

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.

22h

PITTSBURGH®

A/C MANIFOLD GAUGE SET



⚠ WARNING



To prevent explosion, serious injury, and death:

- Service of air conditioning systems must be done only by trained and experienced technician to avoid overfilling.
 - Technicians opening refrigeration circuit in automotive air conditioning systems **MUST** be certified in refrigerant recovery and recycling procedures in compliance with section 609 of Clean Air Act Amendments of 1990.
- For additional information regarding ozone depletion and air conditioning service regulations, visit EPA's website: www.epa.gov/ozone

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.

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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.

⚠ WARNING

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

Specifications

Blue (Low) Gauge	0-120 PSI
Blue Hose	1/4 IN. FFL x 4 FT. 9 IN.
Red (High) Gauge	0-500 PSI
Red Hose	1/4 IN. FFL x 4 FT. 9 IN.
Yellow Hose	1/2 IN. ACME x 4 FT. 9 IN.
Gauge Accuracy	+/-2%
Set includes Quick Disconnect Valves	

WARNING! TO PREVENT SERIOUS INJURY: ONLY USE R-134a REFRIGERANT WITH THIS A/C MANIFOLD GAUGE SET.

Safety Warnings



WARNING Read all safety warnings and instructions.

Failure to follow the warnings and instructions may result in serious injury.

Save all warnings and instructions for future reference.

- Keep work area clean and well lit.**
- Keep children away.** Children must never be allowed in the work area. Do not let them handle the A/C Manifold Gauge Set.
- There are certain applications for which this A/C Manifold Gauge Set was designed. It will do the job better and more safely at the rate for which it was intended. Do not modify this A/C Manifold Gauge Set and do not use this A/C Manifold Gauge Set for a purpose for which it was not intended.
- Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving engine parts. Protective clothes and nonskid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
- Wear ANSI-approved impact safety goggles and heavy-duty work gloves at all times during setup and use.
- Do not overreach.** Keep proper footing and balance at all times.
- Maintain gauge with care.** Keep the A/C Manifold Gauge Set clean for better and safer performance. Inspect hoses periodically, and if damaged, have them repaired by a qualified technician.
- Stay alert.** Watch what you are doing, use common sense. Do not operate gauge when you are tired.
- Check for damaged parts.** Before using any gauge, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician.
- Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this gauge. Approved accessories are available from Harbor Freight Tools.
- Do not operate gauge if under the influence of alcohol or drugs.** Read warning labels if taking prescription medicine to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the gauge.
- Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.
- Industrial applications must follow OSHA requirements.**

14. **People with pacemakers should consult their physician(s) before using this product.**
Electromagnetic fields in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker. In addition, people with pacemakers should observe the following: Caution is necessary when near the coil, spark plug cables, or distributor of a running engine.
15. The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors, which cannot be built into this product, but must be supplied by the operator.
16. **ONLY USE REFRIGERANT R-134a WITH THIS A/C MANIFOLD GAUGE SET.**
17. **Do not start an engine in an enclosed area (like a garage).** A running gasoline engine generates carbon monoxide; carbon monoxide is a colorless, odorless gas that can cause serious injury and death, if inhaled.
18. **Keep hands away from the moving parts and hot parts of vehicle's engine.**
19. **Read and understand all instructions and safety precautions as outlined in the vehicle manufacturer's manual for air condition servicing. Only qualified mechanics that are trained in servicing air conditioning systems should use this product.**
20. **When warming up an engine in preparation for checking of the A/C system, make sure the vehicle's transmission is placed in "Park" and the emergency brake is applied.**
21. **Refrigerant can cause severe frostbite if it comes in contact with skin.**
Follow the safety warnings and instructions provided by the refrigerant manufacturer.
22. **Do not disconnect any pressurized hose.**
Pressurized refrigerant can cause severe injury.
23. **Use caution when opening an air conditioning system line or can of refrigerant.**
When checking, always place a towel around the service valves of the air conditioning unit and Red and Blue Couplers (22,23).
24. **Keep refrigerant away from excessive heat as pressure in the container could increase enough to rupture the can.**
25. **Do not discharge refrigerant into the atmosphere.** Capture refrigerant into an approved recovery container (not included), and then dispose of properly. Contact your local Hazardous Waste Authority for disposal guidelines.
26. **Only use refrigerant in a manner consistent with the air conditioning system's repair manual.**



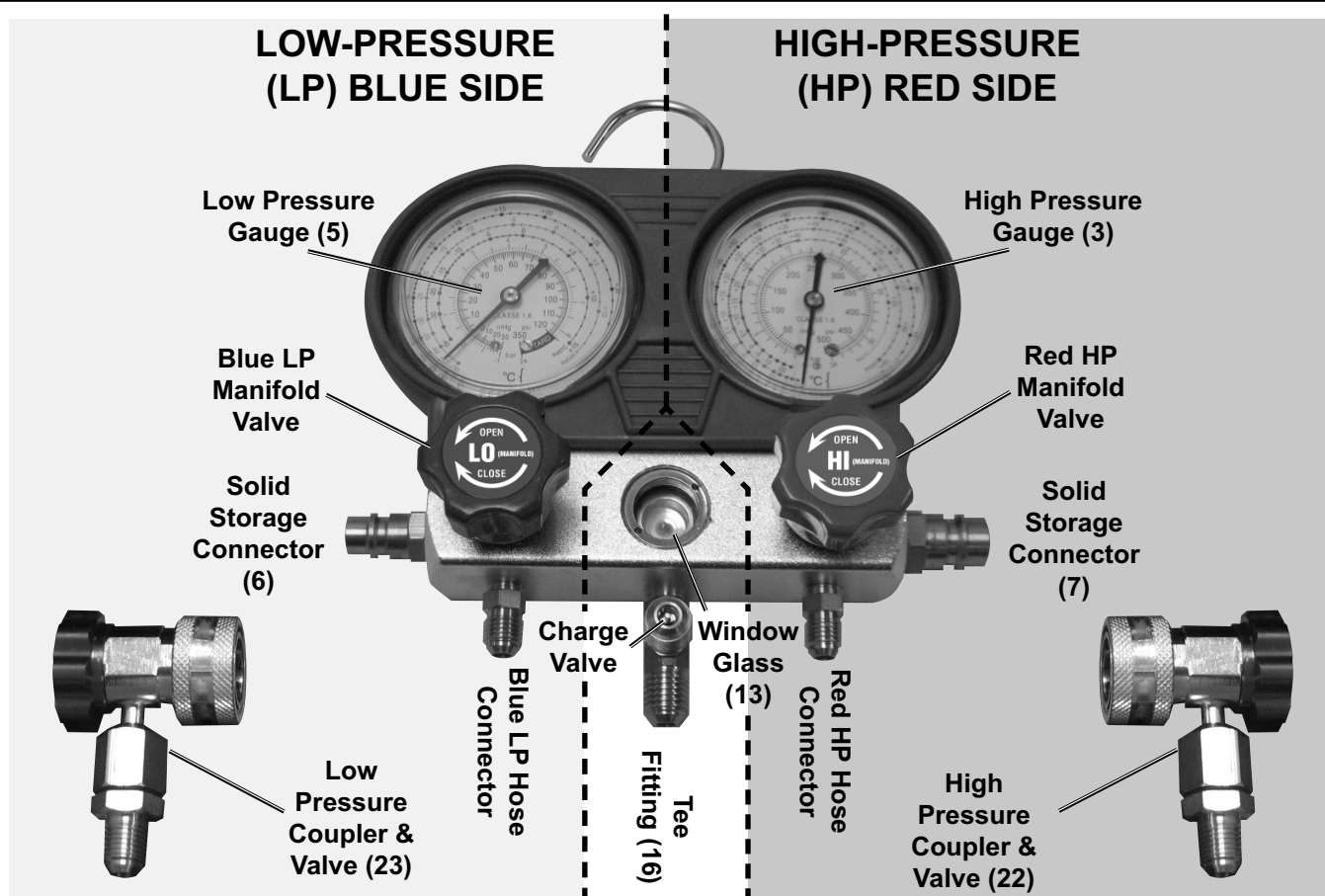
SAVE THESE INSTRUCTIONS.

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Applications

1. The High Pressure Gauge (3) is used to measure high-pressure compressor discharge side pressure.
2. The Low Pressure Gauge (5) is used to measure low-pressure side suction or pressure.
3. The Thumb Handles (11) control the flow of refrigerant to and from the High Pressure Hose Yellow (18), also called the Charge Hose.
4. The Coupler Valves (22,23) control the flow to the Gauges (3,5) from the Red and Blue Hoses (17,19).
5. The Window Glass (13) allows checking the appearance of the refrigerant.
6. The High Pressure Hose Yellow (18), also called Charge Hose can be used three ways:
 - a. Refrigerant recovery/evacuation.
 - b. Charging (filling) the system.
 - c. For checking, attach the High Pressure Hose Yellow (18) to both branches of the Tee Fitting (16) to reduce the risk of leaks.
7. The charge valve allows for simultaneous connection of a refrigerant recovery system.
8. General instructions for A/C service are outlined in this manual. Specific procedures for each individual system type and model should be referenced in the vehicle manufacturer's specific A/C system service manual.
9. See Operation instructions that follow.

Components and Functions



Operation



Read the **ENTIRE SAFETY WARNINGS** section at the beginning of this manual before set up or use of this product.

!WARNING



TO PREVENT EXPLOSION, SERIOUS INJURY, AND DEATH:

Service of air conditioning systems must be done only by trained and experienced technician to avoid overfilling. Technicians opening refrigeration circuit in automotive air conditioning systems **MUST** be certified in refrigerant recovery and recycling procedures in compliance with section 609 of Clean Air Act Amendments of 1990.

For additional information regarding ozone depletion and air conditioning service regulations, visit EPA's website: www.epa.gov/ozone

!WARNING



TO PREVENT SUDDEN LOSS OF CONSCIOUSNESS, AND DEATH:

Connect and use in a well-ventilated area **ONLY**. Refrigerant can displace air if allowed to accumulate, causing sudden loss of consciousness followed by death. This can happen **WITHOUT FEELING SHORTNESS OF BREATH**.

!WARNING



TO PREVENT EXPLOSION, SERIOUS INJURY, AND DEATH:

Do not open the red HP Manifold Valve unless requested to do so during the recovery/evacuation procedure. Refrigerant is under great pressure.

Attempting to add refrigerant through the HP side of the system may cause the refrigerant can to explode.

Note: Throughout this manual:

HP means **High-pressure**

LP means **Low-pressure**

CW means **Clockwise**

CCW means **Counterclockwise**

Note: Procedures such as charging refrigerant through the HP side of the system and adding lubricant to the system are beyond the scope of this manual.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagram near the end of this manual.

Thumb Handles (11) operation:

 = close

 = open

Coupler Valve (22,23) operation:

 = close

 = open.

	⚠WARNING	
 	To prevent SERIOUS INJURY and DEATH: 1. Wear ANSI-approved safety goggles and heavy-duty work gloves during setup and use. 2. DO NOT OPEN either Manifold Valve unless directed to do so; otherwise, refrigerant leaks, A/C system contamination, and hazardous expulsion of pressurized refrigerant may occur.	3. Use in well-ventilated area only. 4. Keep gauge and hoses away from moving engine parts. 5. Turn off vehicle's engine and A/C system before attaching gauge. 6. The following procedure is to be performed only by a technician certified in refrigerant recovery and recycling procedures, as explained previously.

Diagnostic Check

⚠WARNING

TO PREVENT SERIOUS INJURY: Only hand tighten all hose connections. Do not use tools to tighten connections. Overtightening permanently damages seal causing refrigerant leak.

1. **Close both Coupler Valves (22,23) by turning CCW.**

2. **CONNECT HOSES:**

NOTICE: These connections are to be hand tightened only; Tools like pliers or a wrench should not be used to tighten them. Overtightening will cause the o-ring seal in the hose connection to pop out and/or damage it.

- a. Hand tighten one end of the Low Pressure Hose Blue (19) to the Blue LP Hose Connector and the other end to the Low Pressure Coupler & Valve (23).
- b. Hand tighten one end of the High Pressure Hose Red (17) to the Red LP Hose Connector and the other end to the High Pressure Coupler & Valve (22).
- c. Hand tighten one end of the High Pressure Hose Yellow (18) to the Tee Fitting (16) and the other end to the Charge Valve on that Connector.

3. **ATTACH COUPLERS:**

- a. Attach the Low Pressure Coupler & Valve (23) to the suction LP port on the A/C system.
- b. Attach the High Pressure Coupler & Valve (22) to the discharge HP port on the A/C system.

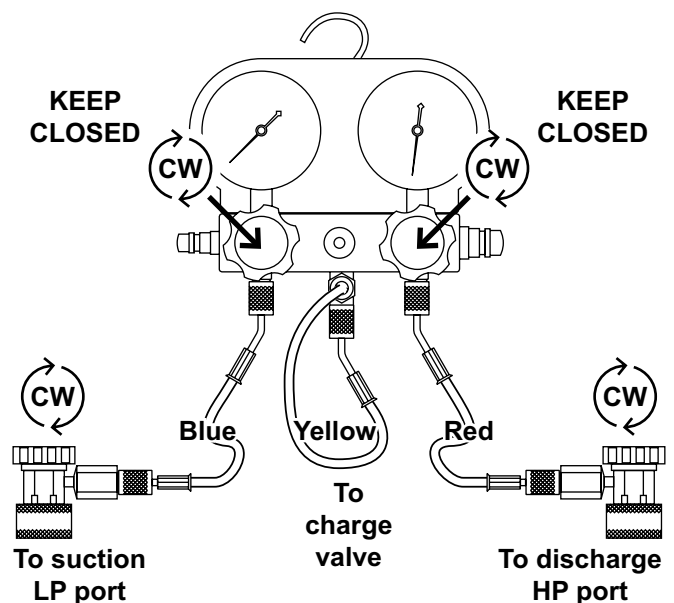
4. **PERFORM CHECK:**

- a. To do a dynamic check:
Turn on the vehicle and allow it to reach normal operating temperature. Then, turn on the A/C system.
- b. Open both Coupler Valves (22,23) by turning CW.

- c. Read the pressure on both of the Gauges (3,5) and compare to the manufacturer's recommended readings.

5. **AFTER:**

- a. **Close both Coupler Valves (22,23) by turning CCW.**
- b. Turn off the vehicle and the A/C system if dynamic check was done.
- c. **Carefully disconnect the Couplers (22,23), the hoses may contain residual refrigerant.** Pull back the knurled ring on each Coupler (22,23) and store it on its Solid Storage Connector (6,7).



	⚠ WARNING	
To prevent SERIOUS INJURY and DEATH: 1. Wear ANSI-approved safety goggles and heavy-duty work gloves during setup and use. 2. DO NOT OPEN either Manifold Valve unless directed to do so; otherwise, refrigerant leaks, A/C system contamination, and hazardous expulsion of pressurized refrigerant may occur.	3. Use in well-ventilated area only. 4. Keep gauge and hoses away from moving engine parts. 5. Turn off vehicle's engine and A/C system before attaching gauge. 6. The following procedure is to be performed only by a technician certified in refrigerant recovery and recycling procedures, as explained previously.	

Recovery / Evacuation

⚠ WARNING

TO PREVENT SERIOUS INJURY: Only hand tighten all hose connections. Do not use tools to tighten connections. Overtightening permanently damages seal causing refrigerant leak.

1. **Close both Thumb Handles (11) by turning CW. Close both Coupler Valves (22,23) by turning CCW.**

2. **CONNECT HOSES:**

NOTICE: These connections are to be hand tightened only; Tools like pliers or a wrench should not be used to tighten them. Overtightening will cause the o-ring seal in the hose connection to pop out and/or damage it.

- a. Hand tighten one end of the Low Pressure Hose Blue (19) to the Blue LP Hose Connector and the other end to the Low Pressure Coupler & Valve (23).
- b. Hand tighten one end of the High Pressure Hose Red (17) to the Red LP Hose Connector and the other end to the High Pressure Coupler & Valve (22).
- c. Hand tighten one end of the High Pressure Hose Yellow (18) to the Tee Fitting (16) and the other end to the refrigerant recovery system / vacuum pump.

3. **ATTACH COUPLERS:**

- a. Attach the Low Pressure Coupler & Valve (23) to the suction LP port on the A/C system.
- b. Attach the High Pressure Coupler & Valve (22) to the discharge HP port on the A/C system.

4. **PERFORM RECOVERY / EVACUATION:**

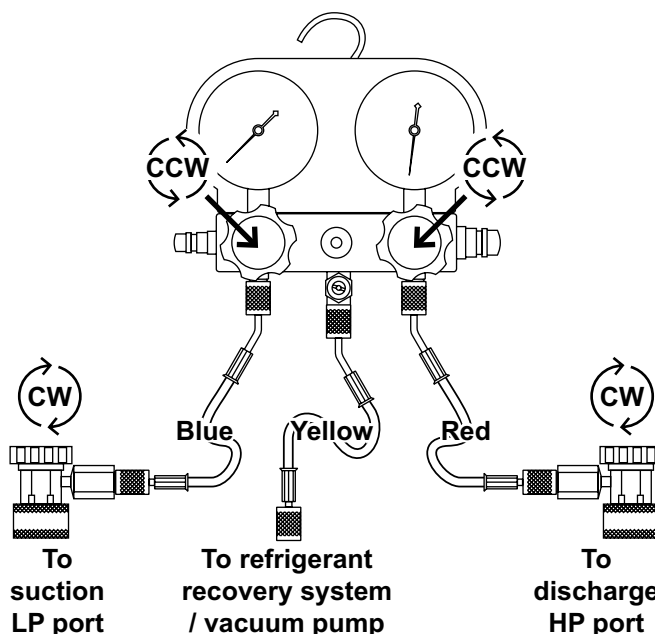
- a. Turn on the refrigerant recovery system / vacuum pump.
- b. Open both Coupler Valves (22,23) by turning CW and both Thumb Handles (11), turning them CCW.

- c. Read the amount of vacuum on the Low Pressure Gauge (5).

5. **AFTER:**

- a. Shut off the refrigerant recovery system / vacuum pump when the vacuum level reaches the manufacturer's recommended level.
- b. **Close both Coupler Valves (22,23) by turning CCW.**
- c. Disconnect the Couplers (22,23) from the A/C system. Pull back the knurled ring on each Coupler (22,23) and store it on its Coupler Solid Storage Connector (6,7).

TURN VALVES AS SHOWN ONLY AFTER MAKING ALL CONNECTIONS AND TURNING ON REFRIGERANT RECOVERY SYSTEM / VACUUM PUMP



⚠ WARNING		
 	To prevent SERIOUS INJURY and DEATH:	
	1. Wear ANSI-approved safety goggles and heavy-duty work gloves during setup and use. 2. DO NOT OPEN either Manifold Valve unless directed to do so; otherwise, refrigerant leaks, A/C system contamination, and hazardous expulsion of pressurized refrigerant may occur.	3. Use in well-ventilated area only. 4. Keep gauge and hoses away from moving engine parts. 5. Turn off vehicle's engine and A/C system before attaching gauge. 6. The following procedure is to be performed only by a technician certified in refrigerant recovery and recycling procedures, as explained previously.

Charging

⚠ WARNING

TO PREVENT SERIOUS INJURY: Only hand tighten all hose connections. Do not use tools to tighten connections. Overtightening permanently damages seal causing refrigerant leak.

1. **Close both Thumb Handles (11) by turning CW. Close both Coupler Valves (22,23) by turning CCW.**

2. CONNECT HOSES:

NOTICE: These connections are to be hand tightened only; Tools like pliers or a wrench should not be used to tighten them. Overtightening will cause the o-ring seal in the hose connection to pop out and/or damage it.

- a. Hand tighten one end of the Low Pressure Hose Blue (19) to the Blue LP Hose Connector and the other end to the Low Pressure Coupler & Valve (23).
- b. Hand tighten one end of the High Pressure Hose Red (17) to the Red LP Hose Connector and the other end to the High Pressure Coupler & Valve (22).
- c. Hand tighten one end of the High Pressure Hose Yellow (18) to the Tee Fitting (16) and the other end to refrigerant supply. **KEEP THE CAN/CYLINDER UPRIGHT.**

3. ATTACH COUPLERS:

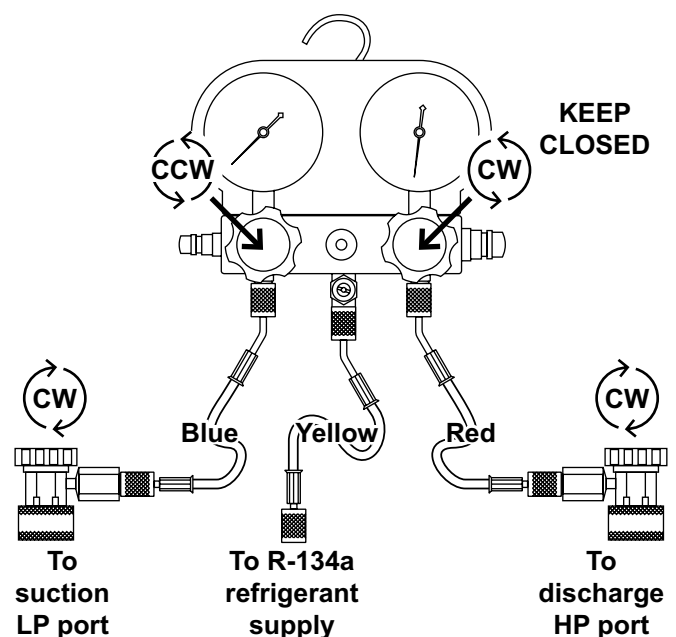
- a. Attach the Low Pressure Coupler & Valve (23) to the suction LP port on the A/C system.
- b. Attach the High Pressure Coupler & Valve (22) to the discharge HP port on the A/C system.

4. PERFORM CHARGING:

- a. Turn on the vehicle and allow it to come up to normal operating temperature. Then, turn on the A/C system.
- b. Open the Low Pressure Coupler & Valve (23) only by turning CW and Thumb Handle (11), turning it CCW.

5. **AFTER:**
 - a. After charging manufacturer recommended amount of R-134a, **close both Coupler Valves (22,23) by turning CCW.**
 - b. Turn off the vehicle and the A/C system.
 - c. **Carefully disconnect the Couplers (22,23) from the A/C system, the hoses may contain residual refrigerant.** Pull back the knurled ring on each Coupler (22,23) and store it on its Solid Storage Connector (6,7).

TURN VALVES AS SHOWN ONLY AFTER MAKING ALL CONNECTIONS



Inspection, Maintenance and Cleaning



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

⚠ WARNING

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:

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

1. **Before each use**, inspect the general condition of the A/C Manifold Set. Check for cracked or broken parts, damaged Hoses (17,18,19), and any other condition that may affect safe operation. If a problem with the Set occurs, have it corrected before further use. **Do not use damaged equipment.**
2. Periodically, clean with a damp cloth using a mild detergent or solvent.
3. When storing, keep the set clean and dry. Also, connect the High Pressure Coupler & Valve (22) and the Low Pressure Coupler & Valve (23) to its corresponding Solid Storage Connector (6,7) to prevent contamination.

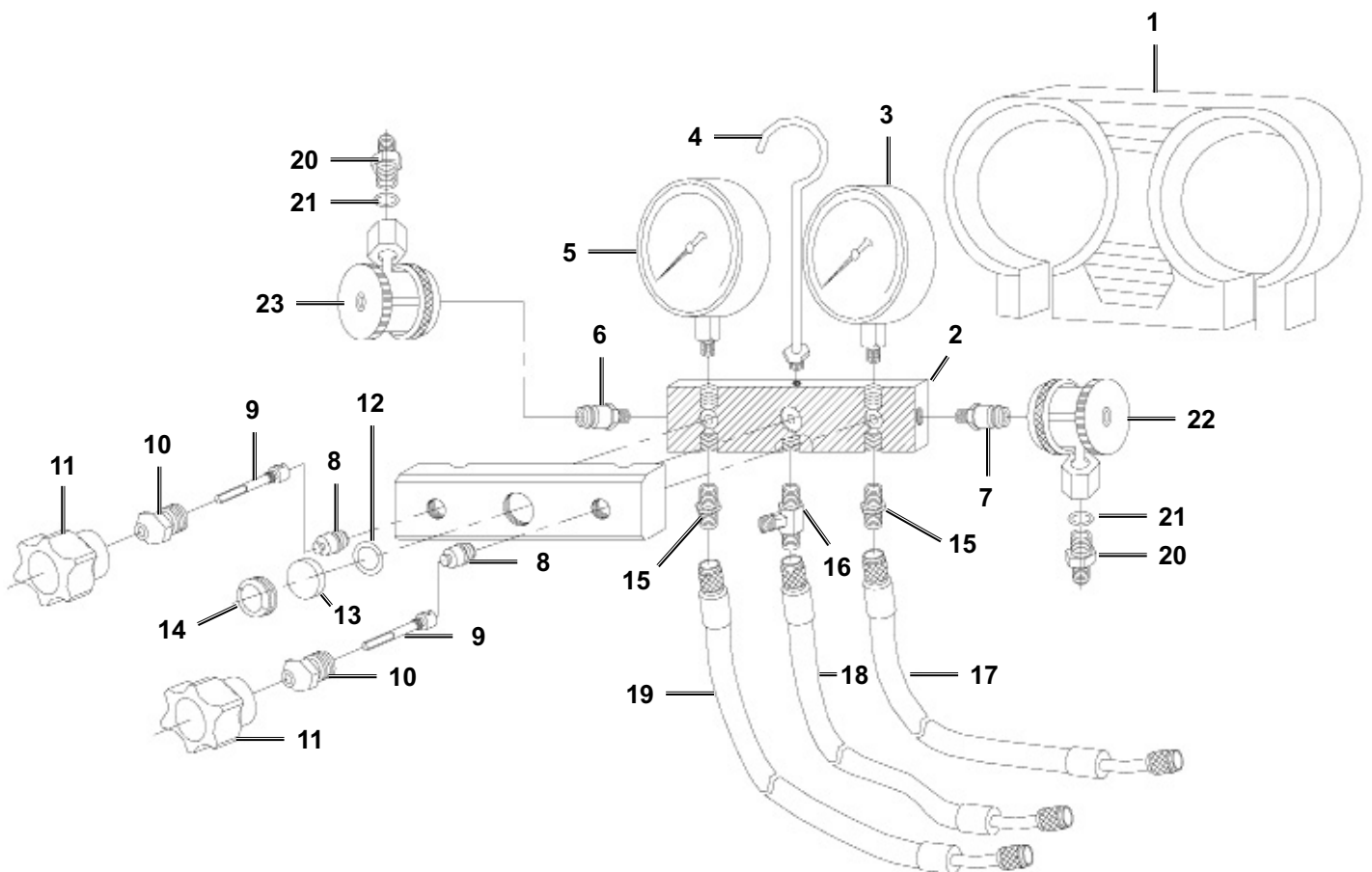
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Parts List and Diagram

Part	Description	Qty.
1	Rubber Cover	1
2	Manifold Body	1
3	High Pressure Gauge	1
4	Hook Set	1
5	Low Pressure Gauge	1
6	Solid Storage Connector (Low Press.)	1
7	Solid Storage Connector (High Press.)	1
8	Valve Seat	2
9	Valve Stem	2
10	Valve Nut	2
11	Thumb Handle	2

Part	Description	Qty.
12	O-Ring	1
13	Window Glass	1
14	Ring Nut	1
15	Connector	2
16	Tee Fitting	1
17	Ref. High Pressure Hose Red	1
18	Ref. High Pressure Hose Yellow	1
19	Ref. Low Pressure Hose Blue	1
20	Connector	2
21	O-Ring	2
22	High Pressure Coupler & Valve (Red)	1
23	Low Pressure Coupler & Valve (Blue)	1

HP means High-pressure LP means Low-pressure



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 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. Specify UPC 193175446619 when ordering parts.

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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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