



LESSON PACKET

Recovery Machine Setup & System Service Process

TMM Academics – Sealed System Training

◆ Lesson Overview

This lesson explains how to properly set up a recovery machine, connect gauges, and follow the correct service sequence when working on sealed systems. It also covers protecting equipment, proper valve settings, and when to perform leak testing and evacuation.

◆ 1. Purpose of the Recovery Machine

A recovery machine:

- Pulls refrigerant from the system
- Compresses it
- Condenses it
- Pumps it into a recovery tank

👉 It functions similar to a compressor and condenser

◆ 2. Protecting the Recovery Machine

Dryer Filter (Important)

Installed at the inlet of the recovery machine:

- Prevents debris from entering
 - Protects internal components
 - Reduces contamination risk
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👉 Especially important when:




- Oil is present
 - System contamination is suspected
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Best Practice:

- Cap filter when not in use
 - Keep moisture out
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◆ **3. Gauge Connections**

A standard manifold gauge has:

-  Low side (blue) → connected to system
 -  High side (red) → connected to system
 -  Center port → process line
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Center Port Function:

Used for:

- Recovery machine
 - Vacuum pump
 - Charging refrigerant
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👉 This is the “service connection” for all operations

◆ **4. Recovery Machine Valve Settings**

Recovery machines typically have:

- Vapor setting
 - Liquid setting
 - Closed position
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For Most Refrigerator Work:

 Use **Vapor setting**

Why?

- Small refrigerant volume (4–8 oz typical)
 - Vapor recovery is sufficient
 - Faster setup
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◆ 5. Liquid vs Vapor Recovery

Vapor Recovery:

- Most common for refrigerators
 - Simpler setup
 - Adequate for small systems
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Liquid Recovery:

- Used for larger systems
 - Requires high-side access
 - Speeds up recovery
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 For domestic refrigeration:
Vapor is typically sufficient

◆ 6. Monitoring Recovery

During operation:

- Low side gauge shows pressure entering machine
 - High side gauge shows pressure leaving machine
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Completion Indicator:

👉 When system reaches **~10 inches vacuum**

- Close gauges
 - Verify it holds
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If pressure rises:

- System may still contain refrigerant
 - Or leak may be present
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👉 Continue recovery until stable

◆ 7. Leak Testing (CRITICAL STEP)

After compressor replacement:

👉 DO NOT pull vacuum to check leaks

Correct Method:

Use **Nitrogen**

- Pressurize system (~100 PSI)

- Check with soap solution
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Why 100 PSI?

- Prevents damage to evaporator (aluminum)
 - Safe pressure level
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👉 Over-pressurizing can damage system components

◆ 8. Why Not Use Vacuum for Leak Testing

If system has a leak and you pull vacuum:

- Air enters system
 - Moisture enters system
 - Contaminates oil and refrigerant
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👉 This leads to:

- System failure
 - Repeat service issues
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◆ 9. Vacuum Process (After Leak Test)

Once leak-free:

- Connect vacuum pump
 - Pull vacuum
 - Monitor oil level in pump
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Vacuum Pump Maintenance:

- Check oil level before use
 - Oil should be clean
 - Replace if contaminated
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👉 Dirty oil reduces vacuum performance

◆ 10. Proper Service Sequence

Correct order of operation:

1. Recover refrigerant
 2. Replace components
 3. Leak test with nitrogen
 4. Evacuate system
 5. Charge refrigerant
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👉 Skipping steps leads to system failure

◆ 11. Common Mistakes

- ✗ Not using dryer filter
 - ✗ Leaving Schrader cores in during recovery
 - ✗ Using vacuum to check leaks
 - ✗ Over-pressurizing system
 - ✗ Not monitoring gauges
 - ✗ Running fan only (not compressor on recovery machine)
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👉 Example:

Some techs turn machine “on” but only run fan

👉 Compressor must be engaged to recover refrigerant

◆ 12. Key Field Principles

- ✓ Protect your tools
- ✓ Follow correct sequence
- ✓ Monitor pressures
- ✓ Work clean
- ✓ Take your time

👉 Efficiency comes from consistency



Review Questions

Multiple Choice

1. What is the purpose of a dryer filter on a recovery machine?
 - A. Increase pressure
 - B. Protect machine from contamination
 - C. Store refrigerant
 - D. Reduce temperature
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2. Which gauge port connects to the recovery machine?
 - A. High side
 - B. Low side
 - C. Center port
 - D. Tank port
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3. What is the correct leak testing method?
 - A. Vacuum
 - B. Nitrogen pressure
 - C. Air pressure
 - D. Water

Short Answer

4. Why should Schrader cores be removed during recovery?

5. Why should vacuum not be used for leak detection?

Scenario

6. Recovery machine is running but no refrigerant is being removed.
What is a possible issue?

7. System pressure rises after reaching vacuum. What does this indicate?



Answer Key

1. B – Protect machine from contamination
2. C – Center port
3. B – Nitrogen pressure

4. They restrict flow and slow down recovery

5. It pulls in air and moisture into the system

6. Valve set to closed or compressor not engaged

7. Leak present or refrigerant still trapped in system