

American Society of Sanitary Engineering

Professional Qualifications Standard for the

Mechanical Inspector

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Professional Qualifications Standard for the Mechanical Inspector

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Westlake, Ohio
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FOREWORD

Professional Qualifications Standard for the Mechanical Inspector

This foreword shall not be considered part of the standard. However, it is offered to provide background information.

In 1987, the American Society of Sanitary Engineering's Board of Directors recognized the need to develop Professional Qualifications Standards for the plumbing and mechanical industry. Since that time, ASSE has developed a number of Professional Qualifications Standards, including the Series 5000, *Cross-Connection Control Professional Qualifications Standard*, and the Series 6000, *Professional Qualifications Standard for Medical Gas Systems Personnel*. Both of these important documents, now each considered the industry standard, were necessary to allow the Authority Having Jurisdiction to have nationally recognized standards, developed in an open consensus process by all industry stakeholders, to use in ensuring that individuals working on these critically important systems possess the knowledge and experience required to successfully perform the installation, testing, maintenance and inspection needed within our industry.

With the development of the ASSE/IAPMO/ANSI Series 17000, *Professional Qualifications Standard for the Mechanical Inspector*, and its companion document, the ASSE Series 16000, *Professional Qualifications Standard for the Plumbing Inspector*, the Society is again leading the way and raising the bar for the plumbing and mechanical industry. For the first time, these important new standards spell out the experience, education, training and general knowledge requirements for inspectors who play a critical role in protecting the health and safety of both the general public and the industry itself.

Our ever changing industry is affected by innovation with the constant development of new materials, systems and installation methods. The economy also plays a large role in funding for education of public inspectors and the move toward third-party and multi-craft inspectors. With these industry developments, it was essential that a national standard for mechanical inspectors be developed. That need has been fulfilled with the ASSE/IAPMO/ANSI Series 17000.

Recognition is made of the time volunteered by members of this working group and of the industry members who participated in the development of this standard.

Compliance with this standard does not imply acceptance by any code body or Authority Having Jurisdiction.

This voluntary consensus standard was promulgated in accordance with procedures developed by the American National Standards Institute (ANSI).

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Professional Qualifications Standard for the Mechanical Inspector

10-1.1 Scope

This standard applies to an individual who inspects mechanical systems.

- k. Process piping
- l. Refrigeration systems
- m. Job site safety requirements
- n. Steam and hot water boilers
- o. Ventilation and air supply

10-1.2 Purpose

The purpose of this standard is to provide minimum performance criteria, identified by industry consensus, for Mechanical System Inspectors (“herein referred to as the “Inspector”).

10-2.2 Product Performance Knowledge

10-2.2.1 The Inspector shall be able to identify approved mechanical products and materials.

10-2.2.2 The Inspector shall be able to identify components of mechanical systems.

10-2.2.3 The Inspector shall be able to identify and describe the operating principles and performance characteristics of mechanical systems; and demonstrate knowledge of the following components:

- a. Appliances and equipment
- b. Chimneys and vents
- c. Duct systems
- d. Exhaust systems
- e. Fuel piping
- f. Hangers and supports
- g. Refrigeration systems
- h. Steam and hot water boilers and safety components

10-1.3 Limitations

This standard applies to individuals seeking Mechanical Inspector Certification only.

10-1.4 Reference and Industry Standards

Appendix A includes the referenced standards in the model mechanical codes.

10-2.1 General Knowledge

10-2.1.1 The Inspector shall be able to identify and show knowledge of the applicable laws, codes, rules, listing agencies and regulations from the federal, state and local levels pertaining to mechanical systems and ASSE Series 17000.

10-2.1.2 The Inspector shall be able to identify and describe the basic concepts pertaining to:

- a. Administration and general regulations
- b. Chimneys and vents
- c. Combustion air
- d. Commercial hoods and kitchen ventilation
- e. Duct systems
- f. Environment air ducts and product conveying systems
- g. Exhaust systems
- h. Fuel gas piping
- i. Hydronic systems
- j. Installation of specific appliances

10-2.3 Product Installation Knowledge

10-2.3.1 The Inspector shall be able to identify and describe the proper installation requirements for the mechanical systems pertaining to:

- a. Applicable governmental requirements
- b. Applicable mechanical codes and standards
- c. Manufacturer’s installation instructions

10-2.4 System Knowledge

10-2.4.1 The Inspector shall be able to identify and describe the appropriate installation of the following:

- a. Chimneys and vents
- b. Combustion air
- c. Commercial hoods and kitchen ventilation
- d. Duct systems
- e. Environment air ducts and product conveying systems
- f. Exhaust systems
- g. Fuel piping
- h. Hydronic systems
- i. Specific appliances
- j. Process piping
- k. Refrigeration systems
- l. Steam and hot water boilers
- m. Ventilation and air supply

10-2.4.2 The Inspector shall be able to describe the precautions and hazards associated with the following:

- a. Chimney and vent systems
- b. Combustion air
- c. Damper installation and location
- d. Duct location
- e. Duct sizing
- f. Hangers and supports
- g. Job site safety
- h. Structural alterations

10-2.4.3 The Inspector shall be able to demonstrate knowledge of the following:

- a. Acceptance test verification
- b. Administrative procedures
- c. Commonly used plan symbols and abbreviations
- d. Impact of additional mechanical appliances and equipment

10-2.4.4 The Inspector shall be able to identify the correct physical locations for the following items:

- a. Appliances and equipment
- b. Chimney and vent terminals
- c. Dampers
- d. Exhaust systems and components
- e. Firestopping and smoke-limiting systems
- f. Fuel piping system components
- g. Kitchen grease duct system components
- h. Refrigeration piping system components
- i. Relief valves and safety devices

10-3.1 Minimum Duties Performed

The Inspector shall be able to perform the following:

- a. Document inspections and maintain records
- b. Final inspection
- c. Fuel system(s) inspections
- d. Read and interpret construction plans
- e. Rough inspection
- f. Underground inspection

10-3.2 Terminology

The Inspector shall be able to demonstrate comprehension of all terminology listed in the ASSE Standard 17000 and its appendices.

10-3.3 Certification of Inspectors

10-3.3.1 Eligibility requirements

10-3.3.1.1 A minimum of five (5) years of documented practical experience in either installation or inspection of mechanical systems.

10-3.3.1.2 Successful completion of a minimum 36-hour training course encompassing all aspects of ASSE Standard 17010.

10-3.3.1.3 Certification shall include successfully passing a written exam encompassing aspects of ASSE Standard 17010.

10-3.3.1.4 Certification to this standard shall be through a nationally recognized third-party certification agency.

10-3.3.1.5 Certification shall be for a three (3) year period.

10-3.3.2 Recertification of Inspectors

10-3.3.2.1 Recertification shall include the successful completion of a minimum of 1.5 industry-related Continuing Education Units (15 hours); or an 8 hour course encompassing all aspects of ASSE Series 17010 and a written examination through a nationally recognized third-party certification agency.

Reference and Industry Standards and Codes

A-1 Reference and Industry Standards and Codes

The following list of reference and industry standards and codes is part of the requirements of ASSE Standard 17010.

AABC-2002	Total System Balance, 6th Edition
ACCA Manual B-2009	Balancing and Testing Air and Hydronic Systems
ACCA Manual D-2009*	Residential Duct Systems
ACCA Manual J-2006*	Residential Load Calculation
ACCA Manual N-2008	Commercial Load Calculation
ACCA Manual Q-2003	Low Pressure, Low Velocity Duct System Design
ACCA 4 QM-2007*	Maintenance of Residential HVAC Systems
AHRI 700-2006	Specification for Fluorocarbon Refrigerants
AMCA 500-D-2007*	Laboratory Methods of Testing Dampers for Ratings
AMCA 540-2008*	Louvers Impacted by Wind Borne Debris
AMCA 550-2009*	High Velocity Wind Driven Rain Resistance Louvers
ASCE 25-2006*	Earthquake-Actuated Automatic Gas Shutoff Devices
ASHRAE 15-2010*	Safety Standard for Refrigeration Systems
ASHRAE 34-2010*	Designation and Safety Classification of Refrigerants
ASHRAE 52.1-1992	Gravimetric and Dust Spot Procedures for Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter
ASHRAE 52.2-2007	General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size
ASHRAE 55-2010	Thermal Environmental Conditions for Human Occupancy
ASHRAE 62.1-2010*	Ventilation for Acceptable Indoor Air Quality
ASHRAE 62.2-2010*	Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings
ASHRAE 90.1-2010*	Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE 90.2-2007*	Energy-Efficient Design of Low-Rise Residential Buildings
ASHRAE 111-2008*	Measurement, Testing, Adjusting and Balancing of Building HVAC Systems
ASHRAE 129-1997 (R2002)*	Measuring Air-Change Effectiveness
ASHRAE 136-1993 (R2006)*	A Method of Determining Air Change Rates in Detached Dwellings
ASHRAE/ACCA 180-2008*	Inspection and Maintenance of Commercial-Building HVAC Systems
ASHRAE/ACCA 183-2007*	Peak Cooling and Heating Load Calculations in Buildings Except Low-Rise Residential Buildings
ASHRAE Handbook-2009	Fundamentals
ASHRAE -Handbook-2008	HVAC Systems and Equipment
ASME A13.1-2007*	Scheme for the Identification of Piping Systems

ASME A112.4.1-2009*	Water Heater Relief Valve Drain Tubes
ASME A112.18.6-2009/CSA B125.6-2009*	Flexible Water Connectors
ASME B1.20.1-1983 (R2006)*	Pipe Threads, General Purpose, Inch
ASME B1.20.3-1976 (R2008)*	Dryseal Pipe Threads, Inch
ASME B16.1-2010*	Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250
ASTM A 254-9 (R2002)	Copper-Brazed Steel Tubing
ASME B16.3-2006*	Malleable Iron Threaded Fittings: Classes 150 and 300
ASME B16.5-2009*	Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 Metric/Inch
ASME B16.9-2007*	Factory-Made Wrought Butt welding Fittings
ASME B16.11-2009	Forged Fittings, Socket-Welding and Threaded
ASME B16.15-2006*	Cast Copper Alloy Threaded Fittings: Classes 125 and 250
ASME B16.18-2001 (R2005)*	Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.20-2007*	Metallic Gaskets for Pipe Flanges: Ring-Joint, Spiral-Wound, and Jacketed
ASME B16.22-2001 (R2010)*	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B16.23-2002 (R2006)*	Cast Copper Alloy Solder Joint Drainage Fittings: DWV
ASME B16.24-2006*	Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500, and 2500
ASME B16.26-2006*	Cast Copper Alloy Fittings for Flared Copper Tubes
ASME B16.29-2007*	Wrought Copper and Wrought Copper Alloy Solder-Joint Drainage Fittings-DWV (Note 1)
ASME B16.33-2002 (R2007)*	Manually Operated Metallic Gas Valves for use in Gas Piping Systems up to 125 psi (Sizes NPS 1/2 -NPS 2)
ASME B16.50-2001 (R2008)*	Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings
ASME B31.5-2010*	Refrigeration Piping and Heat Transfer Components
ASME B36.10M-2004 (R2010)*	Welded and Seamless Wrought Steel Pipe
ASME BPVC Section I-2010*	Rules for Construction of Power Boilers
ASME BPVC Section IV-2010*	Rules for Construction of Heating Boilers
ASME BPVC Section VIII-2010*	Rules for Construction of Pressure Vessels Division 1
ASME CSD-1-2009	Controls and Safety Devices for Automatically Fired Boilers
ASTM A 53/A 53 M-2010	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless
ASTM A 106/A 106M-2010	Seamless Carbon Steel Pipe for High-Temperature Service
ASTM A 126-2004 (R2009)	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A 254-1997 (R2007)	Copper-Brazed Steel Tubing
ASTM A 312-2009	Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
ASTM A 420-2010a	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service
ASTM A 568-2009a	Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled
ASTM A 653/A 653M-2010	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 733-2003 (R2009)	Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
ASTM A 861-2004 (R2008)	High-Silicon Iron Pipe and Fittings
ASTM B 32-2008	Solder Metal