SUMMIT
STUDY GUIDES

# EPA 608

Diagnostic Assessment

## Week 1 Diagnostic

Answer Key & Weakness Map

Scored by the four Section 608 exam sections • Original practice questions

Find your weak sections, then study the chapters that matter most

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## How to Use This Material

Take this assessment in one sitting with a 45-minute timer, choosing the single BEST answer for each question. It has 40 questions, 10 from each section of the exam: Core, Type I, Type II and Type III. Then score it with the separate answer key and fill in the Weakness Map at the end of the key: count your correct answers in each section, and study the sections marked Focus first or Review before the others. The interactive version on the Diagnostic page of the EPA 608 bonus site scores your Weakness Map automatically.

# EPA 608 Week 1 Diagnostic: Answer Key

The best answer for each question, with an explanation and the book section to review.

## Section 1: Core Questions 1-10

**1. B** 18°F superheat and 8°F subcooling

On R-134a, 18.4 psig is 20°F and 124.2 psig is 100°F. Superheat = 38 − 20 = 18°F; subcooling = 100 − 92 = 8°F. Swapping the two results is the most common slip.

Core · Review: Book section 3.4

**2. D** Above the temperature of the air or water cooling the condenser

Heat flows only from hot to cold, so the condensing temperature must be above the temperature of the condenser's cooling air or water. That is why the compressor must raise the pressure, and with it the saturation temperature.

Core · Review: Book section 3.1

**3. A** CFCs and HCFCs

The July 1, 1992 prohibition covered CFC and HCFC refrigerants. It was extended to substitutes on November 15, 1995. CO2 is an exempt substitute.

Core · Review: Book section 2.2

**4. B** The revised bank; no Type II retest is needed

Existing certifications stay valid with no federal retest. Old-bank exams may be given only through January 1, 2027, so a section added after that comes from the revised bank.

Core · Review: How to Use This Book

**5. C** Use only a dye the equipment manufacturer approves

Fluorescent dye with a black light can locate leaks, but only a dye the equipment manufacturer approves should be used.

Core · Review: Book section 4.5

**6. A** An open flame or torch

Never heat a cylinder with an open flame or torch. Overheating, like overfilling, can cause a cylinder to explode.

Core · Review: Book section 5.4

**7. C** A1 refrigerants do not propagate flame, so they have no LFL

Class 1 refrigerants show no flame propagation, so they have no lower flammability limit. Their detectors are set by the OEL instead.

Core · Review: Book section 5.3

**8. D** Label the unit with the charge weight and date

UL 60335-2-40 requires the unit to be labeled with the charge weight and date. Never exceed the manufacturer's maximum charge.

Core · Review: Book section 6.3

**9. A** HCFO

R-1233zd(E) is a hydrochlorofluoroolefin (HCFO): it contains chlorine but has a near-zero ODP. It is easy to confuse with the HFO R-1234ze(E), which contains no chlorine.

Core · Review: Book section 1.3

**10. B** An EPA-approved equipment testing organization

Manufacturers and importers must have equipment certified by an EPA-approved equipment testing organization. EPA approves those organizations; it does not test machines itself.

Core · Review: Book section 2.6

## Section 2: Type I: Small Appliances Questions 11-20

**11. C** 21 of 25 (84%)

A mail-in Type I requires 84%, which is 21 of 25 correct, and it cannot count toward Universal. 18 of 25 (70%) is the passing score for closed-book sections.

Type I · Review: How to Use This Book

**12. B** Company, location, date, refrigerant and monthly totals, 3 years

A 12 lb unit is more than 5 lb and less than 50 lb, so since Jan 1, 2018 the technician keeps the disposal record (company name, location, date, refrigerant type, monthly totals and quantities sent for reclaim or destruction) for 3 years. Factory sealing alone does not make a 12 lb unit a small appliance.

Type I · Review: Book section 2.8

**13. D** In separate recovery cylinders, one refrigerant per cylinder

Never mix refrigerants in a recovery cylinder. A mixed cylinder usually cannot be reclaimed and may be refused or charged for destruction.

Type I · Review: Book section 5.4

**14. A** Recover 80% of the charge or reach 4 in. Hg vacuum

With equipment made on or after Nov 15, 1993 and a compressor that does not run, the level is 80% of the charge or 4 in. Hg vacuum.

Type I · Review: Book section 7.2

**15. B** They do not need certified self-contained equipment

A person who services only their own appliances with permanently attached pump-out units does not need certified self-contained equipment.

Type I · Review: Book section 2.6

**16. C** Nothing more; it may go into another appliance of the same owner

Recovered refrigerant may be returned to the same appliance or another appliance of the same owner without recycling or reclaiming. Reclaim is required only when the refrigerant changes owners.

Type I · Review: Book section 4.1

**17. A** Section 609, because it is motor vehicle air conditioning

Car and truck air conditioning (MVAC) falls under Section 609, not Section 608, regardless of charge size or refrigerant.

Type I · Review: Book section 1.5

**18. B** The defrost heater

Running the defrost heater warms the evaporator and vaporizes trapped liquid so it can leave through the access fittings.

Type I · Review: Book section 7.3

**19. A** Recharge only with R-32, the refrigerant on the nameplate

Never mix refrigerants, and never put R-410A into A2L equipment or an A2L into R-410A equipment. Similar pressures do not make the refrigerants interchangeable; charge only with the nameplate refrigerant.

Type I · Review: Book section 6.3

**20. B** R-134a does not mix with mineral oil, so oil may not return

Oil must mix with the refrigerant to return to the compressor. R-134a does not mix with most refrigerant oils, including mineral oil, so oil can collect in the evaporator and starve the compressor.

Type I · Review: Book section 3.5

## Section 3: Type II: High- and Medium-Pressure Appliances Questions 21-30

**21. D** Escaping liquid boils at a very low temperature and causes frostbite

Liquid refrigerant released at atmospheric pressure boils at a very low temperature and can freeze skin and eyes on contact. Safety glasses and gloves are worn when connecting and disconnecting hoses.

Type II · Review: Book section 8.7

**22. B** No; it must be no higher than 0 psig

The non-major limit is 0 psig. 3 psig would meet the oil-change limit of 5 psig, but not the non-major limit.

Type II · Review: Book section 8.2

**23. A** Warming the system to help the moisture boil off

Heating the system speeds dehydration, and low ambient temperature slows it. Evacuation speed also depends on system size, moisture amount, pump size and line size.

Type II · Review: Book section 8.5

**24. B** No; bubbles form only when gas pushes outward

Bubble solution needs positive pressure inside the system so escaping gas blows bubbles. A system in a vacuum draws air in. Pressurize with nitrogen or refrigerant first, then use bubbles.

Type II · Review: Book section 4.5

**25. C** About 419 psig

R-410A saturates at about 419 psig at 120°F. 260 psig is R-22 at 120°F, 318 psig is R-410A at 100°F and 201 psig is R-410A at 70°F. Overheating a cylinder can cause it to explode.

Type II · Review: Book section 5.4, 8.7

**26. A** They have a much lower global warming potential

R-410A has a GWP of 2,088, while R-32 is 675 and R-454B is 465. R-410A has zero ODP, the replacements are mildly flammable (A2L), and R-410A equipment will be serviced for years.

Type II · Review: Book section 6.1

**27. C** No; mixed refrigerant cannot be reclaimed as either product

Charge only the refrigerant the system is designed for and never top off with a different one. A mixture cannot be reclaimed as either refrigerant and may have to be destroyed.

Type II · Review: Book section 4.7

**28. D** March 1, 2027

Chronic-leaker reports for appliances that leak 125% or more of their full charge in a calendar year are due to EPA by March 1 of the following year. April 10 is the 2020 date when leak repair stopped covering substitute-only appliances.

Type II · Review: Book section 2.9

**29. D** High-pressure

160 psig + 14.7 = about 175 psia, which falls in the high-pressure band of 170 to 355 psia. Treating 160 as psia would wrongly place it in the medium band.

Type II · Review: Book section 3.2, 8.1

**30. B** Identify the refrigerant with a PT check or an identifier

Identify the refrigerant first: read the nameplate, check the PT relationship and use a refrigerant identifier if in doubt. Guessing risks mixing refrigerants in the cylinder and the machine.

Type II · Review: Book section 4.2, 3.3

## Section 4: Type III: Low-Pressure Appliances Questions 31-40

**31. C** Heart irregularities

High vapor concentrations can cause cardiac arrhythmia, unconsciousness and death. That is why machinery rooms have detectors and ventilation and why large releases require SCBA.

Type III · Review: Book section 5.1

**32. A** A large mass of refrigerant vapor would still be inside

Low-pressure chillers hold a large mass of refrigerant as vapor even at atmospheric pressure, so stopping at 0 psig would let it escape when the machine is opened. That is why the level is 25 mm Hg absolute.

Type III · Review: Book section 9.4

**33. B** A running evaporator is in a vacuum, so leaks there admit air

During operation the evaporator runs below atmospheric pressure, so leaks pull air in instead of releasing refrigerant. Warming the idle shell brings it above atmospheric so leaks can be found.

Type III · Review: Book section 9.3

**34. D** Leak test 10 psig max; rupture disc 15 psig; recovery 25 mm Hg absolute

Leak tests stay at or below 10 psig because the evaporator rupture disc bursts at about 15 psig, and recovery is to 25 mm Hg absolute (about 29 in. Hg vacuum), not 25 in. Hg.

Type III · Review: Book section 9.7

**35. B** 25 mm Hg absolute in both equipment-date columns

The current Table 1 lists 25 mm Hg absolute for low-pressure appliances whether the recovery equipment was made before or after November 15, 1993. The 25 in. Hg figure is an error carried in old prep material.

Type III · Review: Book section 2.5

**36. D** Reclamation by an EPA-certified reclaimer

Recovered refrigerant may go back into the same owner's equipment without processing, but when ownership changes it must be reclaimed to AHRI 700 by a certified reclaimer.

Type III · Review: Book section 4.1

**37. C** About 300 mm Hg absolute

Absolute pressure = 29.92 − 18.1 = 11.82 in. Hg absolute, and 11.82 × 25.4 = about 300 mm Hg absolute. 460 mm Hg comes from converting the 18.1 vacuum reading directly; 742 subtracts 18 mm from 760.

Type III · Review: Book section 3.2

**38. B** Type II or Universal

60 psia falls in the medium-pressure range (45 to 170 psia at 104°F), and medium-pressure appliances are Type II. Type III covers only refrigerants below 45 psia.

Type III · Review: Book section 8.1

**39. C** Notify EPA within 60 days of first using the practice

Excluding destroyed purge refrigerant requires notifying EPA within 60 days of first using that practice. March 1 is the deadline for chronic-leaker reports, a different requirement.

Type III · Review: Book section 9.6

**40. A** About 10.7%; over 10%, so repair is required

Rolling average = total added over the past 365 days ÷ full charge: 75 ÷ 700 × 100 = 10.7%, which exceeds the 10% comfort-cooling threshold. Using only the latest 20 lb gives 2.9%.

Type III · Review: Book section 9.8

# Your Weakness Map

Circle each question you missed, then count your correct answers per section. Under 60% = **Focus first**; 60–79% = **Review**; 80% or more = **Maintain**. On the real exam, 70% (18 of 25) passes a section.

| Exam section | Questions | Correct | Study if below 80% |
|---|---|---|---|
| **Core** | 1-10 | ____ of 10 | Chapter 2: Section 608 Rules (the most-tested Core chapter)<br>plus the book sections listed under each question you missed |
| **Type I: Small Appliances** | 11-20 | ____ of 10 | Chapter 7: Type I: Small Appliances<br>plus the book sections listed under each question you missed |
| **Type II: High- and Medium-Pressure Appliances** | 21-30 | ____ of 10 | Chapter 8: Type II: High- and Medium-Pressure Appliances<br>plus the book sections listed under each question you missed |
| **Type III: Low-Pressure Appliances** | 31-40 | ____ of 10 | Chapter 9: Type III: Low-Pressure Appliances<br>plus the book sections listed under each question you missed |

With 10 questions per section, treat these percentages as a guide to where to focus, not a prediction of your exam score. Spend the first 15–20 minutes of three study sessions each week on your weakest sections, then drill each one in the online Exam Test Simulator with a 25-question set from that section only. Take the Week 4 Checkpoint in Week 4 of your study plan to check your progress.