5

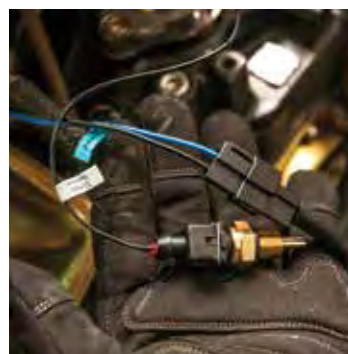


## CONTROLLER

When fitting the controller, it's important to select a location inside the cabin that is easily accessible and, ideally, visible from the driver's seat, so you can see what the pump is doing at all times. We chose the driver kick panel, as it was the only flat surface suitable. The self-tapping screws provided made short work of mounting it. If you have only steel surfaces to mount to, some M3 rivnuts would make for a tidy installation. You will also need to mount the small remote LED where you can see it. This tells you whether or not the controller has power — a valuable diagnostic tool!

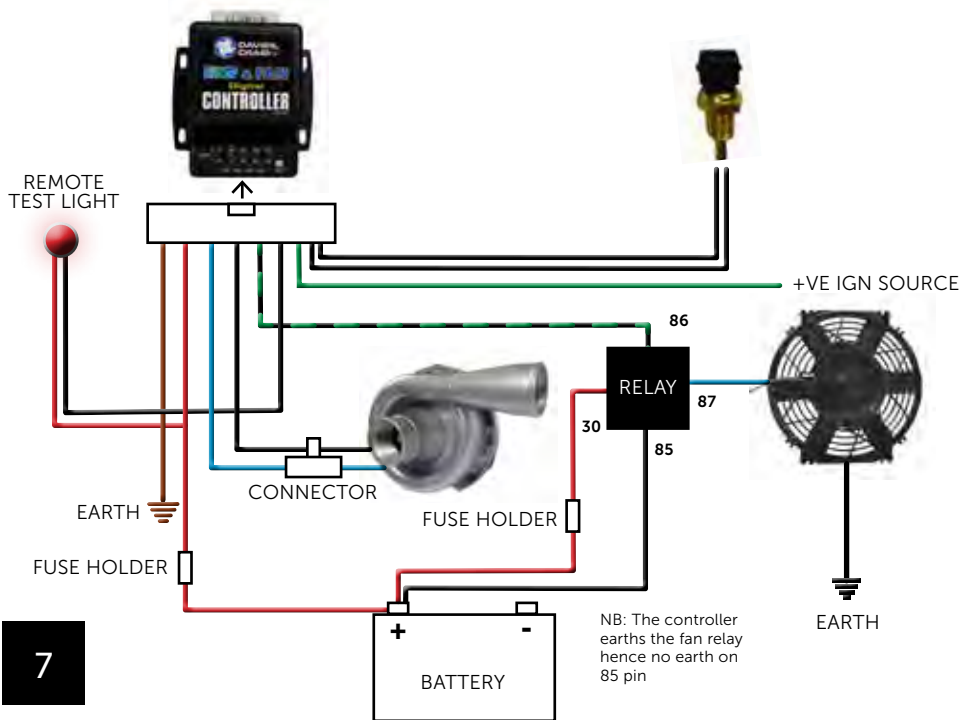


6



## TEMPERATURE SENSOR

The controller requires a coolant temperature sensor, which is included in the kit. This can be mounted in a few different locations — either in the inline adaptor housing, which would go on the lower radiator line, or on the thermostat housing or manifold top. Our alloy radiator had a threaded bung near the top hose outlet, so we opted for this purely for aesthetic reasons.



## 7 WIRING IT UP

Both the controller and the fan come with their own wiring looms, so you don't have to worry too much about getting correct wiring, as it's all been handled for you. The fan should be wired in first. We mounted the supplied relay behind the grille, and used the same mounting hole for the earth wire, rubbing a small area of paint back to bare steel to ensure a good connection. You will need a constant 12V source connected to the red wire, and the green wire must connect to the green/black wire from the controller loom, as this wire is the switch.

All connections like this were soldered, and then sealed with heat shrink wrap. The kit does include wire joiners, but we like to take things to a more permanent and weatherproof level, to ensure reliability.

With the controller mounted, the next step was to plug in the loom. You will need a hole in the firewall to feed the loom through. As there are two plugs prewired on this loom, the hole will need to be at least 20mm in diameter. If you don't have a large enough hole — or don't want to drill

one — cutting the loom and then joining it back together once through a smaller hole is a good solution. If you do this, make sure each connection is soldered and insulated properly. This loom is well labelled, so you can't go too wrong.

The loom has a plug for the EWP and another for the temperature sensor. The controller will also need a switched and constant 12V source and earth. All of these wires are clearly labelled. You can run the constant direct from the battery, as there is an inline fuse, although we found an unused source under the dash for both constant and switched 12V. There are slice clips included, but, again, we decided to solder and insulate with shrink wrap.

Once all the wires were connected, we cable tied the excess in a tidy bundle under the dash. Flicking on the key saw the controller run through its test start up procedure, a sign of success. From here, the next step was to select the target temperature by following the directions in the manual provided. We opted to run with 180 degrees.

## PROBLEMS WE ENCOUNTERED

Due to the previous auxiliary layout for this particular vehicle, it wasn't a straightforward 'bolt everything back in and go' experience. As you can see below, both the alternator and the power steering pump mounted off the water pump housing. Making this situation even worse was the fact that the engine-driven compressor for the truck's airbag suspension was mounted on one of the alternate alternator positions.

Fortunately, a number of bolt-on kits are available for small block alternators and power steering pumps — low mount, high mount, top mount, and mid mount. Any of these that don't bolt to the stock water pump are going to work, although each chassis will be different, so take



care in selecting a combination that works in your application, or set about fabricating something yourself to suit.

Alternatively, you could revert to using the factory pump housing just as an idler pulley, which is what we ended up doing, due to the added difficulty of including the airbag compressor. If you decide to go this route, you will need to remove the water pump impeller blades, by removing the rear inspection plate from the housing, which isn't all that hard.

## THE OUTCOME

Running the new combination of alloy radiator, EWP, and 16-inch fan with controller has made a world of difference to the truck's cooling system. The driver now sees no spikes on the temperature gauge — it sits constant, whether he's hard on the accelerator on the back roads, sitting in Auckland's less than ideal traffic, or hauling the trailer on the Bombays. We also noticed when testing the system that the truck reaches operating temperature faster, which will be a big help with those cold morning warm-ups. But, above all else, it restored to the owner peace of mind that he'll reach his destination without a roadside pit stop, and that he can finally get rid of that large water container that's always sat in the tray!

## THE COST

Since we did the labour on this one ourselves, we'll class that as free. So the only cost involved was the purchase of the Davies Craig Triple Treat kit, which, with the largest available water pump BNT has a special ongoing trade price of \$479+GST. Add to this the header kit for the trade price also of \$129+GST and you've got a total cost of \$608+GST. When you work out the price of buying the parts in the kit separately, it essentially works out that you get the fan for free. Not a bad deal at all!