

Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

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MADDOX™

SUPERIOR AUTOMOTIVE TOOLS

MH-1B

Cooling System Test & Refill Kit



Visit our website at: <http://www.harborfreight.com>
Email our technical support at: productsupport@harborfreight.com

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When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

⚠WARNING

Read this material before using this product. Failure to do so can result in serious injury. **SAVE THIS MANUAL.**

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No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

Important Safety Information

1. **TO PREVENT STEAM BURNS, DO NOT OPEN CAP OF HOT OR WARM RADIATOR.**
2. Loosen the radiator cap slowly.
3. Keep away from hot engine parts and fluids.
4. Use this product only according to these instructions. Improper use can create hazards.
5. Wear ANSI-approved safety goggles and heat resistant work gloves during product assembly and use.
6. Refer to the vehicle's service manual for specific pressurized cooling system testing instructions before use.
7. Clean up coolant spills immediately. Dispose of fluids according to local, state, and federal codes and regulations.
8. Keep work area clean and well lit.
9. Do not exceed 90 PSI maximum air pressure.
10. Do not overreach. Keep proper footing and balance at all times. This enables better control of the product in unexpected situations.
11. Keep bystanders out of the area during assembly and use.
12. Do not assemble or operate when tired or when under the influence of drugs or medication.
13. This product is not a toy. Do not allow children to play with or near this product.
14. Use as intended only.
15. Inspect before every use. Do not use if parts missing or damaged.
16. Maintain product labels and nameplates. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.

Operating Instructions

1. Refer to the vehicle's service manual for specific pressurized cooling system testing instructions.
2. Empty radiator of coolant and dispose of or recycle old coolant properly.
3. Set the heater controls on the vehicle to the highest heat position to ensure achieving a vacuum on the entire cooling system.
Note: On some vehicles it may be necessary to turn the ignition ON with the engine OFF to open the heater control valves.
4. Install the 1/4" Air Inlet Plug onto the Valve Body Assembly.
5. Loosen the vehicle's radiator cap slowly to relieve any excess pressure before removing the cap completely.
TO PREVENT STEAM BURNS, DO NOT OPEN CAP OF HOT OR WARM RADIATOR.
6. Select the Radiator Neck Adapter that most closely fits the filler neck of the radiator. Slide the Neck Adapter over the Expander on the Valve Body.
7. Insert the Neck Adapter into the filler neck of the radiator. Make sure it is fully inserted and square to the sealing surface.
8. Turn the Control Knob clockwise to expand the Neck Adapter. Tighten firmly, then pull on the Valve Body to ensure the Neck Adapter is fully engaged.
Note: It may be necessary to close off the overflow hose on some radiators or expansion tanks to obtain a vacuum in the cooling system.
9. Route filter end of Coolant Hose down and away from vehicle's electrical components.
10. With the Coolant Suction Valve and Air Inlet Valve closed, attach the air line from your air compressor to the Air Inlet Plug. Compressor must be capable of supplying a constant 90 PSI to the tool.

11. Make sure the Coolant Suction Valve is closed, then open the Air Inlet Valve to start drawing a vacuum. The reading on the Gauge should start to rise.

Note: Radiator and heater hoses may collapse which is normal due to the vacuum created.

12. When the Gauge reading stabilizes, continue to draw vacuum for 30 seconds to obtain maximum vacuum, typically -24 to -26 inHg depending on coolant system size.

13. Close the Air Inlet Valve and monitor Gauge reading for 1-2 minutes:

- a. If the vacuum drops, the cooling system has a leak and is not sealed. Disconnect the tool and make necessary repairs.
- b. If the Gauge reading remains stable, disconnect the compressor air line from the Air Inlet Plug and proceed to next step.

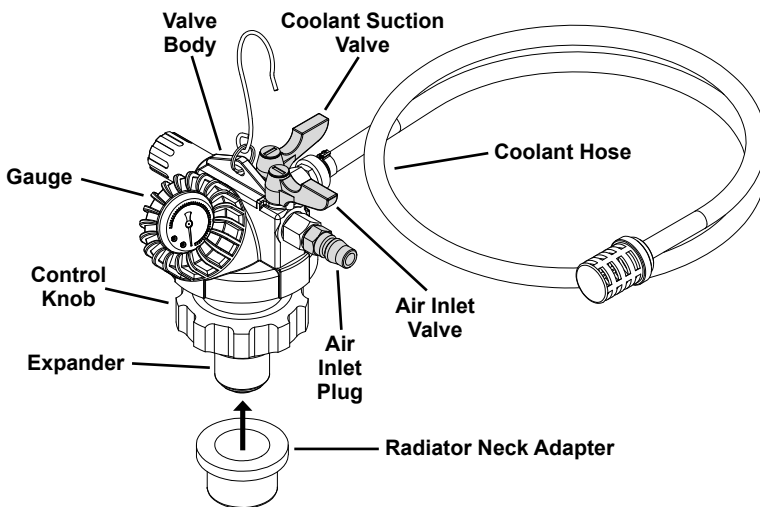
14. Insert filter end of Coolant Hose into a container of premixed coolant, then slowly open the Coolant Suction Valve. The vacuum created in the cooling system will pull coolant into the system. Keep container as close as possible to the same height as the tool.

Important: Keep Coolant Hose completely submerged in the coolant or air will be pulled into the cooling system. If additional coolant is needed, close the Suction Valve and refill container.

15. When the Gauge reaches zero, the cooling system is full. Turn the Control Knob counterclockwise to loosen the Neck Adapter and disconnect the tool from the filler neck.

16. Check coolant level and top off if necessary. Fill expansion tanks to proper level.

17. Store the Kit in its Case in a clean, dry, safe location out of reach of children.



Maintenance and Servicing



Procedures not specifically explained in this manual must be performed only by a qualified technician.

WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:

Detach the tool from the vehicle being tested before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:

Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

1. **BEFORE EACH USE**, inspect the general condition of the tool. Check for loose fittings, misalignment or binding of moving parts, cracked or broken parts and any other condition that may affect its safe operation.
2. **AFTER USE**, clean external surfaces of the tool with clean cloth and flush with clean water. Allow the tool to air dry, then store the Kit in its case in a clean, dry, safe location out of reach of children.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST AND ASSEMBLY DIAGRAM IN THIS DOCUMENT AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Record Product's Serial Number Here: _____

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

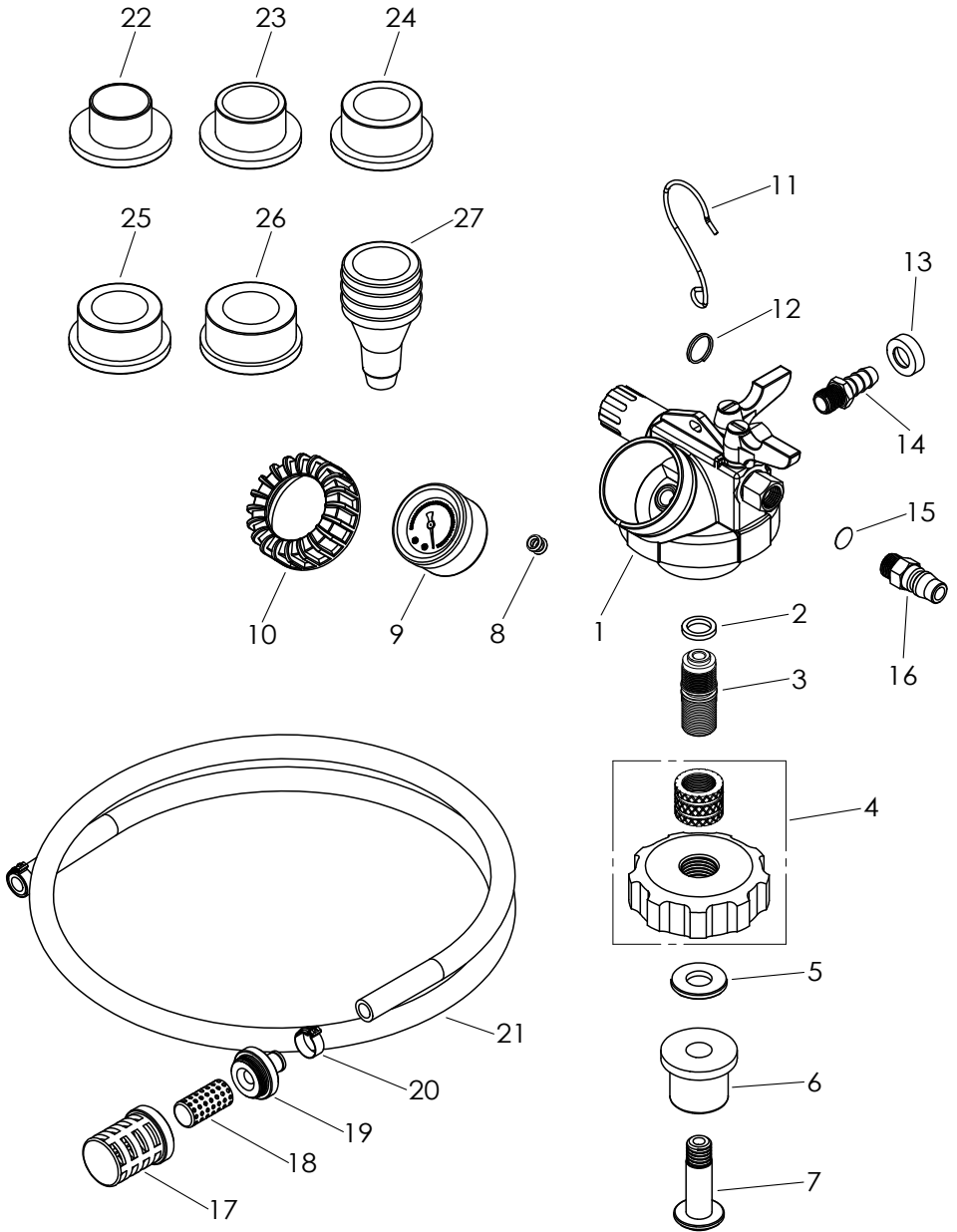
Parts List and Diagram

Parts List

Part	Description	Qty
1	Valve Body Assembly	1
2	Axle Gasket	1
3	Axle	1
4	Control Knob / Nut	1
5	Knob Gasket	1
6	Expander	1
7	Screw	1
8	O-Ring 5x1.9	2
9	Vacuum Gauge	1
10	Gauge Cover	1
11	Hanger	1
12	Ring	1
13	Hose Collar	1
14	1/4 NPTx3/8 Barbed Hose Fitting	1

Part	Description	Qty
15	Inlet Air Valve Filter	1
16	Air Inlet Plug	1
17	Filter Housing	1
18	Stainless Filter	1
19	Aluminum Filter Seat	1
20	Hose Clamp	2
21	PVC Coolant Hose	1
22	31mm Radiator Neck Adapter	1
23	35mm Radiator Neck Adapter	1
24	40mm Radiator Neck Adapter	1
25	42mm Radiator Neck Adapter	1
26	45mm Radiator Neck Adapter	1
27	Universal Cone Adapter	1
28	Storage Case (not shown)	1

Assembly Diagram



Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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