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# INSTALLATION GUIDE

ISUZU D-MAX RG

MAZDA BT-50 TF



P/N: PWA110250 PIPE KIT | P/N PW110249 - INTERCOOLER



ENGINEERING THE UNFAIR ADVANTAGE

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## CONDITIONAL MANUFACTURERS WARRANTY

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PWR Custom Aluminium Radiators, Intercoolers and Oil Coolers along with cores only for these units are warranted to the original purchaser to be free of fault for materials and workmanship for a period of 1 year from the date of purchase and only when used under normal operating conditions. Claims for internal damage to engine or other related components of user's vehicle are not covered by this warranty. The PWR product user is responsible for the monitoring of engine temperature operations and for having the appropriate detection devices in place to warn the user of overheating and other engine related malfunctions. At time of installation an approved coolant must be added to the cooling system. (see important information – Radiator point 3) Responsibility for any damage, injury or loss attributed to any fault in material or workmanship in the above listed products shall be limited by replacing the unit on return of the defective product.

### ***Warranty voids***

If the product is repaired or welded by another party other than PWR Performance Products. \* If any defect is attributable to an accident, abuse or negligence. \* Where the product is used for an application for other than it was intended. \* If any parts or accessories are fitted which adversely affect the product

### ***Warranty does not cover***

Charge relating to removal and replacement to vehicle. \*Internal or external corrosion. \* Any consequential damage. \* Freight cost incurred to send the item back to PWR

## LIMIT OF LIABILITY STATEMENT

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The information contained in this publication was accurate and in effect at the time the publication was approved for printing and is subject to change without notice or liability. PWR Performance Products reserves the right to revise the information presented herein or to discontinue the production of parts described at any time.

# SAFETY PRECAUTIONS

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**STOP**

**CAREFULLY READ THE IMPORTANT SAFETY PRECAUTIONS and WARNINGS BEFORE PROCEEDING WITH THE INSTALLATION!**

Appropriate disassembly, assembly methods and procedures are essential to ensure the personal safety of the individual performing the kit installation. Improper installation due to the failure to correctly follow these instructions could cause personal injury or death. Read each step of the installation manual carefully before starting the installation.

- Always wear safety glasses for eye protection.
- Place the ignition switch in the OFF position.
- Always apply the parking brake when working on the vehicle.
- Block the front and rear tyre surfaces to prevent unexpected vehicle movement.
- Operate the engine only in well-ventilated areas to avoid exposure to carbon monoxide.
- Do not smoke or use flammable items near or around the fuel system.
- Use chemicals and cleaners only in well ventilated areas.
- Batteries can produce explosive hydrogen gas which can cause personal injury. Do not allow flames, sparks or flammable sources to come near the battery.
- Keep hands and any other objects away from the radiator fan blades.
- Keep yourself and your clothing away from moving parts when the engine is running.
- Do not wear loose clothing or jewellery that can be caught in rotating or moving parts.

# IMPORTANT INFORMATION FOR FITTING

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Please read the following before fitting our PWR Performance Product.

## **WARNING**

**WARNING:** Failure to follow this procedure will void your warranty.

- Do not use this product in any other motor vehicle for which it is not designed.
- Do not use any other mounting location / method other than described in this instruction.
- It is advisable to seek assistance of another person when installing this product.
- Do not repair or modify this product and / or its mounting bracket in any way - repair or modification may affect proper operation of the vehicle or cause destruction of property.
- Ensure all torque settings are followed.
- Be sure to clean and remove any loose debris before removing pipe work as debris entering the engine could be detrimental to the engine and or components

### ***Radiators:***

- Before removing the old radiator check the existing coolant for stray current. This is done by connecting a voltmeter between the coolant and the battery ground. The meter should have a range of at least 12 volts (assuming the vehicle have a 12 volt charging system) and a sensitivity of at least one-tenth of a volt. By connecting one test lead to battery ground and placing the other lead into the coolant (DO NOT TOUCH THE METAL CORE OR FILLER NECK) any voltage indicates current passing through the coolant-ELECTROLYSIS.
- If no current found flush cooling system with distilled water to remove the existing coolant/inhibitors. When the entire system has been flushed including the over flow bottles, you can fit the new radiator. DO NOT MIX COOLANTS
- Select a coolant that is recommended by the manufacturer or by PWR. Product must meet the current AS2108 or manufacturer's engine coolant/inhibitor standard and refill system. Bring engine up to temperature and let cool. Re-Check the coolant level and top up if necessary. USE ONLY DISTILLED WATER.
- IMPORTANT- again recheck step 1 for any stray current.
- PLEASE be careful when fitting and make sure all mounting points are tight (to manufacturer's specifications) and there is sufficient clearance so no rubbing occurs.
- PLEASE ensure that all hose clamps are done up.
- Correct cap must be used for each individual system.

### ***Intercoolers:***

- PLEASE be careful when fitting and make sure all mounting points are tight (to manufacturer's specifications) and there is sufficient clearance so no rubbing occurs.
- PLEASE ensure that all hose clamps are done up.

### ***Oil Coolers:***

- PLEASE be careful when fitting and make sure all mounting points are tight (to manufacturer's specifications) and there is sufficient clearance so no rubbing occurs.
- PLEASE ensure that all hose clamps are done up.
- Do not run over 80 psi rating.

### ***Liquid to Air Barrel Intercooler kits:***

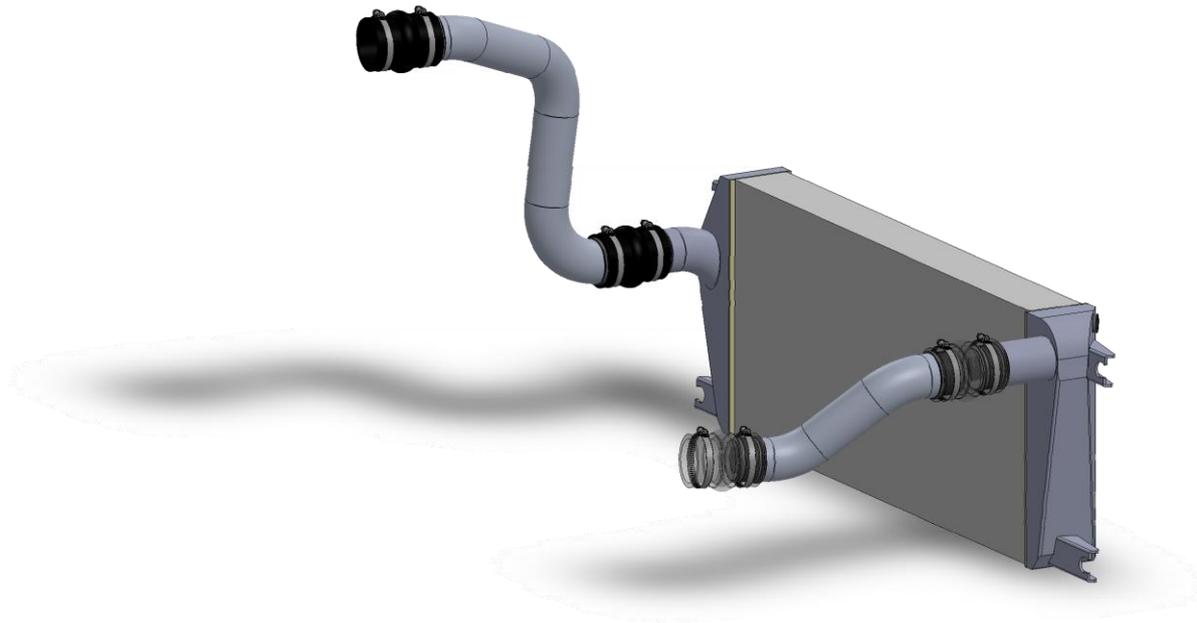
- Select a coolant that is recommended by the manufacturer or by PWR. Product must meet the current AS2108 engine coolant/inhibitor standard and refill system. Cycle the fluids through the system to remove air locks. Re-Check the coolant level and top up if necessary. USE ONLY DISTILLED WATER
- PLEASE be careful when fitting and make sure all mounting points are tight (to manufacturer's specifications) and that there is sufficient clearance so no rubbing occurs.
- PLEASE ensure that all hose clamps are done up.
- Pump must be fitted in accordance to fitting instructions supplied and by a qualified auto electrician.

# APPLICATION

Before commencing the procedures outlined please read the guide and verify all parts are present and not damaged. If anything is missing or damaged, please notify PWR Advanced Cooling Technology on 07 55471600.

## PACKING LIST

Description	Part Number	Quantity
<b>Air Induction</b>		
68mm Intercooler	PWI110249	1
Bracket Spacer Washers	PWI110249-SM07	4
Cold Intercooler Outlet Pipe	01.110250	1
Hot Intercooler Intake Pipe	02.110250	1
2" Silicone Hump Hose	15A19101	4
1/8" NPT plug	PWA932-02-BLK	1
Zip Tie	73009	1
Hose Clamps	TSS36S30EP00C	8
<b>Decals/Labels/Warranties</b>		
Warranty Card		1



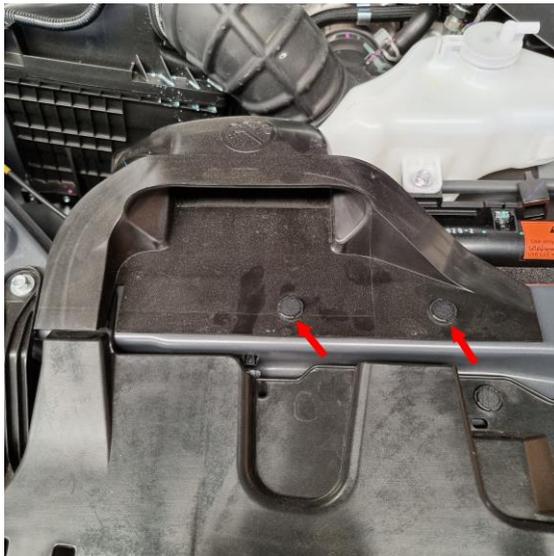
## EQUIPMENT AND SUPPLIES REQUIRED FOR FITMENT

- 1/4" and 3/8" drive ratchets with extensions
- Metric socket sets (short and deep recommended)
- Metric wrench sets
- Phillip's-head and Flat head screwdriver
- Sharp serrated knife, Hacksaw or cutting disk (to cut plastic)
- Marking Pen

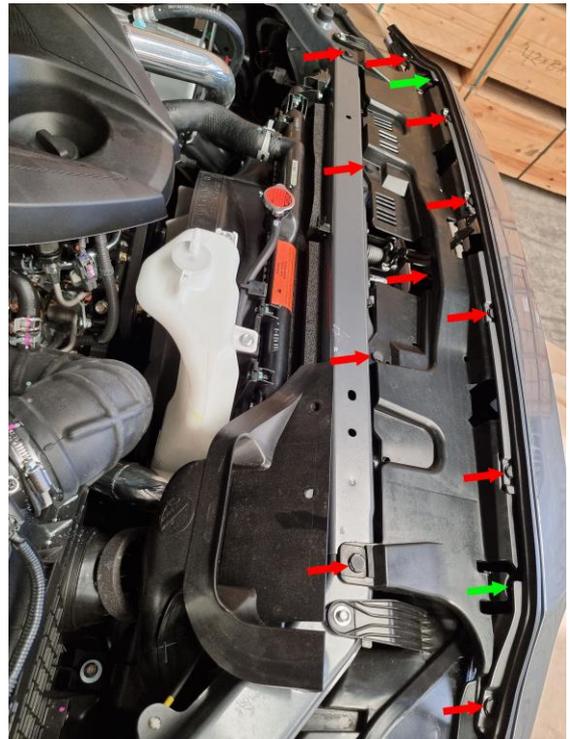
# DISASSEMBLY

The following section will guide you through the disassembly of the OEM parts on your vehicle. Special care should be taken to label parts and avoid damaging items as removed since many items will be reused. Removal of the entire front bumper bar (with grille intact) is necessary for fitment with the majority of the fastening hardware being scrivenets which are easily removed, but many are hidden below the black plastic radiator trim panel.

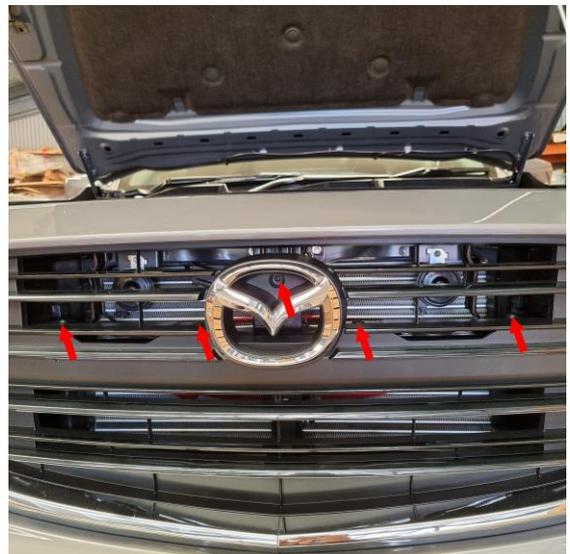
1. Open Bonnet.
2. Cover fenders with fender covers to protect vehicle finish.
3. Disconnect Battery.
4. Remove airbox snorkel by first removing 2 x scrivenets with flat blade screwdriver and lifting directly upwards.



5. Remove 11 x scrivenets indicated with red arrows to allow access to 2 x phillips head screws which need to be removed, indicated by green arrows. The rubber weatherstrip near the headlights may need to be lifted to allow easier access to removing the scrivenets.



6. Remove 4 x scrivenets from inside the grille and 1 x phillips head screw from inside the badge.



7. Moving underneath the front bumper bar, both driver side and passenger side front bar lower plastic trims need to be removed to access the scrivenets underneath.

8. Remove 4 x remaining scrivets.

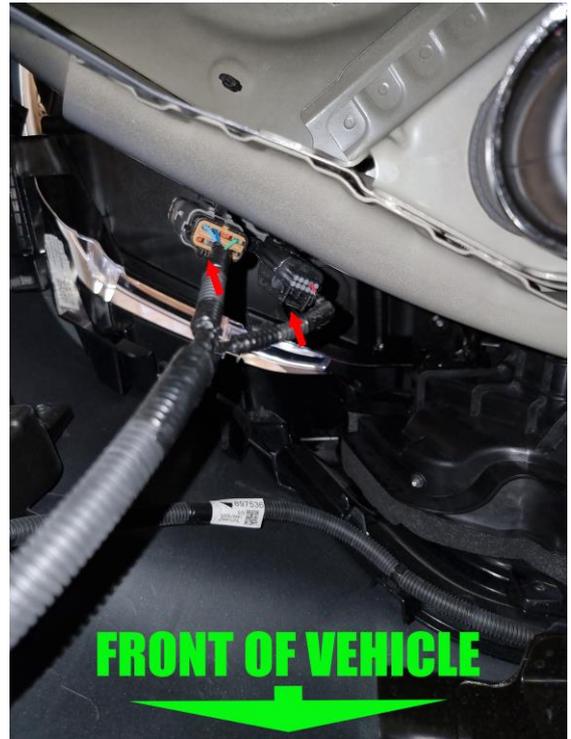


9. Remove 4 x small scrivets inside each wheel arch area carefully, as these are prone to breaking easily.



10. Move the passenger side wheel arch liner away from the bar enough to gain access to inside the front bar to release both wiring harness connectors with a narrow flat blade

screwdriver.



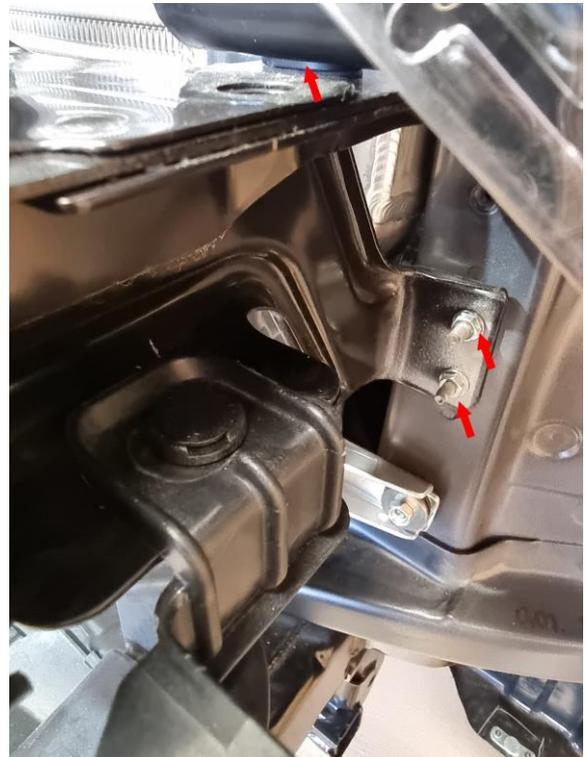
11. Release the front bumper bar from each fender (front guards) by firmly pulling in the direction of the curbside or road. The front bumper bar should now be able to be removed with care as to not scratch the paintwork or damage the headlight assemblies.
12. Remove lower front bar brackets on driver & passenger side as shown. This will assist in removal of the lower half of the plastic ducting.



13. Remove 8 x scrivenets securing both upper driver side & passenger plastic ducts and entire lower plastic duct. The ducts can all be removed.



14. Remove front bumper bar support by removing 6 x nuts and 2 x bolts securing the headlights. Unclip sensor before removing.



15. Remove both horn brackets and place over the top of the radiator out of the way. Unbolt 2 x upper and 2 x lower bolts from bonnet latch upright, removing as a complete assembly. Unclip all 3 harness clips and bonnet release cable and place out of the way for easier OEM intercooler removal and to avoid damage to air conditioning condenser directly behind.



16. Remove white clip from temperature sensor to allow the harness to be released and remove sensor from OEM Intercooler to be refitted to your PWR Intercooler.



17. Loosen all 4 hose clamps on hot and cold side intercooler hoses. Remove top 2 x nuts and lower 2 x bolts on intercooler. The intercooler can now be removed. Remove hoses if hard pipe kit has also been purchased. Press out steel inserts before removing rubber bushes from OEM Intercooler to be reused.



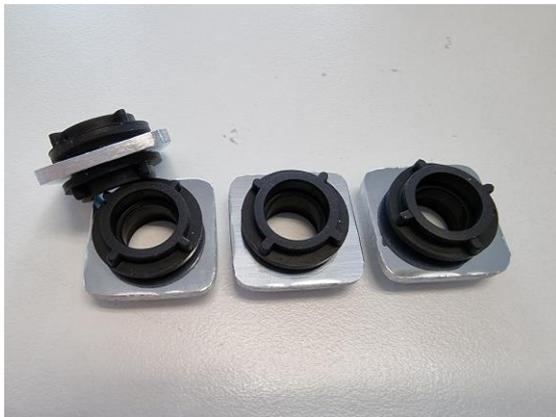
# ASSEMBLY

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The following section will guide you through the assembly of the PWR Advanced Cooling Technology upgraded intercooler and pipe kit installation in your vehicle. If you have already installed the PWR intercooler upgrade and are only installing the pipe kit, please proceed to step **Assembly Section 4 – Pipe kit**.

## **Assembly Section 1 – Intercooler**

18. Insert rubber bushes inside provided spacer washers and slide into PWR Intercooler brackets. Press steel insert through bushes once in position as shown.



19. Thread temperature sensor into PWR intercooler and tighten.

## Assembly Section 2 – Modifications

20. Cut off plastic from both upper driver side & passenger plastic ducts as indicated along the yellow line.



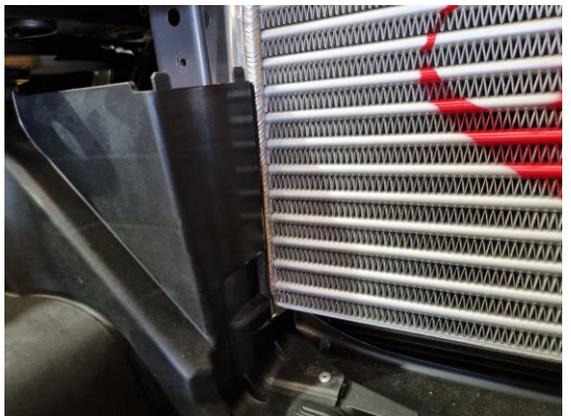
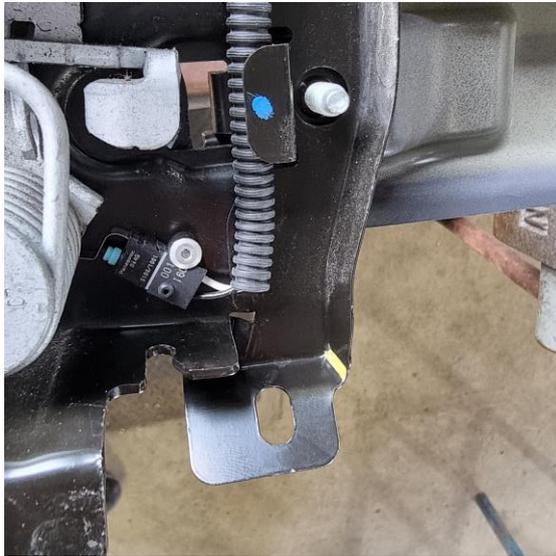
21. On the lower plastic ducting, if the self adhesive foam is in good condition, it can be carefully peeled back and re-used against the new cut edge on the next step.
22. On both sides of the lower ducting, mark out lines measuring down 155mm from the top. Continue this line at approx. 90° to the corner as shown below. Crossed out section is to be cut off and the self adhesive foam strip can be re-stuck down.



23. Remove the bonnet latch sensor harness clip from the harness as shown. There isn't sufficient clearance with the harness clip attached to the bracket once the PWR Intercooler is fitted. A zip tie is supplied to hold this wire in place upon reassembly.



24. The harness bracket on the passenger side of the bonnet latch support needs to be bent to allow clearance. A small cut (indicated by yellow line) will allow this to bend flat as shown.



**Assembly Section 3 – Fitment of PWR Intercooler and OEM components**

25. Assembly of the new PWR Intercooler is essentially the reverse of disassembly noting that the lower brackets use the original bolts, but using previously unused threads in the radiator support panel. If fitting hard pipe kit, please continue to Step# 26. Otherwise, refer to Step# 17 and work backwards to assemble your new PWR Intercooler.



## Assembly Section 4 – Piping kit

26. Push silicone hoses onto all pipes ensuring that the hoses go all the way home against the stops of the billet outlets.
27. Noting the orientation of the hose clamps, the hard pipe side of the silicone hose clamps can be pre-tightened to approx. 6Nm torque. Leave the other hose clamps loose.



28. On the driver side, loosely fit the hot pipe onto the outlet of the turbo ensuring the other end is close to the opening through the radiator support panel.



29. With Plastic engine cover removed, loosely fit the cold pipe onto the intake manifold of the engine with the other end close to the opening on the passenger side of the radiator

support panel.



30. Slide the intercooler into position onto the upper studs on the radiator support panel whilst ensuring that the silicone hoses are going onto the intercooler outlets on both sides, otherwise intercooler won't fully seat into its final position.
31. Fit upper nuts and lower bolts to intercooler brackets and tighten ensuring intercooler is free of wiring looms and the bonnet cable and it is fully seated against the radiator support panel.
32. Rock each hard pipe left to right until perfect alignment is achieved. There should be no gaps between the end of the silicone hoses and the seating edge of the billet outlets on the intercooler, intake manifold and turbo outlet. Tighten all hose clamps to approx. 6Nm torque.
33. Proceed to continue with reassembly of all of the OEM parts (Step# 17, working backwards)
34. Connect battery and confirm that all hoses, pipes, wires and panels are secure. Ensure that no tools or obstructions have been left under the bonnet and your PWR Intercooler and pipe kit is now installed. Check all lights and sensors that may have been disconnected during the install are now fully functional.

*Enjoy and thank you from the team at PWR.*