

1 SUPPLY PLUMBING

Plumbing
MODULE

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► 1.0 OBJECTIVES

1.1 OBJECTIVES

1.1.1 GENERAL MODULE OBJECTIVES

In this Module, you will learn how plumbing systems work, and how to identify the common components that make up the supply and waste plumbing system. We'll also talk about water heaters, plumbing fixtures and faucets.

This is not a code compliance course. It's a performance-based course. There are many plumbing codes out there, and they change regularly. It's great to know your local codes and there are usually code courses readily available. You should understand that most existing houses will fail to meet some aspects of most current codes.

It's not our goal to turn you into a plumber. You won't be able to troubleshoot, install or repair plumbing systems based on what you learn in this Module. There are many places to go to learn more about plumbing systems and we encourage you to expand your knowledge.

By the time you have finished the Module, you will be able to spot the common performance-related problems. You'll also be able to follow an inspection and testing procedure for checking plumbing systems.

1.1.2 SUPPLY PLUMBING SECTION OBJECTIVES

In this section we look at how water gets into the house. We look at both public and private supply systems. Although we can't see much of them during inspections, we'll talk about the **service pipes** or **water entry pipes** that bring the water up to the house. We'll also look more closely at the piping we can see inside the house on the supply side. We will talk about the things that cause supply plumbing problems, such as leaks and low water pressure.

Plumbing

MODULE

STUDY SESSION 1

1. The first Study Session outlines the Scope of plumbing inspections as set out in the ASHI® Standards of Practice.

Note: ASHI® stands for the American Society of Home Inspectors.

This Session also includes some comments on the Standards and a discussion of the basic principles of plumbing.

2. Please read the Plumbing chapter of **The Home Reference Book** before starting this Session.
3. At the end of the Study Session you should be able to —
 - name the four basic components of the plumbing system that have to be inspected to meet the Standards
 - list five things the Standards do not require an inspector to observe in a plumbing inspection
 - describe functional flow in one sentence
 - describe in three sentences the flow of water through the house from its point of entry to its point of exit, including the function of the vent piping
 - list three things that can go wrong with supply piping
 - list four factors which affect the pressure or flow at a fixture
4. This Study Session may take you about one hour.
5. Quick Quiz 1 is included at the end of this Session. Answers may be written in your book.

Key Words:

- ***Functional flow***
- ***Cross connection***
- ***On-site waste disposal system***
- ***Main shutoff valve***
- ***Static pressure***

► 2.0 SCOPE AND INTRODUCTION

2.1 INTRODUCTION

It's Simple

A house plumbing system has a fairly simple mission. The idea is to bring ample clean water into the house for drinking, washing and cooking. We want to heat some of the water for washing purposes. After we've used the water in the house, we want to get rid of it. We also want to get rid of the liquid, solid and gaseous wastes associated with toilets. We use the drain, waste and venting system to get this waste out of the house.

We typically want water available at several points in the house. There are usually water faucets and basins or sinks in kitchens, bathrooms and laundry areas. Most houses also have water at an exterior hose bibb for washing cars, watering lawns, etc.

The supply water can come from either a municipal water system or a private water source such as a well, pond, lake, river or cistern. Solid and liquid wastes can be discharged to a sewer system or a private sewage disposal system such as a septic tank and tile bed.

*Not As Simple
As It Seems*

While the concept of plumbing is simple, the practice is complex. The risks of mixing the waste with the supply are often poorly understood by the homeowner. The concept of venting on the waste side of the plumbing system is a mystery to many home inspectors as well as homeowners.

We'll start our discussion at the beginning, looking at supply piping.

2.2 SCOPE

THE ASHI® STANDARDS OF PRACTICE

The following are excerpted from the ASHI® Standards of Practice, effective January 1, 2000.

ASHI® Standards

2. PURPOSE AND SCOPE

2.1 The purpose of these Standards of Practice is to establish a minimum and uniform standard for private, fee-paid home *inspectors* who are members of the American Society of Home Inspectors. *Home Inspections* performed to these Standards of Practice are intended to provide the client with information regarding the condition of the *systems* and *components* of the home as inspected at the time of the *Home Inspection*.

2.2 The *inspector* shall:**A. *inspect*:**

1. *readily accessible systems* and *components* of homes listed in these Standards of Practice.
2. *installed systems* and *components* of homes listed in these Standards of Practice.

B. *report*:

1. on those *systems* and *components* inspected which, in the professional opinion of the *inspector*, are *significantly deficient* or are near the end of their service lives.
2. a reason why, if not self-evident, the *system* or *component* is *significantly deficient* or near the end of its service life.
3. the *inspector's* recommendations to correct or monitor the reported deficiency.
4. on any *systems* and *components* designated for inspection in these Standards of Practice which were present at the time of the *Home Inspection* but were not inspected and a reason they were not inspected.

2.3 These Standards of Practice are not intended to limit *inspectors* from:

- A. including other inspection services, *systems* or *components* in addition to those required by these Standards of Practice.
- B. specifying repairs, provided the *inspector* is appropriately qualified and willing to do so.
- C. excluding *systems* and *components* from the inspection if requested by the client.

6. PLUMBING SYSTEM**6.1 The *inspector* shall:****A. *inspect*:**

1. the interior water supply and distribution *systems* including all fixtures and faucets.
2. the drain, waste and vent *systems* including all fixtures.
3. the water heating equipment.
4. the vent systems, flues and chimneys.
5. the fuel storage and fuel distribution *systems*.
6. the drainage sumps, sump pumps, and related piping.

B. *describe*:

1. the water supply, drain, waste, and vent piping materials.
2. the water heating equipment including the energy source.
3. The location of main water and main fuel shut-off valves.

6.2 The *inspector* is NOT required to:**A. *inspect*:**

1. the clothes washing machine connections.
2. the interiors of flues or chimneys which are not *readily accessible*.
3. wells, well pumps, or water storage related equipment.
4. water conditioning *systems*.
5. solar water heating *systems*.
6. fire and lawn sprinkler *systems*.
7. private waste disposal *systems*.

B. *determine*:

1. whether water supply and waste disposal systems are public or private.
2. the quantity or quality of the water supply.

C. operate safety valves or shut-off valves.**13. GENERAL LIMITATIONS AND EXCLUSIONS****13.1 General limitations:****A. Inspections performed in accordance with these Standards of Practice**

1. are not *technically exhaustive*.
2. will not identify concealed conditions or latent defects.

B. These Standards of Practice are applicable to buildings with four or fewer dwelling units and their garages or carports.**13.2 General exclusions:****A. The *inspector* is not required to perform any action or make any determination unless specifically stated in these Standards of Practice, except as may be required by lawful authority.****B. *Inspectors* are NOT required to determine:**

1. the condition of *systems* or *components* which are not *readily accessible*.
2. the remaining life of any *system* or *component*.
3. the strength, adequacy, effectiveness, or efficiency of any *system* or *component*.
4. the causes of any condition or deficiency.
5. the methods, materials, or costs of corrections.
6. future conditions including, but not limited to, failure of *systems* and *components*.
7. the suitability of the property for any specialized use.
8. compliance with regulatory requirements (codes, regulations, laws, ordinances, etc.).
9. the market value of the property or its marketability.
10. the advisability of the purchase of the property.
11. the presence of potentially hazardous plants or animals including, but not limited to wood destroying organisms or diseases harmful to humans.
12. the presence of any environmental hazards including, but not limited to toxins, carcinogens, noise, and contaminants in soil, water and air.

13. the effectiveness of any *system installed* or methods utilized to control or remove suspected hazardous substances.
 14. the operating costs of *systems* or *components*.
 15. the acoustical properties of any *system* or *component*.
- C.** *Inspectors* are NOT required to offer:
1. or perform any act or service contrary to law.
 2. or perform *engineering* services.
 3. or perform work in any trade or any professional service other than *home inspection*.
 4. warranties or guarantees of any kind.
- D.** *Inspectors* are NOT required to operate:
1. any *system* or *component* which is *shut down* or otherwise inoperable.
 2. any *system* or *component* which does not respond to *normal operating controls*.
 3. shut-off valves.
- E.** *Inspectors* are NOT required to enter:
1. any area which will, in the opinion of the inspector, likely be dangerous to the *inspector* or other persons or damage the property or its *systems* or *components*.
 2. The *under-floor crawl spaces* or attics which are not *readily accessible*.
- F.** *Inspectors* are NOT required to inspect:
1. underground items including, but not limited to underground storage tanks or other underground indications of their presence, whether abandoned or active.
 2. *systems* or *components* which are not *installed*.
 3. *decorative* items
 4. *systems* or *components* located in areas that are not entered in accordance with these Standards of Practice.
 5. detached structures other than garages and carports.
 6. common elements or common areas in multi-unit housing, such as condominium properties or cooperative housing.
- G.** *Inspectors* are NOT required to:
1. perform any procedure or operation which will, in the opinion of the *inspector*, likely be dangerous to the inspector or other persons or damage the property or its *systems* or *components*.
 2. move suspended ceiling tiles, personal property, furniture, equipment, plants, soil, snow, ice, or debris.
 3. *dismantle* any *system* or *component*, except as explicitly required by these Standards of Practice.