

# **PLAZMAMAN**

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## **PATROL TD42 W2A KIT INSTALLATION MANUAL**

**You have purchased a high performance Plazmaman W2A Intercooler kit. This kit should only be fitted by persons who have a good level of mechanical and automotive wiring knowledge/skill. If you do not fall into this category we highly recommend that you seek the services of professional installers. Please contact us in regards to an installer in your area.**

- 1. Carefully read this whole instruction manual first before you start. Also check through the parts list to make sure you have all the necessary components. Incorrect installation could lead to engine failure and/or component damage.**
- 2. Start the whole process by disconnecting the battery terminals. Once this is done remove the front bull bar and grille. This might also include +/- winch wiring, spot light and antenna wiring. Remove the OEM top mount Intercooler and bracket, taking note of all the removed vacuum lines. These lines will have to be plugged back into the inlet manifold as a final step.**

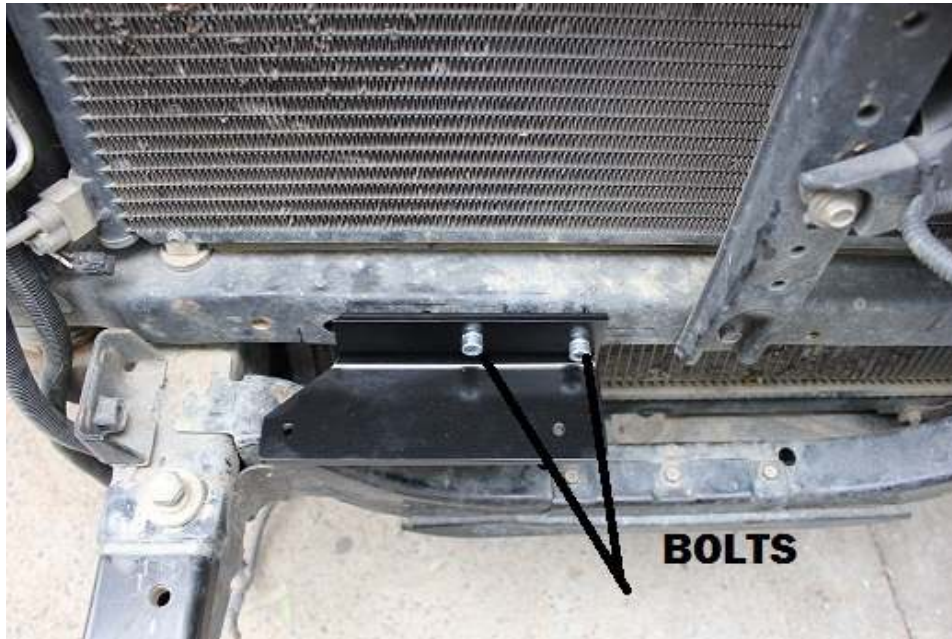
### **RADIATOR / WATER PUMP INSTALLATION**

- 3. Using supplied Large L shaped bottom bracket , bolt it into place on the front chassis section. The threaded holes are in the chassis from factory.**

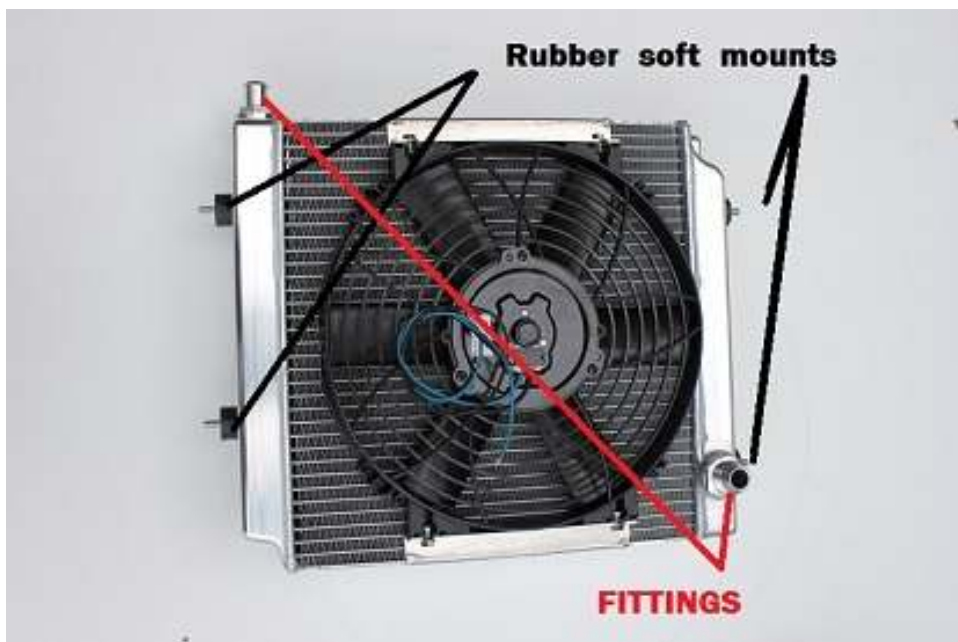
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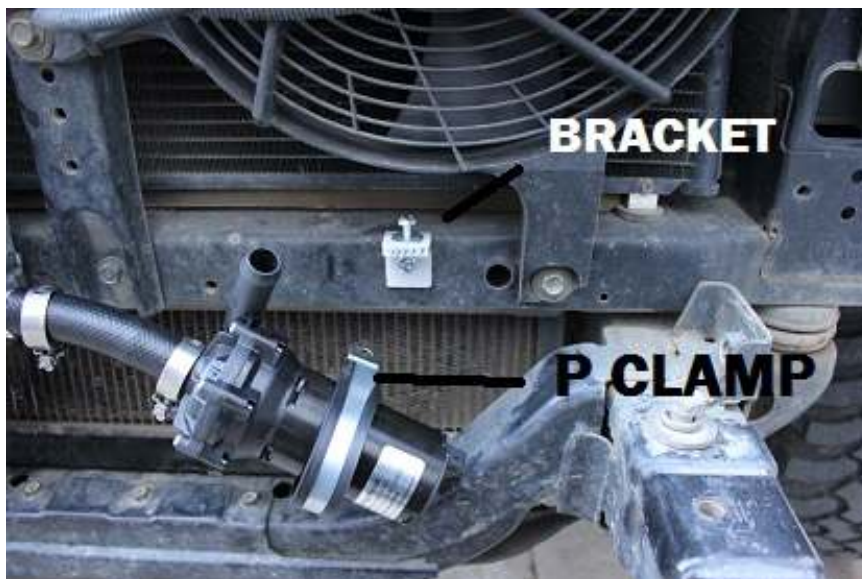
4. Install supplied rubber mounts and water hose fittings into the supplied radiator. Bolt thermo fan into place.



5. Install radiator by pushing the bottom mounts through the holes in the bottom bracket, and using supplied top brackets (as pictured) bolt into place. The rubber soft mounts will give the radiator extra anti vibration support across rough terrain.

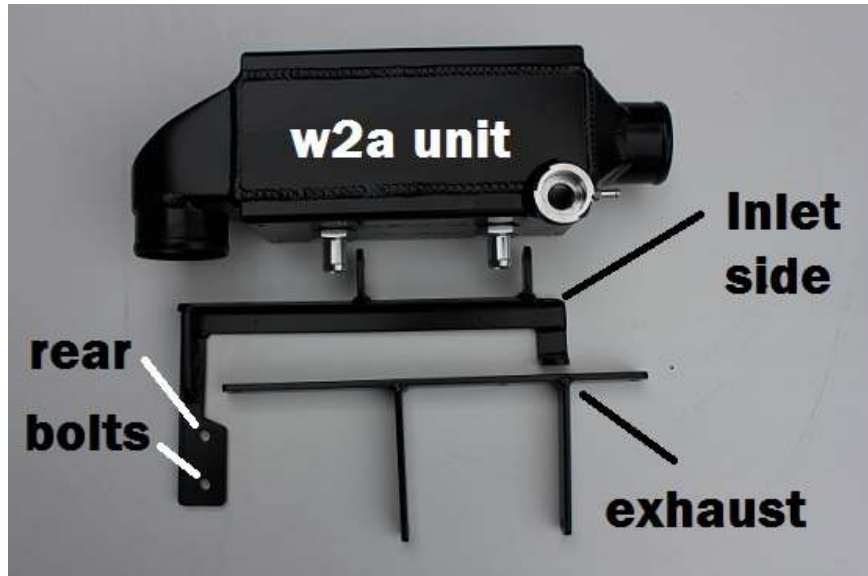


6. Bolt small L shaped bracket onto chassis. Find the rubber P clamp and bolt into place. Slide small section of hose onto end of water pump and push through P Clamp and secure into place.



## W2A UNIT INSTALLATION

7. The W2A unit comes supplied with 2 rigid metal brackets. These are bolted onto either side of the rocker cover. One is bolted on top of the inlet manifold – x1 bolt on top and x2 hard to get to bolts on the rear side near back of the head- you must have patience but not very difficult. Bolt this bracket into place tightly first.





8. The bracket on the exhaust side is a lot easier to fit. Using the supplied stainless studs, screw them into place tightly where the original bolts through the heat shield used to go. Fit the bracket and add the nuts/flat washers, **but do not tighten yet**.



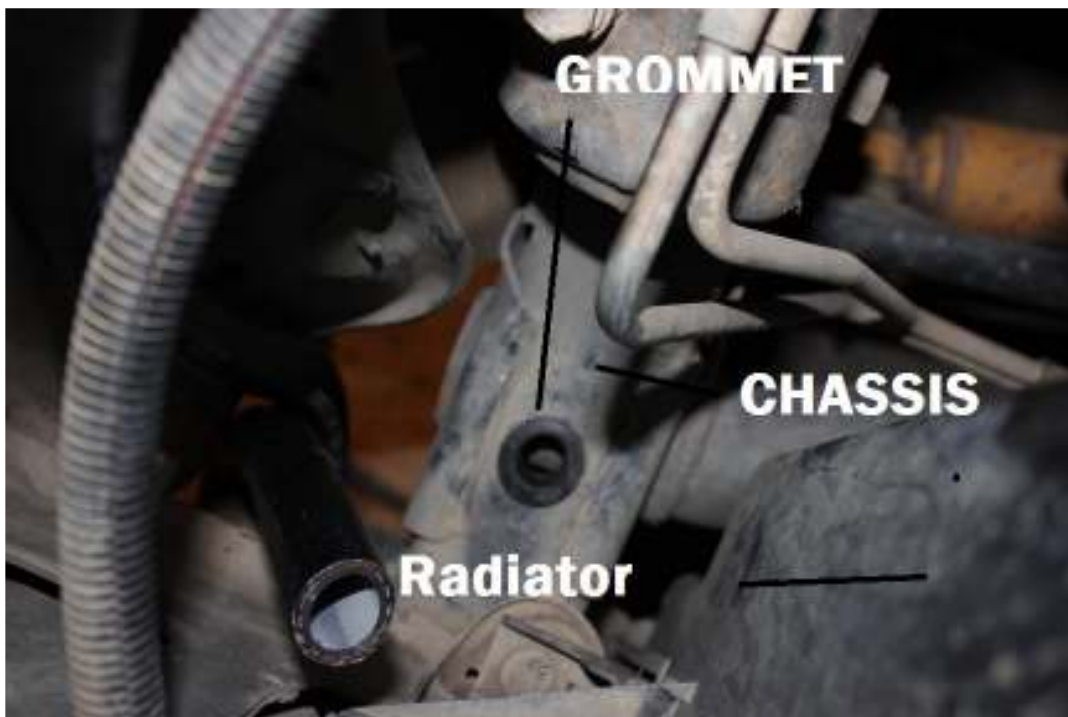
9. Now carefully pick up the W2A unit and test fit over the x4 upright brackets. The uprights sometimes might have to be tapped in or outwards to suit the w2a width. This can be done carefully with a plastic hammer. Once the w2a unit is in place, bolt it into place and **make sure you tighten the x3 nuts on the top part of the exhaust manifold bracket**.



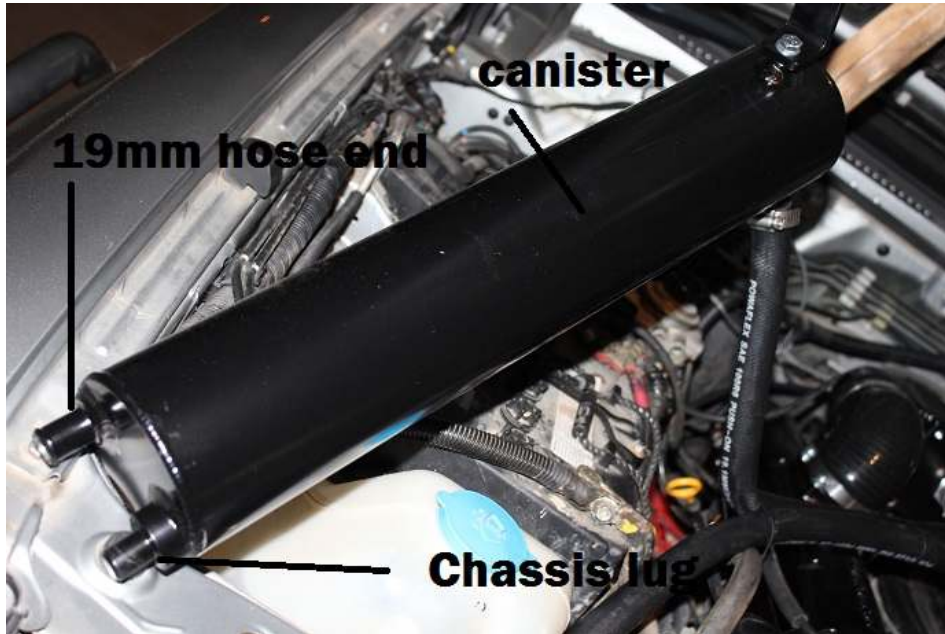
**10. Next step is to add the turbo side and inlet entry piping. The inlet side is standard across all models but the turbo side will sometimes vary due to different models and aftermarket turbo setups that are around. We can cater for all setups but sometimes need feedback to get them correct.**



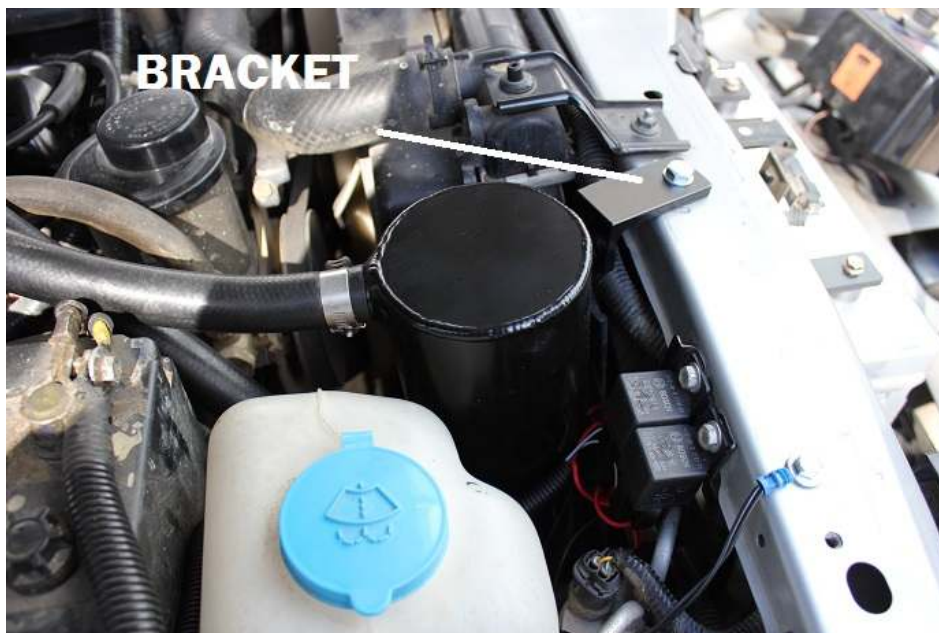
11. Installation of the extra capacity water tank is next. This increases the system water capacity by approx. 3 litres. We supply a small grommet which gets inserted into a factory chassis hole on the drivers side just behind the radiator shroud. See picture. The tank has a 19mm hole on the bottom and also a grommet lug welded on. The lug goes straight into the rubber grommet which was inserted into the chassis hole. The bottom 19mm hole takes the hose which comes out of the water pump. Then from the top of this canister the hose goes to the **DRIVERS** side of the water W2A unit.







12. **We do recommend** the bottom hose be fitted and tightened when the canister is on top of engine bay . It is a lot harder to reach the hose underneath. Once tank is in place secure the top with supplied bracket into factory threaded radiator panel hole.



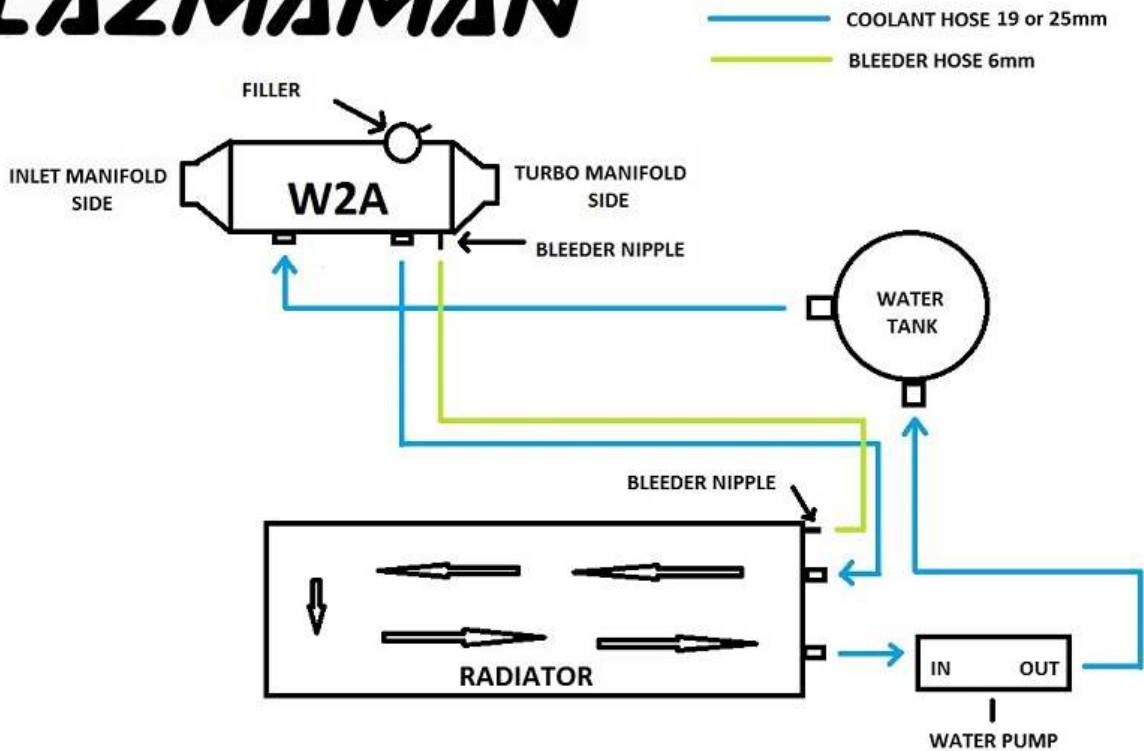


13. At this step we wire in the supplied relay/fuse kits. These kits that we supply a very easy to install, but as with all wiring just have a bit of patience. We used generic relays for these so replacements should be easy to find if you are in trouble. If you are not a wiring friendly person we do suggest that you do get help on this one. You must remember to wire the fan and water pump together into switched accessories 12V+ wire that can be found somewhere. This way you can run them both for a while if need be after some hard driving. We also recommend that you run these through any turbo timer or/and alarm system that you may have. Running these will help greatly reduce under bonnet air temperatures after shut off. The constant running thermo fan will also help with under bonnet temperature reduction for hotter weather days and may aid in extra cooling for air conditioning condensers. ( water temps are relatively low in the w2a radiator system so not much heat is produced ).
14. **One critical thing to watch out for is for those guys that do river crossings. We do recommend that the thermo fan is also internally dash switched, so that is can be turned off if attempting river crossings. Failure to do so will result in a damaged radiator core.**



15. HOSE INSTALLATION – Below is the typical hose installation for our w2a systems ( DIAGRAM BELOW IS NOT IDENTICAL TO PATROL SYSTEM , it is a generic diagram. BUT IT USES THE SAME FLOW PATHS THAT HAVE TO BE FOLLOWED) . Notice the air bleeds. These are critical so no air locks occur.

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**WARNING - MOST W2A WATER FLOW AND COOLING ISSUES ARE MAINLY DUE TO AIR LOCKS WITHIN THE SYSTEM , AND/OR INCORRECT WIRING ( IE WRONG PUMP ROTATION ).**

16. Below are some pictures of the hose routes that we choose. You can also choose your own paths/directions to go around certain articles you may have installed in your vehicle. **IT IS CRITICAL THAT HOSES DO NOT HAVE SHARP BENDS AS THIS WILL RESTRICT WATER FLOW and system will not cool properly.**







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**17. ADDING THE WATER/COOLANT.** At this stage of the installation all the hardware should be fitted and wiring hoses all attached. **DOUBLE CHECK YOUR WORK IS CORRECT.** Most problems occur due to mistakes or not being mechanically minded.

The majority of pump failures and system cooling issues are due to air locks in the system. Even us the experts sometimes get caught out by air locks. They are the devil of any w2a system. At Plazmaman we have done all the hard testing work to make these systems easy to fill with water. Our anti air lock hose that run from the top of the radiator to the w2a unit keeps the system free of these once the water has been filled properly. If the system has for some reason run dry then initial filling procedure below has to be followed again.

We recommend using our coolant /anti corrosion agent as it is supplied to us by our radiator core manufacturer. **We HIGHLY recommend also using distilled water** in the system. This prolongs the systems life as we have experienced through prolonged use of our products.

**ASK FOR SOMEONE TO HELP YOU AS TO MAKE THIS JOB EASIER. IF POSSIBLE FIND A SMALL FUNNEL – THIS WILL HELP.**

**FILLING THE CANISTER – Make sure grille is off the car. Use Water only at this stage.**

**Carefully crack the top radiator 135 DEG motorsport fitting by half a turn and leave loose.** Undo the top hose that runs from the canister to the w2a unit – undo the w2a unit side. Hold hose in the air and fill the canister. Have patience , as the canister fills it will automatically start to fill the radiator. You will know when the radiator is full when the water will rush out of the top 135 deg fitting you initially cracked open. Once full close this fitting up – But not very tight for now.

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At this stage the radiator and canister should be full. Re-attach the top hose to the w2a unit. Carefully pour 500ml of the anti corrosion/inhibitor into the w2a unit through the top radiator cap entry. Add extra water till full. Crack open the 135 deg fitting again and look for any air locks to release. Once this is done take the top radiator air bleed nipple off and look for air locks to release them.

Now it is time to turn on the water pump. We recommend taking the Thermo fan relay out as it will annoy you whilst listening to the water pump flowing. Run the pump for 4-5 second intervals whilst stopping to fill top water level. We do recommend that at times you stop the pump and check the 135 deg fitting and top radiator air bleeds for air locks. This may take a few minutes to get correct, but once it settles the pump should run freely and the water flow on top through the radiator neck be a free flow. **WATER FLOW SHOULD BE FROM THE INLET SIDE OUT TO THE TURBO SIDE WHEN WIRED PROPERLY – IT IS HARD TO GET WRONG.**

18. Now it is time to install the supplied radiator overflow plastic canister to any part of the engine bay you see fit. Make sure it is away from direct turbo exhaust heat. Attach the hose from this to the nipple on the radiator neck.



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**19. Reattached the factory horns and refit the front grille. Sometimes you might have to trim a bit of plastic from back of the grille to fit properly. Re fit any other accessory you might have removed. Double check everything and if not sure call us to discuss any issues.**



**We are constantly looking at areas to improve so any info or advice from issues you may have incurred will be most welcome.**

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