

# VACUFILL

## Operating Manual

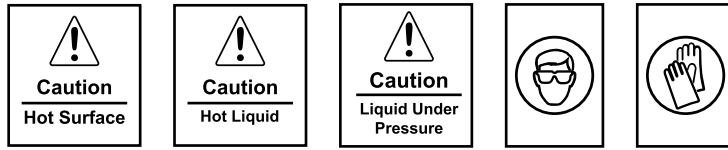




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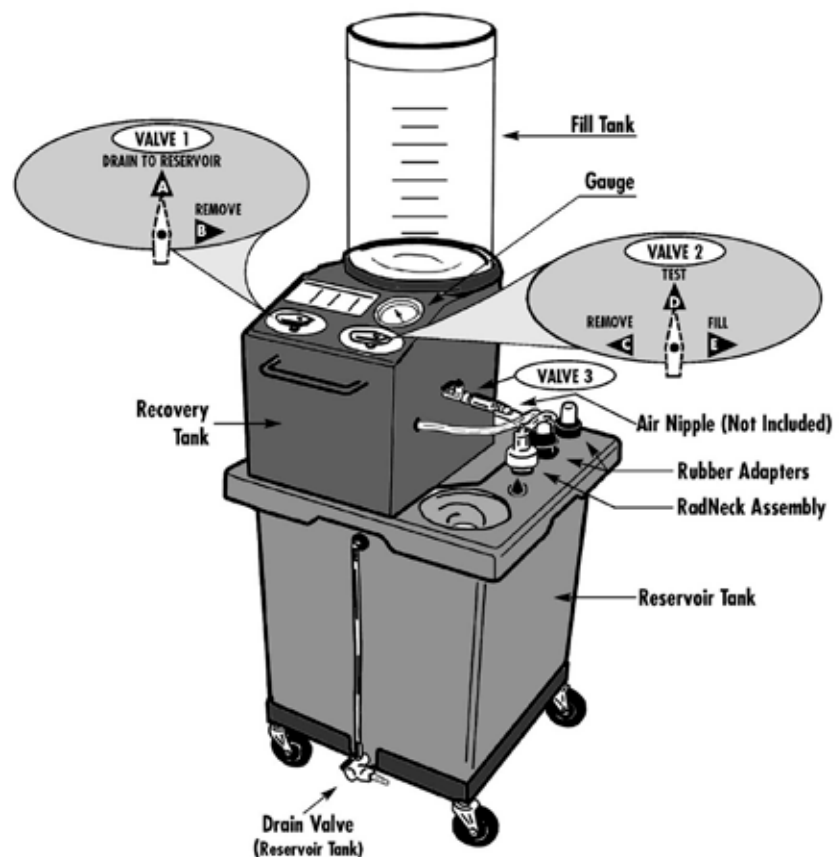
**SAFETY**



**IMPORTANT:** When working on automotive cooling systems, caution and extreme care should be taken at all times. Systems can be under pressure and be very hot.

- Hot pressurised antifreeze/coolant can cause injury
- Moving engine components
- Hot metal surfaces
- Hot fluids
- Engine exhaust fumes contain toxic gases
- Vent exhaust fumes away from work area
- Spillages should be cleared immediately
- Antifreeze/coolant **MUST** be disposed of in accordance with company/legal requirements
- Ensure coolant exchanger valves are operated in correct order

**CONTROL LOCATIONS**



## MACHINE OVERVIEW

### VACUFILL

The VACUFILL is a compressed air powered automotive coolant exchange unit. It affords a quick, simple to connect and effective method to remove coolant from vehicle cooling systems. The unit is also supplied with an easy to follow step by step quick guide.

## COOLING SYSTEMS

There are three types of cooling system configuration.

- **Expansion Tank**

There will be typically 2 or more hoses going to an expansion tank.

Pressure should be released by slowly removing cap. Once the system pressure has been reduced the cap can be removed.

The coolant is extracted via the expansion tank.

- **Overflow Tank**

There will be one hose going to the overflow tank from the radiator.

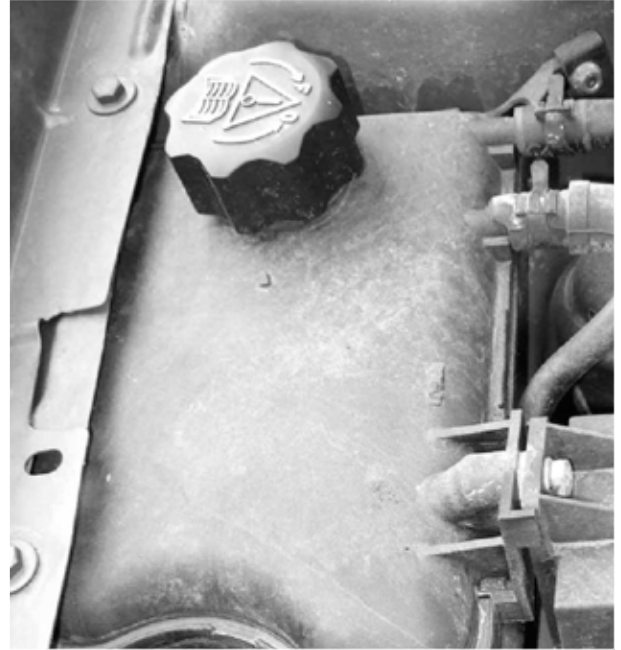
Coolant is first removed from the overflow tank and then using the rubber adapters coolant is extracted from the radiator with the cap removed.

- **Overflow Pipe**

Typically a rubber pipe from the radiator cap neck runs down the side of the radiator.

There is no expansion or overflow tank on this type of cooling system.

System pressure is released via the overflow pipe connection and then coolant using the rubber adapters with the radiator cap removed.



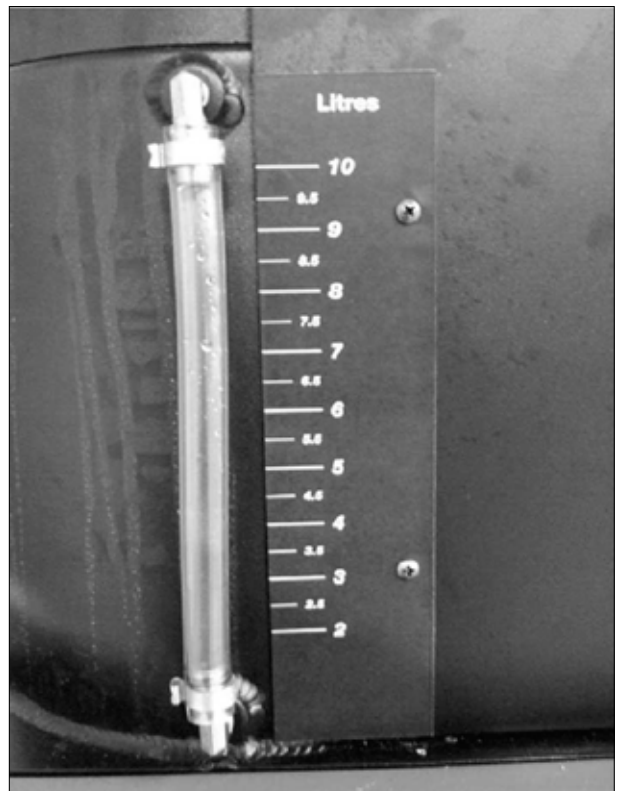
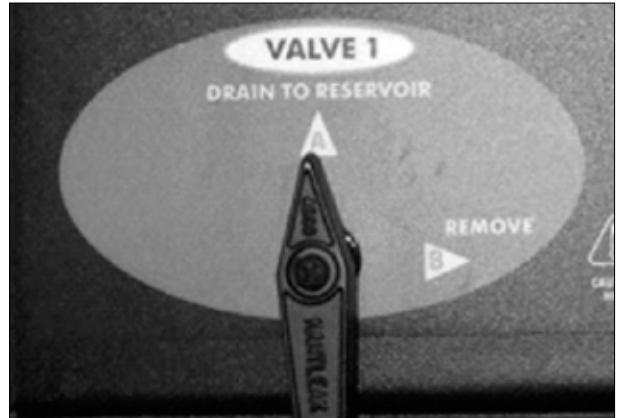
**INITIAL CHECKS**

Ensure the waste reservoir tank is not full.

Empty as required.

Ensure there is no recovered coolant in the exchanger. To drain, turn Valve 1 to **DRAIN TO RESERVOIR** for 40 seconds and then back to **REMOVE**.

There should be no coolant in the sight glass on the side of the coolant exchanger.



## 1. REMOVING COOLANT FROM AN OPEN COOLING SYSTEM (Radiator/expansion tank cap removed)



**WARNING:** Gloves and protective eyewear must be worn. Risk of burns may result from high coolant temperatures.

- 1.1 For faster coolant removal, preheat the vehicles cooling system until it reaches normal operating temperature. The radiator top hose should be hot. This confirms the cooling system thermostat has opened. This is done with the radiator/expansion tank cap removed.
- 1.2 Place a length of extension pipe into the radiator or expansion tank until it reaches the bottom. Cut off the excess tube so that the height of the tube is level with the top of the radiator or expansion tank opening.
- 1.3 Insert the cut tube with sealing "O" ring and "O" ring cover into the bottom of the Rad Neck assembly.
- 1.4 Place Rad Neck assembly into radiator or expansion tank opening using the appropriate rubber adapter. Tighten the knurl knob by turning it clockwise until a good tight secure fit is made between rubber adapter and radiator or expansion tank. Ensure any overflow or bleed holes/passages are covered by the rubber adapter.
- 1.5 Clamp all hoses with the exception of the lowest hose in order to get maximum vacuum.
- 1.6 Connect air line (minimum of 90psi) to Valve 3 on unit. Ensure Valve 3 is CLOSED.
- 1.7 Set Valve 1 to **REMOVE**, Valve 2 to **REMOVE** and Valve 3 to **ON**.




**NOTE:** There will be a hissing sound heard from the Coolant Exchanger and the system hoses may start to collapse (suck in), this is normal due to the vacuum within the system.



1.8 As the coolant is extracted fluid can be seen flowing through the extraction hose and the vacuum gauge will move anti-clockwise.

Removal is completed when there is no coolant flow through the Rad Neck assembly or extraction hose (approx 5mins).

 **NOTE:** It is important to follow the steps below in the exact order. If Valve 3 is turned OFF before Valve 2 is in the TEST position, coolant will flow back into the vehicle.

1.9 Set Valve 2 to TEST and Valve 3 to OFF

1.10 The recovered amount of coolant can now be determined using the scale on the side of the unit


To release the vacuum in the system for repairs, disconnect the coupler on the extraction hose from the Rad Neck assembly.

1.11 When as much coolant as possible has been removed using the procedure above, additional coolant can be removed using the DRAFT EFFECT instructions. Although this is optional.



**2. REMOVE COOLANT FROM HOT SYSTEM**

(Overflow tank/overflow systems)

 **Warning:** Cooling systems run at high temperatures and pressures. **Pressure must be relieved before removing the radiator or cap.**



**WARNING:** Gloves and protective eyewear must be worn. Risk of burns may result from high coolant temperatures.

- 2.1 Disconnect the coupler on the extraction hose from the Rad Neck assembly.
- 2.2 Remove the overflow coolant hose from the side of the radiator cap neck. Determine if the overflow nipple fits the supplied 5/16 or 3/8 size hose.
- 2.3 Select the proper size overflow extraction hose and attach to the open end of the overflow nipple with a clamp.
- 2.4 Attach the overflow extraction hose to the coupler on the extraction hose.
- 2.5 Connect air line (minimum of 90psi) to Valve 3 on unit. Ensure Valve 3 is **CLOSED**.
- 2.6 Set Valve 1 to **REMOVE**, Valve 2 to **REMOVE** and Valve 3 to **ON**
- 2.7 The vacuum gauge will move anticlockwise and the coolant will flow into the extraction hose.
- 2.8 After the coolant stops flowing, slowly turn the radiator system cap (**DO NO REMOVE AT THIS TIME**). This will allow coolant to flow into the coolant exchanger.
- 2.9 Once the coolant has stopped flowing, turn Valve 2 to **TEST** then Valve 3 to **OFF**.
- 2.10 Disconnect the overflow coolant hose from the extraction hose via the coupler. This will remove the vacuum from the cooling system and allow easy removal of the cooling system cap.
- 2.11 Disconnect the overflow extraction hose from the overflow nipple and reconnect overflow coolant hose.
- 2.12 Now follow the instructions for Removing Coolant from An Open System.



**WARNING!** Gloves and protective eyewear must be worn. Risk of burns may result from high coolant temperatures and pressures



### 3. DRAFT EFFECT PROCEDURE

This procedure is performed once the open system procedure has been completed to maximise coolant removal.

- 3.1 Disconnect extraction hose from Rad Neck assembly to release vacuum in cooling system.
- 3.2 Remove heater hose at heater core leading to the water pump.
- 3.3 Plug or pinch off the removed hose using appropriate tools (pinch-off pliers or heater core plugs).
- 3.4 Temporarily plug heater core using heater core plug (not included).
- 3.5 Draw system down to 24-26 inches of vacuum.
- 3.6 Remove the temporary plug from the heater core.
- 3.7 The rush of air into the cooling system will force coolant from the heater core and engine block into the radiator.
- 3.8 For best results, repeat this procedure until no more coolant is extracted.
- 3.9 Remove all plugs and pinch-off pliers, reinstall heater hose and draw system down into 24-26 inches of vacuum.
- 3.10 Set Valve 2 to **TEST** to check cooling system for any vacuum leaks.

### 4. REMOVE COOLANT FROM OVERFLOW TANK

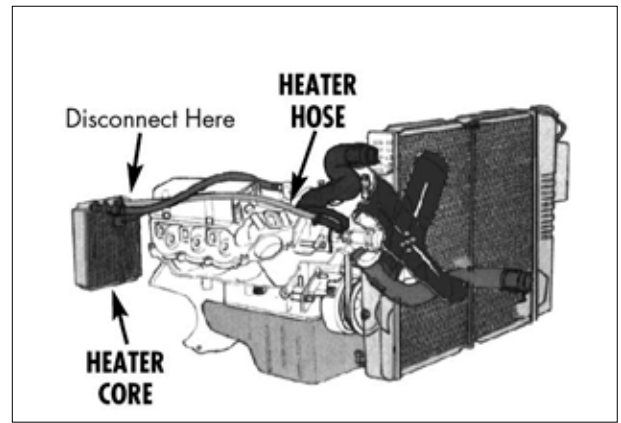
An extension tube is needed to remove coolant from the overflow tanks. The tube in the Rad Neck assembly should reach the bottom of the overflow tank. If not, then replace the tube in the Rad Neck one of adequate length. When changing extension tubes, always ensure the "O" ring and "O" ring cover are fitted.

- 4.1 Set Valve 1 to **REMOVE**, Valve 2 to **REMOVE** and Valve 3 to **ON**.



**NOTE:** There will be a hissing sound from the coolant exchanger

- 4.2 As the coolant is extracted fluid can be seen flowing through the extraction hose and the vacuum gauge will move anti-clockwise.



Removal is completed when there is no coolant flow through the Rad Neck assembly or extraction hose (approx 5mins).



**NOTE:** It is important to follow the steps below in the exact order. If Valve 3 is turned OFF before Valve 2 is in the TEST position, coolant will flow back into the overflow tank.

4.3 Set Valve 2 to **TEST** and Valve 3 to **OFF**

4.4 The recovered amount of coolant can now be determined using the scale on the side of the unit. This should be added to the amount recovered from the cooling system to provide a total quantity.

## 5. TO EVACUATE AIR FROM THE COOLING SYSTEM

5.1 Attach and secure Rad Neck assembly to cooling system

5.2 Clamp off overflow hoses to get maximum vacuum in the cooling system

5.3 Attach air line hose to Valve 3

5.4 Set Valve 1 to **REMOVE**, Valve 2 to **REMOVE** and Valve 3 to **ON**.

If vehicle is warm, the gauge will show a vacuum reading of 15 (minimum). If the vehicle is cold then a higher reading will be seen (15-26).

## 6. TO TEST VACUUM

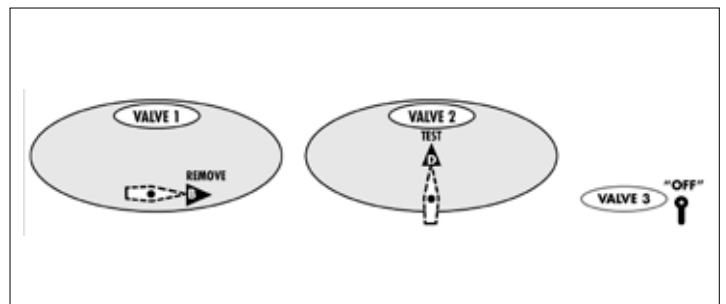
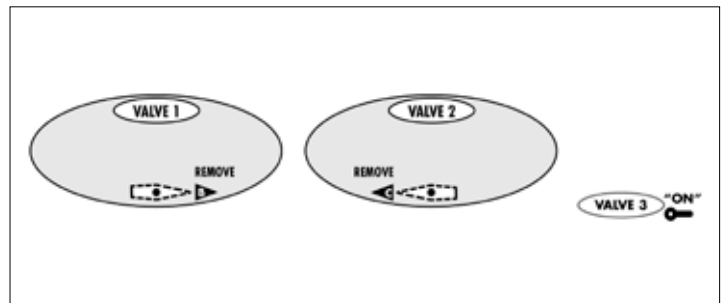
6.1 The air in the radiator must be evacuated.

6.2 After one minute, set Valve 2 to **TEST** and Valve 3 to **OFF**.

6.3 Observe gauge for 20 seconds for any drop in vacuum. No drop in vacuum means no leaks. If there is no vacuum loss then proceed with filling the cooling system.




**NOTE:** Fill the cooling system with the correct coolant as per manufacturer specifications.



**7. TO FILL NEW COOLANT INTO THE COOLING SYSTEM**

Vehicle cooling systems must be evacuated. See **TO EVACUATE AIR FROM THE COOLING SYSTEM** instructions.

7.1 Fill clear container with required quantity and recommended coolant for the vehicle.



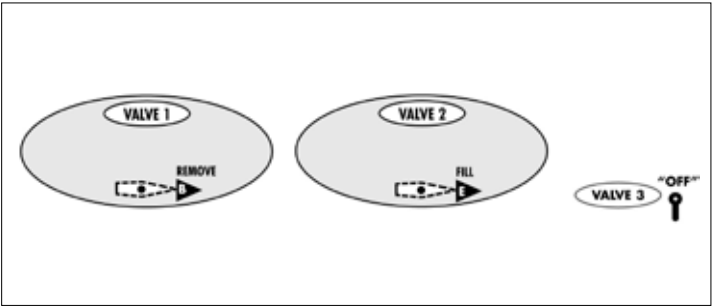
**NOTE:** Make sure there is more coolant in the container than the system requires.

7.2 If the removed coolant is to be reused, proceed with **REUSE COOLANT** instructions.

7.3 Set Valve 1 to **REMOVE** and Valve 3 to **OFF**


7.4 Set Valve 2 to **FILL**. The vacuum gauge will move in a clockwise direction as coolant flows into the cooling system.

7.5 System is full when the gauge stops and coolant can no longer be seen moving through the extraction hose. For vehicles with overflow tanks, stop when the proper fluid level is reached.



**8. TO STOP FILLING COOLANT**

8.1 When the vacuum gauge reading stops and coolant can no longer be seen moving through the extraction hose, set Valve 2 to **TEST**. For vehicles with an overflow tank, fill coolant to correct level before setting Valves.

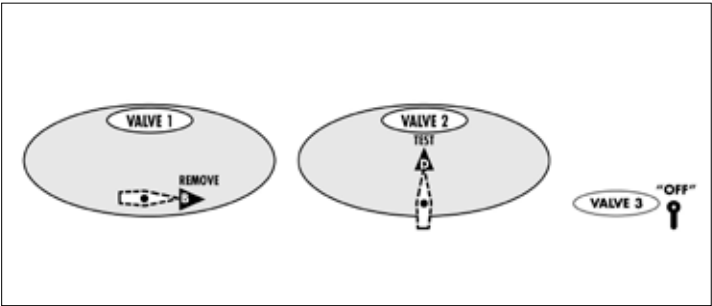


**NOTE:** If gauge reading continues to drop and the container is almost empty, add more coolant into the container until the gauge reading stops.

8.2 Remove Rad Neck assembly from cooling system.

8.3 Top-up cooling system to correct level.

8.4 Start vehicle to warm cooling system. Add coolant if necessary before replacing cap for the cooling system.



## 9. TO DRAIN THE RECOVERY TANK INTO THE RESERVOIR TANK

- 9.1 Set Valve 3 to **OFF**
- 9.2 Set Valve 1 to **DRAIN TO RESERVOIR** and Valve 2 to **TEST** to drain removed coolant from the recovery tank into the coolant tank
- 9.3 Let coolant continue to drain until the recovery tank is empty or the reservoir tank is full. This will take approximately 5 minutes for 9.5ltrs.
- 9.4 Set Valve 1 to **REMOVE** to stop draining.

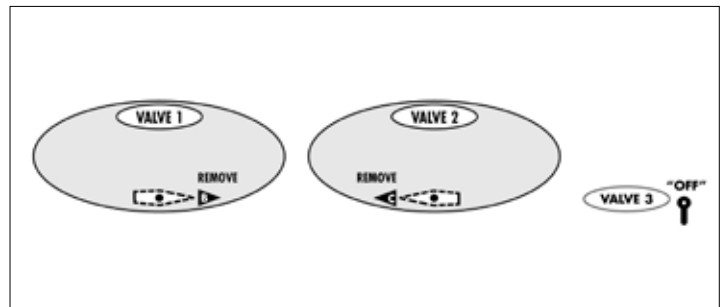
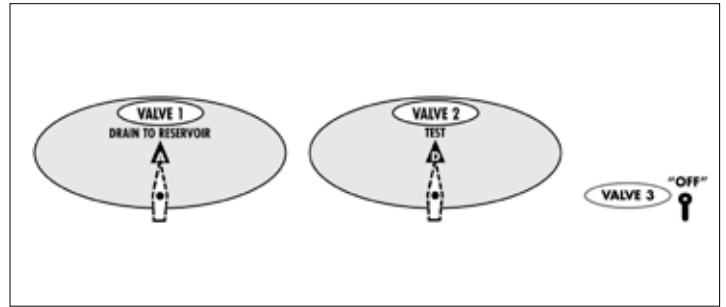
## 10. TO REUSE COOLANT

- 10.1 Cooling system must be in a vacuum. See **EVACUATE AIR** instructions.
- 10.2 Set Valve 3 to **OFF**
- 10.3 Set Valve 1 to **REMOVE** and Valve 2 to **REMOVE**
- 10.4 Let the coolant fill the cooling system until the vacuum gauge stops.



**NOTE:** No dip tube fitted to the Rad Neck assembly is used.

- 10.5 Remove Rad Neck assembly and check level of coolant.
- 10.6 If more coolant is required, follow **EVACUATE AIR** instructions.
- 10.7 Follow **FILL NEW COOLANT** instructions



**11. TROUBLESHOOTING**

Exchanger will not pull into a vacuum / remove coolant.

Solution:

- Ensure any overflow / breather holes in the expansion tank are covered by the rubber adapters.
- Ensure the rubber adapter is sealing onto the cooling system (expansion tank and overflow systems).
- Ensure the "O" ring and small rubber cover are correctly fitted as shown opposite..
- Ensure the Valves are in the correct positions.
- Ensure the waste reservoir is not full.

Exchanger will not refill the cooling system with coolant

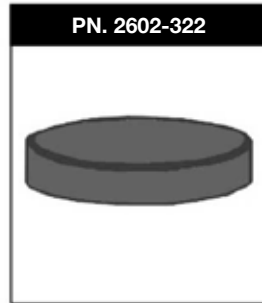
Solution:

- Ensure the cooling system has adequate vacuum. Vacuum gauge should be in green scale.
- Ensure the Valves are in the correct positions

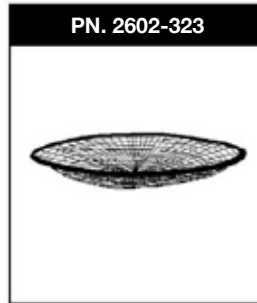


## REPLACEMENT PARTS

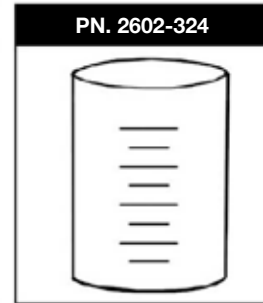
Fill tank cover



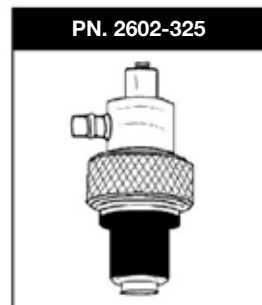
Fill tank filter



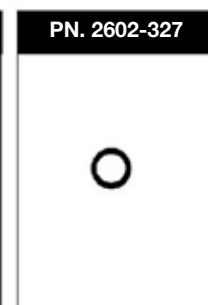
Fill tank



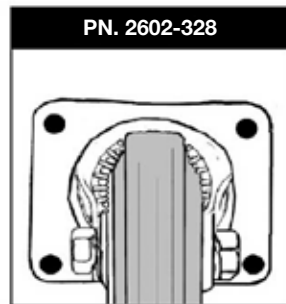
Rad Neck assembly



Rubber adapters (4) O Ring stopper



Wheel



## WARRANTY

Autoclimate warrants this product to be free of defects in materials and workmanship for a period of one year.

Autoclimate at its sole discretion will replace or repair any defective item within the warranty period. Autoclimate must be contacted prior to any warranty claim to arrange repair, collection or replacement.

In the unlikely event of product failure, please contact the telephone numbers listed on the side of the product.

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