

ASSE International

Cross-Connection Control Professional Qualifications Standard

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Cross-Connection Control Professional Qualifications Standard

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FOREWORD

Cross-Connection Control Professional Qualifications Standard

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

ASSE International professional qualifications standards are developed in the interest of consumer safety.

In 1987, ASSE's Board of Directors recognized the need to develop a professional qualifications standard for individuals involved with backflow prevention. The resulting qualifications standard, the ASSE Series 5000, established minimum industry requirements for the backflow prevention assembly tester, backflow prevention assembly repairer and cross-connection control surveyor. This voluntary consensus standard was the first in the plumbing and water supply fields to set minimum requirements for qualified professional. The Series 5000 was first issued by the ASSE Board of Directors in 1990 and was designated as an American National Standard by the American National Standards Institute (ANSI) on November 14, 1991. The standard series has been updated and revised in 1998, 2000, 2004 and 2009, with the current revision released in 2015.

Backflow prevention methods, devices and assemblies, along with their selection, installation, testing and repair, have been an important part of protecting the public health and the water supply for many years. With the growing use of recycled or gray water systems, and the chronic shortage of water in some areas of the country and world, it is vital that this important resource be protected. There is no understating the importance of requiring trained personnel to specify, install, test and repair this critical protection – the ASSE/IAPMO/ANSI Series 5000 standards mandate the proper level of training, testing and experience needed. To prepare, update and revise this standard, representatives from different regions and industry segments dedicated themselves to achieving true consensus, thereby advancing the backflow prevention community.

In order to better meet the needs of the industry, this revised standard defines the minimum requirements for testing backflow prevention assemblies meeting the performance requirements of ASSE Standards 1013, 1015, 1020, 1047, 1048 and 1056, and the minimum qualifications requirements for becoming an ASSE Certified Backflow Prevention Assembly Tester, Fire Protection System Cross-Connection Control Tester, Backflow Prevention Assembly Repairer, Cross-Connection Control Surveyor, and Backflow Prevention Program Administrator. This 2015 revision has added Standard #5063, *Minimum Performance Requirements for Testing Air Valve and Vent Inflow Preventers*.

Recognition is made of the time volunteered by members of the working group, the original qualifications standards committee members, and of the industry members who participated in the previous revisions of this standard.

Compliance with this standard does not imply acceptance by any code body. It is recommended that all cross-connection control professionals be in compliance with federal, state and local codes.

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

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Minimum Performance Requirements for Testing Reduced Pressure Principle Backflow Preventers (RP) and Reduced Pressure Principle Fire Protection Backflow Preventers (RPF)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing ASSE Standard 1013 Reduced Pressure Principle Backflow Preventers (RP) and Reduced Pressure Principle Fire Protection Backflow Preventers (RPF).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1013 Reduced Pressure Principle Backflow Preventers (RP) and Reduced Pressure Principle Fire Protection Backflow Preventers (RPF).

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.

- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2

Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the adequacy of the air gap, the evidence of illegal bypasses and the adequacy of drainage systems from the assembly.
4. The general appearance of the assembly shall be checked for evidence of excessive discharge, condition of shutoff valves, test cocks, relief valve and air gap, and adequacy of drainage, should leakage occur.

3.0 Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served); date and time of the test; initial test results (pass-fail of first check and second check, relief valve discharge, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to discharge, improper installation/orientation, etc.
- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements, with provisions for both vertical and horizontal installations. (In the absence of local performance requirements, note Appendix E for sample test procedures.)
 - Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the first check
 - Confirm the proper operation of the second check
 - Confirm the proper operation of the relief valve
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be tested to these requirements.

Minimum Performance Requirements for Testing Double Check Backflow Prevention Assemblies (DC) and Double Check Fire Protection Backflow Prevention Assemblies (DCF)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing ASSE Standard 1015 Double Check Backflow Prevention Assemblies (DC) and Double Check Fire Protection Backflow Prevention Assemblies (DCF).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1015 Double Check Backflow Prevention Assemblies (DC) and Double Check Fire Protection Backflow Prevention Assemblies (DCF).

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.
- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.

- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2

Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the evidence of illegal bypasses.
4. The general appearance of the assembly shall be checked for condition of shutoff valves and test cocks.

3.0

Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application, (i.e. equipment or system served);

date and time of the test; initial test results (pass-fail of first check and second check, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to improper installation/orientation, etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements, with provisions for both vertical and horizontal installations. (In the absence of local performance requirements, note Appendix E for sample test procedures.)
- Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the first check
 - Confirm the proper operation of the second check
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be tested to these requirements.

Minimum Performance Requirements for Testing Pressure Vacuum Breaker Assemblies (PVB)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing an ASSE Standard 1020 Pressure Vacuum Breaker Assembly (PVB).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1020 Pressure Vacuum Breaker Assemblies (PVB).

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.
- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2 Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation, elevation above point of use and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the elevation above point of use in accordance with the authority having jurisdiction.
4. The general appearance of the assembly shall be checked for evidence of discharge through the air inlet valve, condition of shutoff valves, test cocks and air inlet valve, and adequacy of drainage when leakage occurs.

3.0 Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served);

date and time of the test; initial test results (pass-fail of air-inlet valve and check valve, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to discharge, improper installation/orientation, etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements. (In the absence of local performance requirements, note Appendix E for sample test procedures.)
- Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the check valve
 - Confirm the proper operation of the air inlet valve
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be retested to these requirements.

Minimum Performance Requirements for Testing Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (RPDF)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing an ASSE Standard 1047 Reduced Pressure Detector Fire Protection Backflow Prevention Assembly (RPDF).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1047 Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (RPDF).

1.3 Definitions

Field Testing Performance Requirement: A test procedure which evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.
- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2 Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the adequacy of the air gap, the evidence of illegal bypasses and the adequacy of drainage systems from the assembly.
4. The general appearance of the assembly shall be checked for evidence of excessive discharge, condition of shutoff valves, test cocks, relief valve and air gap, and adequacy of drainage should leakage occur.

3.0 Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served); date and time of the test; initial test results

(pass-fail of first check and second check, relief valve discharge, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to discharge, improper installation/orientation, etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements on both the line and bypass assemblies with provisions for testing in both vertical and horizontal installations. (In the absence of local performance requirements, note Appendix E for sample procedures.)
- Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the first check
 - Confirm the proper operation of the second check
 - Confirm the proper operation of the relief valve
 - Confirm that the meter registers during low flow conditions
 - Confirm flow
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be retested to these requirements.

Minimum Performance Requirements for Testing Double Check Detector Fire Protection Backflow Prevention Assemblies (DCDF)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing an ASSE Standard 1048 Double Check Detector Fire Protection Backflow Prevention Assembly (DCDF).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1048 Double Check Detector Fire Protection Backflow Prevention Assemblies (DCDF).

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.
- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2 Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The proper application of the assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the evidence of illegal bypasses.
4. The general appearance of the assembly shall be checked for condition of the shutoff valves and test cocks.

3.0

Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served); date and time of the test; initial test results (pass-fail of first check and second check, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts

used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to improper installation/orientation, etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements on both the line and bypass assemblies with provisions for both vertical and horizontal installations. (In the absence of local performance requirements, note Appendix E for sample procedures.)
- Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the first check
 - Confirm the proper operation of the second check
 - Confirm that the meter registers during low flow conditions
 - Confirm flow
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be tested to these requirements.

Minimum Performance Requirements for Testing Spill Resistant Vacuum Breakers (SRVB)

1.0 Scope, Purpose and Definitions

1.1 Scope

This operational performance test requirement includes all activities that shall be addressed while field testing an ASSE Standard 1056 Spill Resistant Vacuum Breaker (SRVB).

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE Standard 1056 Spill Resistant Vacuum Breakers (SRVB).

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates a backflow prevention assembly for compliance to the minimum performance requirements.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.
- B. Arrangements/notifications shall be made where a continuous water supply is necessary or where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly perform the test.

2.2 Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation, elevation above point of use and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs, such as, but not limited to, the elevation above point of use in accordance with the authority having jurisdiction.
4. The general appearance of the assembly shall be checked for evidence of discharge through the air inlet valve, condition of shutoff valves, test cocks and air inlet valve, and adequacy of drainage when leakage occurs.

3.0 Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number, type of assembly and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of

application (i.e. equipment or system served), date and time of the test; initial test results (pass-fail of air-inlet valve and check valve, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed, as applicable; printed name, signature and certification number of the tester/repairer; final test results (pass or fail of the assembly), affirmation statement of assembly performance at the date and time of the test, comments relevant to discharge, improper installation/orientation, etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements. (In the absence of local performance requirements, note Appendix E for test procedures.)
- Confirm the assembly is at no-flow during the test
 - Confirm the proper operation of the check
 - Confirm the proper operation of the air inlet
- B. If the assembly passes, the responsible party shall be notified and the system restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be tested to these requirements.

Minimum Performance Requirements for Testing Air Valve and Vent Inflow Preventers

1.0 Scope, Purpose and Definitions

1.1 Scope

This standard applies to any field inspection performance requirement used to appraise the performance of an ASSE Standard 1063 Air Valve and Vent Inflow Preventer. This operational performance test requirement includes all activities that shall be addressed while field testing.

1.2 Purpose

The purpose of this standard shall be to establish minimum field testing performance requirements for ASSE 1063 Air Valve and Vent Inflow Preventers.

1.3 Definitions

Field Testing Performance Requirement: A test procedure that evaluates an air valve and vent inflow preventer for compliance to the minimum performance requirements.

Air Valve and Vent Inflow Preventer: A mechanical assembly used in conjunction with air valves and vents to allow normal flow of air in and out of a water system and prevent the inflow of contaminated water into a system as a result of flooding or malicious tampering.

Refer to Appendix G for additional definitions.

2.0 Field Testing Requirements

At a minimum, inflow preventers shall be tested upon installation, annually, immediately after repair or when returned to service. The test shall be performed by a trained and certified backflow tester meeting the requirements of the 5110 standard.

2.1 Administrative Issues

- A. Initial arrangements shall be made with the responsible party to schedule the test.

- B. Arrangements/notifications shall be made where testing creates a special hazard, inconvenience or risk in buildings or piping systems.
- C. The proper information, reporting forms and equipment shall be gathered to properly conduct this test.

2.2

Site Issues

A. Safety Evaluation

The evaluation shall be made for hazards to persons and property in accordance with applicable federal, state and local safety regulations and statutes. Some of the issues to be examined are, but are not limited to:

- Confined spaces – access, atmosphere
- Chemical, electrical or flammable hazards
- Hazards related to elevation
- Excessive noise

B. Evaluation of the Installation

1. The proper application of the assembly shall be confirmed for code compliance with respect to the degree of hazard, markings, prohibited locations (i.e. where subjected to flooding, freezing, toxic fumes) and special installation requirements.
2. The assembly orientation and direction of flow shall be confirmed as proper.
3. The assembly shall be checked for alterations or special needs specific to the size of the pipe connections and the adequacy of the clearances on the sides and bottom of the assembly.
4. The general appearance of the assembly shall be checked for evidence of excessive water discharge, condition of shutoff valves and test cocks, and cleanliness of the basket.

3.0

Reporting

- A. The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number and size of assembly; responsible person's name and

address; building address; physical location of assembly within the building or along the pipeline (as descriptive as possible); description of application (i.e. equipment or system served); date and time of the test; initial test results (pass/fail of lower check and upper check), test kit manufacturer; repairs made; repair parts used; cleaning performed; final test results (pass/fail of the assembly), as applicable; printed name, signature and certification number of the tester/repairer; type of assembly, affirmation statement of assembly performance at the date and time of the test, comments relevant to performance, improper installation/orientation etc.

- B. The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for their records in accordance with the requirements of the authority having jurisdiction.

4.0 Testing

- A. The following tests shall be performed in accordance with local performance requirements. (In the absence of local performance requirements, note Appendix E for test procedures.)
 - Confirm the assembly is at no flow during the test
 - Confirm the proper operation of the lower check
 - Confirm the proper operation of the upper check
- B. If the assembly passes, it shall be returned to full operation. The occupants shall be notified and the system shall be restored to pretest condition.
- C. If the assembly fails, or does not conform to 2.2(B), the responsible party shall be notified and the assembly repaired or replaced in accordance with applicable codes, standards and local practices. Any assembly that has been repaired or replaced shall be tested to these requirements.



Professional Qualifications Standard for Backflow Prevention Assembly Testers

1.0 Scope and Purpose

1.1 Scope

This standard applies to any individual who is certified in accordance with this standard and who will test all types of backflow prevention assemblies.

1.2 Purpose

The purpose of this standard is to provide minimum qualification criteria, as defined by the scope.

2.0 Limitations for a Backflow Prevention Assembly Tester

2.1 The certification shall be valid for a period of three (3) years.

2.2 Compliance with this standard in itself shall not constitute the requirements for a cross-connection control surveyor, as identified by ASSE Standard 5120, a backflow prevention assembly repairer, as identified by ASSE Standard 5130, a fire protection system cross-connection control tester, as identified by ASSE Standard 5140, a backflow prevention program administrator, as identified by ASSE Standard 5150, or as required by local jurisdiction.

3.0 General Knowledge

3.1 With respect to backflow prevention, the tester shall be knowledgeable of codes and regulations from the federal, state and local levels, and approved listing agencies. The individual shall be knowledgeable on testing procedures under all applicable ASSE standards.

3.2 The tester shall be able to identify and describe an understanding of fundamental theory, concepts and performance pertaining to:

- A. ASSE Standards 5013, 5015, 5020, 5047, 5048 and 5056
- B. Backflow
- C. Backpressure
- D. Backsiphonage
- E. Cavitation
- F. Check valve design
- G. Differential pressure
- H. FDA approved lubricants
- I. General knowledge of test procedures
- J. Special tool requirements
- K. Thermal expansion
- L. Turbulence

3.3 Safety

The tester shall be able to describe the safety precautions and hazards during backflow prevention assembly testing relating to:

- A. Animals and insects
- B. Confined spaces
- C. Electricity
- D. Falling objects
- E. Noise
- F. Pressurized fluids
- G. Toxic fumes
- H. Vehicle traffic

4.0 Product Performance Knowledge

4.1 The tester shall be able to identify and describe the performance characteristics of the following backflow prevention devices and assemblies:

- A. Air Gaps in Plumbing Systems (ANSI A112.1.2)
- B. Atmospheric Type Vacuum Breakers (ASSE 1001, current edition)
- C. Anti-siphon Fill Valves (Ballcocks) for Gravity Water Closet Flush Tanks (ASSE 1002, current edition)
- D. Hose Connection Vacuum Breakers (ASSE 1011, current edition)
- E. Backflow Preventer with Intermediate Atmospheric Vent (ASSE 1012, current edition)

- F. Reduced Pressure Principle Backflow Prevention Assemblies and Reduced Pressure Principle Fire Protection Backflow Prevention Assemblies (ASSE 1013, current edition)
- G. Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies (ASSE 1015, current edition)
- H. Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type (ASSE 1019, current edition)
- I. Pressure Vacuum Breaker Assembly (ASSE 1020, current edition)
- J. Drain Air Gaps for Domestic Dishwasher Applications (ASSE 1021, current edition)
- K. Backflow Preventer for Beverage Dispensing Machines (ASSE 1022, current edition)
- L. Dual Check Backflow Preventers (ASSE 1024, current edition)
- M. Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers - Post Mix Type (ASSE 1032, current edition)
- N. Laboratory Faucet Backflow Preventers (ASSE 1035, current edition)
- O. Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures (ASSE 1037, current edition)
- P. Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (ASSE 1047, current edition)
- Q. Double Check Detector Fire Protection Backflow Prevention Assemblies (ASSE 1048, current edition)
- R. Hose Connection Backflow Preventers (ASSE 1052, current edition)
- S. Chemical Dispensing Systems (ASSE 1055, current edition)
- T. Spill Resistance Vacuum Breakers (ASSE 1056, current edition)
- U. Outdoor Enclosures for Fluid Conveying Components (ASSE 1060, current edition)
- V. Inflow Preventers (ASSE 1063, current edition)
- W. Backflow Prevention Assembly Field Test Kits (ASSE 1064, current edition)
- X. Backflow Preventers with Integral Pressure Reducing Boiler Feed Valve and Intermediate Atmospheric Vent Style for Domestic and Light Commercial Water Distribution Systems (ASSE 1081, current edition)

building (as descriptive as possible); description of application (i.e. equipment or system served); initial test results (pass-fail of first check and second check, relief valve discharge, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed; final test results, as applicable; printed name, signature and certification number of the tester/repairer; type of assembly, affirmation statement of assembly performance at the date and time of the test.

5.2

The tester shall provide copies of the report to the owner and other appropriate parties as required. The tester shall maintain a copy of the report for the records in accordance with the requirements of the authority having jurisdiction.

6.0

Product Installation Knowledge

6.1

The tester shall be able to describe the proper installation requirements for backflow prevention assemblies relating to:

- A. Manufacturer recommendations
- B. Physical location and accessibility
- C. Local jurisdiction requirements

6.2

The tester shall be able to identify and describe the problems resulting from the improper installation of backflow prevention assemblies including, but not limited to:

- A. Environment
- B. Flow capacity
- C. Location
- D. Orientation
- E. Temperature

7.0

Test Equipment Knowledge

7.1

The tester shall have knowledge of ASSE Standard 1064, *Performance Requirements for Backflow Prevention Assembly Field Test Kits*.

7.2

The tester shall be able to identify and describe the proper usage for following equipment:

- A. Differential pressure gauge
- B. Multipurpose transducer (digital readout)
- C. Sight tube (water column)

7.3

All testing equipment shall be verified for accuracy and proper operation, in accordance with ASSE 1064, at a minimum annually.

5.0 Reporting Knowledge

5.1

The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number and size of assembly; responsible person's name and address; building address; physical location of assembly within the

8.0 Terminology

The backflow prevention assembly tester shall demonstrate a basic working knowledge of the terms located in Appendix G.

9.0 Certification of Backflow Prevention Assembly Testers

9-1 Eligibility Requirements for Certification

- A. A minimum of five (5) years of documented practical experience in the installation or service of plumbing, mechanical, fire protection, lawn irrigation or a related industry field using potable water.
- B. Successful completion of a minimum 40-hour training course on backflow assembly testing covering all aspects of ASSE 5110.
- C. Successfully passing a 100-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam that includes testing ASSE 1013, 1015, 1020 and 1056 assemblies.
- E. Certification to this standard shall be through a nationally recognized third-party certification agency
- F. Certification shall be for a three (3) year period.

9-2 Recertification of Backflow Prevention Assembly Testers

- A. Must have a valid, current ASSE 5110 backflow tester certification.
- B. Successful completion of a minimum eight (8) hour training course on backflow assembly testing.
- C. Successfully passing a 25-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam that includes testing ASSE 1013, 1015, 1020 and 1056 assemblies.

Professional Qualifications Standard for Cross-Connection Control Surveyors

1.0 Scope and Purpose

1.1 Scope

This standard applies to any individual who is certified in accordance with this standard and performs cross-connection control surveys.

1.2 Purpose

The purpose of this standard is to provide minimum qualification criteria, as defined by the scope.

2.0 Limitations for a Cross-Connection Control Surveyor

2.1 The certification shall be valid for a period of three (3) years.

2.2 Compliance with this standard in itself shall not constitute the requirements for a backflow prevention assembly tester, as identified by ASSE Standard 5110, a backflow prevention repairer, as identified by ASSE Standard 5130, a fire protection system cross-connection control tester, as identified by ASSE Standard 5140, a backflow prevention program administrator, as identified by ASSE Standard 5150, or as required by local jurisdiction.

3.0 General Knowledge

3.1 The cross-connection control surveyor shall be able to read blueprints for the purpose of identifying cross-connections. The cross-connection control surveyor shall also demonstrate knowledge of codes and regulations from the federal, state and local jurisdictions.

3.2 The cross-connection control surveyor shall possess a working knowledge of:

- A. Backflow
- B. Backflow prevention
- C. Backpressure

- D. Backsiphonage
- E. Cavitation
- F. Cross-connections
- G. Differential pressure
- H. Plumbing code and general requirements
- I. Testing and trouble-shooting
- J. Thermal expansion
- K. Turbulence

3.3 Safety

The cross-connection control surveyor shall describe the safety precautions and hazards during cross connection control surveys including:

- A. Animals and insects
- B. Confined spaces
- C. Electricity
- D. Falling objects
- E. Noise
- F. Pressurized fluids
- G. Toxic fumes
- H. Vehicle traffic

3.4

The cross-connection control surveyor shall demonstrate knowledge of controlling all cross-connections including, but not limited to:

- A. Direct/indirect
- B. Domestic systems
- C. Fire systems
- D. Industrial/commercial systems
- E. Irrigation systems
- F. Medical systems
- G. Potential/actual
- H. Process systems

4.0 Product Knowledge

4.1

The cross-connection control surveyor shall demonstrate product knowledge by describing the proper application of backflow prevention devices/assemblies and their limitations with respect to:

- A. Backflow
- B. Backpressure

- C. Backsiphonage
- D. Continuous pressure
- E. Degree of hazard
- F. Direction of flow
- G. Elevation
- H. Installation limitations
- I. Local codes
- J. Orientation
- K. Pressure loss
- L. Working pressure (minimum and maximum)
- M. Working temperature (minimum and maximum)

4.2 The cross-connection control surveyor shall identify and describe the performance characteristics of the following backflow prevention methods, devices, and assemblies or related products:

- A. Air Gaps in Plumbing Systems (ANSI A112.1.2)
- B. Atmospheric Type Vacuum Breakers (ASSE 1001, current edition)
- C. Anti-siphon Fill Valves (Ballcocks) for Gravity Water Closet Flush Tanks (ASSE 1002, current edition)
- D. Hose Connection Vacuum Breakers (ASSE 1011, current edition)
- E. Backflow Preventer with Intermediate Atmospheric Vent (ASSE 1012, current edition)
- F. Reduced Pressure Principle Backflow Prevention Assemblies and Reduced Pressure Principle Fire Protection Backflow Prevention Assemblies (ASSE 1013, current edition)
- G. Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies (ASSE 1015, current edition)
- H. Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type (ASSE 1019, current edition)
- I. Pressure Vacuum Breaker Assembly (ASSE 1020, current edition)
- J. Drain Air Gaps for Domestic Dishwasher Applications (ASSE 1021, current edition)
- K. Backflow Preventer for Beverage Dispensing Machines (ASSE 1022, current edition)
- L. Dual Check Backflow Preventers (ASSE 1024, current edition)
- M. Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers - Post Mix Type (ASSE 1032, current edition)
- N. Laboratory Faucet Backflow Preventers (ASSE 1035, current edition)
- O. Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures (ASSE 1037, current edition)
- P. Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (ASSE 1047, current edition)

- Q. Double Check Detector Fire Protection Backflow Prevention Assemblies (ASSE 1048, current edition)
- R. Hose Connection Backflow Preventers (ASSE 1052, current edition)
- S. Chemical Dispensing Systems (ASSE 1055, current edition)
- T. Spill Resistance Vacuum Breakers (ASSE 1056, current edition)
- U. Outdoor Enclosures for Fluid Conveying Components (ASSE 1060, current edition)
- V. Inflow Preventers (ASSE 1063, current edition)
- W. Backflow Prevention Assembly Field Test Kits (ASSE 1064, current edition)
- X. Backflow Preventers with Integral Pressure Reducing Boiler Feed Valve and Intermediate Atmospheric Vent Style for Domestic and Light Commercial Water Distribution Systems (ASSE 1081, current edition)

5.0 Conducting a Survey

5.1 The cross-connection control surveyor shall be able to identify and describe the actions taken prior to conducting a cross-connection control survey inspection:

- A. Notification to proper authorities
- B. Notification to premise occupants
- C. Pre-survey documentation and materials
- D. Display proper identification

5.2 The cross-connection control surveyor shall conduct an evaluation to determine potential safety hazards. Some of the issues to be examined are, but not limited to:

- A. Chemical, electrical or flammable hazards
- B. Confined spaces – ventilation, access, oxygen content
- C. Facility-specific safety requirements
- D. Hazards related to elevation of devices
- E. Hazards to the surveyor and other persons
- F. Noise
- G. Toxic fumes

5.3 A. The cross-connection control surveyor shall complete a cross-connection control survey checklist, which includes:

- 1. Systems identification
- 2. Existing and recommended assembly and device locations
- 3. Potential and actual cross-connections
- B. The cross-connection control surveyor shall record the physical identification of backflow prevention assemblies and devices, including the following:

1. Manufacturer
 2. Model number
 3. Serial number
 4. Size
 5. Location of assembly
 6. Type of shutoff valves
 7. Building address
 8. Visual observation of physical condition
 9. Type of device or assembly
- C. A cross-connection control surveyor shall complete a report that identifies unprotected cross-connections, including the following information:
1. Location
 2. Hazard
 3. Type of device/assembly required
 4. Building address
- D. The completed cross-connection control surveyor data shall contain:
1. Surveyor's printed name and signature
 2. Cross-connection control surveyor certification number
 3. Date and time of cross-connection control survey
 4. Compliance schedule as required by the authority having jurisdiction

- 5.4** The cross-connection control surveyor shall identify and describe the actions to be taken after completing a cross-connection control survey:
- A. Complete the proper documentation.
 - B. Provide copies of the completed survey to the customer and other responsible parties.

6.0 Product Installation Knowledge

- 6.1** The surveyor shall be able to describe the proper installation requirements for backflow prevention assemblies relating to:

- A. Manufacturer recommendations
- B. Physical location and accessibility
- C. Local jurisdictional requirements

- 6.2** The surveyor shall be able to identify and describe the problems resulting from the improper installation of backflow prevention assemblies including, but not limited to:

- A. Environment
- B. Flow capacity
- C. Location
- D. Orientation
- E. Temperature

7.0 Terminology

The cross-connection control surveyor shall demonstrate a basic understanding of the terms located in Appendix G.

8.0 Certification of Cross-Connection Control Surveyors

There are two sets of criteria for meeting the requirements for certification. Track A is for individuals who possess a current backflow tester certification in accordance with ASSE 5110, *Professional Qualifications Standard for Backflow Prevention Assembly Testers*. Track B is for individuals who do not possess a current ASSE 5110 certification.

8.1 Eligibility Requirements for Certification – Track A

- 8.1.1
- A. Shall possess a current backflow tester certification in accordance with ASSE 5110.
 - B. Successful completion of a minimum 20-hour training course covering all aspects of ASSE 5120.
 - C. Successfully passing a 50-question exam with a score of 70% or higher.
 - D. Successfully passing a practical exam that includes either a virtual survey (score of 70% or higher required) or an actual survey at a pre-determined location.
 - E. Certification to this standard shall be through a nationally recognized third-party certification agency.
 - F. Certification shall be for a three (3) year period.

8.1.2 Recertification – Track A

- A. Must have a valid, current ASSE 5110 backflow tester certification.
- B. Successful completion of a minimum eight (8) hour training course on backflow assembly testing.
- C. Successfully passing a 25-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam which includes testing ASSE 1013, 1015, 1020 and 1056 assemblies.

8.2 Eligibility Requirements for Certification – Track B

- 8.2.1
- A. Shall provide verification of five (5) years experience in plumbing, mechanical, fire protection, water distribution or a related industry field using potable water.

- B. Successful completion of a minimum 40-hour training course covering all aspects of ASSE 5120.
- C. Successfully passing a 100-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam that includes either a virtual survey (score of 70% or higher required) or an actual survey.
- E. Certification to this standard shall be through a nationally recognized third-party certification agency.
- F. Certification shall be for a three (3) year period.

8.2.2 Recertification – Track B

- A. Must have a valid, current ASSE 5120 cross-connection control surveyor certification.
- B. Successful completion of a minimum eight (8) hour training course on cross-connection control surveying.
- C. Successfully passing a 25-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam that includes either a virtual survey (score of 70% or higher required) or an actual survey at a predetermined location.

Professional Qualifications Standard for Backflow Prevention Assembly Repairers

1.0 Scope and Purpose

1.1 Scope

This standard applies to any individual who is certified in accordance with this standard to repair all approved backflow prevention assemblies.

1.2 Purpose

The purpose of this standard is to provide minimum qualification criteria, as defined by the scope.

2.0 Limitations for a Backflow Prevention Assembly Repairer

2.1 The certification shall be valid for a period of three (3) years.

2.2 Compliance with this standard in itself shall not constitute the requirements for a backflow prevention assembly tester, as identified by ASSE Standard 5110, a cross-connection control surveyor, as identified by ASSE Standard 5120, a fire protection system cross-connection control tester, as identified by ASSE Standard 5140, a backflow prevention program administrator, as identified by ASSE Standard 5150, or as required by local jurisdiction.

3.0 General Knowledge

The repairer shall identify and demonstrate knowledge of the basics pertaining to:

- A. Backflow
- B. Backpressure
- C. Backsiphonage
- D. Cavitation
- E. Differential pressure
- F. FDA approved lubricants
- G. General knowledge of test procedures
- H. Plumbing code and general requirements
- I. Rigging (weight load)
- J. Special tool requirements

- K. Spring containment
- L. Thermal expansion
- M. Torque requirements
- N. Turbulence
- O. Trouble shooting
- P. Types of fasteners

4.0

Product Performance Knowledge

The repairer shall be able to identify and describe the performance characteristics of the following backflow prevention devices and assemblies:

- A. Air Gaps in Plumbing Systems (ANSI A112.1.2)
- B. Atmospheric Type Vacuum Breakers (ASSE 1001, current edition)
- C. Anti-siphon Fill Valves (Ballcocks) for Gravity Water Closet Flush Tanks (ASSE 1002, current edition)
- D. Hose Connection Vacuum Breakers (ASSE 1011, current edition)
- E. Backflow Preventer with Intermediate Atmospheric Vent (ASSE 1012, current edition)
- F. Reduced Pressure Principle Backflow Prevention Assemblies and Reduced Pressure Principle Fire Protection Backflow Prevention Assemblies (ASSE 1013, current edition)
- G. Double Check Backflow Prevention Assemblies and Double Check Fire Protection Backflow Prevention Assemblies (ASSE 1015, current edition)
- H. Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type (ASSE 1019, current edition)
- I. Pressure Vacuum Breaker Assembly (ASSE 1020, current edition)
- J. Drain Air Gaps for Domestic Dishwasher Applications (ASSE 1021, current edition)
- K. Backflow Preventer for Beverage Dispensing Machines (ASSE 1022, current edition)
- L. Dual Check Backflow Preventers (ASSE 1024, current edition)

- M. Dual Check Valve Type Backflow Preventers for Carbonated Beverage Dispensers - Post Mix Type (ASSE 1032, current edition)
- N. Laboratory Faucet Backflow Preventers (ASSE 1035, current edition)
- O. Pressurized Flushing Devices (Flushometers) for Plumbing Fixtures (ASSE 1037, current edition)
- P. Reduced Pressure Detector Fire Protection Backflow Prevention Assemblies (ASSE 1047, current edition)
- Q. Double Check Detector Fire Protection Backflow Prevention Assemblies (ASSE 1048, current edition)
- R. Hose Connection Backflow Preventers (ASSE 1052, current edition)
- S. Chemical Dispensing Systems (ASSE 1055, current edition)
- T. Spill Resistance Vacuum Breakers (ASSE 1056, current edition)
- U. Outdoor Enclosures for Fluid Conveying Components (ASSE 1060, current edition)
- V. Inflow Preventers (ASSE 1063, current edition)
- W. Backflow Prevention Assembly Field Test Kits (ASSE 1064, current edition)
- X. Backflow Preventers with Integral Pressure Reducing Boiler Feed Valve and Intermediate Atmospheric Vent Style for Domestic and Light Commercial Water Distribution Systems (ASSE 1081, current edition)

5.0 Reporting

- 5.1 The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served); initial test results (pass-fail of first check and second check, relief valve discharge, static line pressure); test gauge manufacturer, model number, serial number and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed; final test results, as applicable; printed name, signature and certification number of the tester/repairer; type of assembly, affirmation statement of assembly performance at the date and time of the test.
- 5.2 Copies of the report shall be provided to the owner and other appropriate parties as required. The tester/repairer shall maintain a copy of the report for the records in accordance with the requirements of the authority having jurisdiction.

6.0 Safety Knowledge

- 6.1 The repairer shall describe the safety precautions and hazards relating to:
 - A. Animals and insects
 - B. Confined spaces
 - C. Electricity
 - D. Facility specific safety requirements
 - E. Falling objects
 - F. Noise
 - G. Pressurized fluids
 - H. Rigging (weight load)
 - I. Spring containment
 - J. Toxic fumes
 - K. Vehicle traffic

7.0 Test Equipment Knowledge

- 7.1 The repairer shall have knowledge of ASSE Standard 1064, *Performance Requirements for Backflow Prevention Assembly Field Test Kits*.
- 7.2 The repairer shall be able to identify and describe the proper usage for the following equipment:
 - A. Differential pressure gauge
 - B. Multipurpose transducer (digital readout)
 - C. Sight tube (water column)
- 7.3 All testing equipment shall be verified for accuracy and proper operation, in accordance with ASSE 1064, at a minimum annually.

8.0 Terminology

The backflow prevention assembly repairer shall demonstrate a basic working knowledge of the terms located in Appendix G.

9.0 Certification of Backflow Prevention Assembly Repairers

- 9.1 **Eligibility Requirements for Certification**
 - A. Shall possess a current backflow tester certification in accordance with ASSE 5110, *Professional Qualifications Standard for Backflow Prevention Assembly Testers*.
 - B. Successful completion of a minimum twenty 20-hour training course covering all aspects of ASSE 5130.
 - C. Successfully passing a 50-question exam with a score of 70% or higher.
 - D. Successfully complete a practical performance exam consisting of the disassembly and reassembly of at least four assemblies consisting of at least one (1) RP [2½ inches or larger],

one (1) DC [2½ inches or larger], one (1) PVB [1½ inch or larger] and one (1) SRVB [¾ inch or larger]. The four (4) assemblies shall be of different makes and models.

- E. Certification to this standard shall be through a nationally recognized third-party certification agency.
- F. Certification shall be for a three (3) year period.

9.2 Recertification of Backflow Prevention Assembly Repairers

- A. Must have valid, current 5110 and 5130 certifications.
- B. Successful completion of a minimum eight (8) hour training course on backflow assembly testing.
- C. Successfully passing a 25-question exam with a score of 70% or higher.
- D. Successfully passing a practical exam that includes testing ASSE 1013, 1015, 1020 and 1056 assemblies.



Professional Qualifications Standard for Fire Protection System Cross-Connection Control Testers

1.0 Scope and Purpose

1.1 Scope

This applies to any individual who is certified in accordance with this standard and who will test and maintain all types of backflow prevention assemblies utilized in fire protection systems.

1.2 Purpose

The purpose of this standard is to provide minimum qualification criteria, as defined by the scope.

2.0 Limitations for a Fire Protection System Cross-Connection Control Tester

2.1 The certification shall be valid for a period of three (3) years.

2.2 Compliance with this standard in itself shall not constitute the requirements for a cross-connection control surveyor, as identified by ASSE Standard 5120, a backflow prevention program administrator, as identified by ASSE Standard 5150, or as required by local jurisdiction.

2.3 This certification is limited to the test and repair of existing backflow assemblies. This certification does not allow for modifications to, repair of, or installation of any type of fire protection system.

3.0 General Knowledge

3.1 The individual shall be knowledgeable of codes and regulations from the federal, state and local levels, and of approved listing agencies. The individual shall be knowledgeable of applicable maintenance procedures under all applicable ASSE standards, and NFPA 13 and 25.

3.2 The individual shall be able to identify and describe the basics pertaining to:

- A. Alarms
- B. Antifreeze loop
- C. Backflow
- D. Backpressure
- E. Backsiphonage
- F. Butterfly valves
- G. Cavitation
- H. Differential pressure
- I. FDA approved lubricants
- J. General knowledge of testing and troubleshooting
- K. Indicating type and non-indicating type shutoff valves
- L. Injection systems
- M. Liability
- N. Main drain
- O. Main drain test
- P. Normal/standby condition
- Q. Plumbing codes and fire codes
- R. Pressure loss
- S. Pumps
- T. Rigging (weight load)
- U. Riser
- V. Special tool requirements
- W. Spring containment
- X. Standpipe
- Y. Test equipment
- Z. Thermal expansion
- aa. Torque requirements
- bb. Turbulence
- cc. Types of fasteners
- dd. Water flow detector

3.3

Safety

The individual shall be able to describe the safety precautions and hazards during backflow prevention assembly testing relating to:

- A. Coordination of fire department/monitoring company
- B. Confined spaces
- C. Electricity
- D. General safety
- E. Fire watch/impairment procedures
- F. traffic safety

4.0 Product Performance Knowledge

4.1 The individual shall be able to identify the major components of backflow prevention assemblies.

4.2 The individual shall be able to describe the proper application of backflow prevention assemblies and their limitations with respect to:

- A. Backflow
- B. Degree of hazard

4.3 The individual shall be able to describe the operating principles and performance characteristics of the following components for the backflow prevention assemblies listed in Section 4.4 of this standard:

- A. Assembly working pressure (minimum and maximum)
- B. Assembly working temperature (minimum and maximum)
- C. Bypass assembly
- D. Check valve
- E. Relief valves
- F. Shutoff valves
- G. Test cocks

4.4 The individual shall be able to identify and describe the performance characteristics of the following backflow prevention assemblies:

- A. Field test procedures for bypass assemblies
- B. Reduced Pressure Principle Assembly (ASSE 1013, current edition)
- C. Double Check Valve Assembly (ASSE 1015, current edition)
- D. Reduced Pressure Detector Fire Protection Backflow Preventer (ASSE 1047, current edition)
- E. Double Check Detector Fire Protection Backflow Preventer (ASSE 1048, current edition)

4.5 The individual shall be able to identify and describe the performance characteristics of the following systems:

- A. Types of fire protection systems
- B. Monitoring and alarm systems

5.0 Reporting Knowledge

5.1 The test report shall contain, but not be limited to, the following information: manufacturer's name, model number, serial number and size of assembly; responsible person's name and address; building address; physical location of assembly within the building (as descriptive as possible); description of application (i.e. equipment or system served); initial test results (pass-fail of first check and second check, relief valve discharge, static line pressure); test gauge manufacturer, model number, serial number

and expiration date/last date of calibration; repairs made; repair parts used; cleaning performed; final test results, as applicable; printed name, signature and certification number of the tester/repairer; type of assembly, affirmation statement of assembly performance at the date and time of the test.

5.2 The tester shall provide copies of the test report to the owner and other appropriate parties as required.

6.0 Product Installation Knowledge

6.1 The individual shall be able to describe the proper installation requirements for existing fire system backflow prevention assemblies relating to:

- A. Manufacturer recommendations
- B. Physical location and accessibility
- C. Local jurisdiction requirements
- D. Degree of hazard

6.2 The individual shall be able to identify and describe the problems resulting from the improper installation of existing fire system backflow prevention assemblies.

7.0 Backflow Assembly Test Equipment Knowledge

7.1 The individual shall be able to identify and describe the test equipment's physical operation and its maintenance requirements.

7.2 The individual shall be able to identify and describe test procedures for the following equipment:

- A. Differential pressure gauge
- B. Sight tube (water column)
- C. Multipurpose transducer (digital readout)

7.3 All testing equipment shall be verified for accuracy and operation as per testing equipment manufacturer's instructions.

7.4 All testing equipment shall be verified for accuracy and operation as required by local jurisdiction.

8.0 Terminology

The individual shall demonstrate a basic working knowledge of the terms located in Appendix G and the terms below:

- A. Dedicated line (service)
- B. Forward flow test
- C. Single check detector device
- D. Sprinkler system
- E. Supervisory device
- F. Supervised system
- G. Additional terms listed in section Chapter 3 of NFPA 13

9.0 Certification of Fire Protection System Cross-Connection Control Testers

9.1 Eligibility Requirements for Certification

- A. Shall possess a current backflow tester certification in accordance with ASSE 5110, *Professional Qualifications Standard for Backflow Prevention Assembly Testers*.
- B. Shall possess a current backflow repairer certification in accordance with ASSE 5130, *Professional Qualifications Standard for Backflow Prevention Assembly Repairers*.
- C. Shall provide verification of five (5) years of experience as a sprinkler fitter or plumber.
- D. Successful completion of a minimum 30-hour training course covering all aspects of ASSE 5140.
- E. Successfully passing a 50-question exam with a score of 70% or higher.
- F. Successfully complete a practical performance exam consisting of successfully shutting down, testing of ASSE 1013, 1015, 1047 and 1048 assemblies, and restoring the fire-sprinkler system to proper service, as defined by NFPA 13 and 25.
- G. Certification to this standard shall be through a nationally recognized third-party certification agency.
- H. Certification shall be for a three (3) year period.

9.2 Recertification of Fire Protection System Cross-Connection Control Testers

- A. Must have a valid, current ASSE 5110, 5130 and 5140 certifications.
- B. Successfully complete a minimum eight (8) hour training course.
- C. Successfully pass a 25-question exam with a score of 70% or higher.
- D. Successfully pass a practical exam that includes testing ASSE 1013, 1015, 1020 and 1056 assemblies.

Professional Qualifications Standard for Backflow Prevention Program Administrators

1.0 Scope and Purpose

1.1 Scope

This standard applies to any state licensed/certified water plant operator, water distribution technician, water utility engineer and/or cross-connection control program administrator. It focuses on the drafting, implementation and enforcement of cross-connection control programs and/or ordinances.

1.2 Purpose

The purpose of this standard is to provide minimum qualification criteria, as defined by the scope.

2.0 Limitations for a Backflow Prevention Program Administrator

2.1 The certification shall be valid for a period of three (3) years.

2.2 Compliance with this standard in itself shall not constitute the requirements for a backflow prevention assembly tester, as identified by ASSE Standard 5110, a cross-connection control surveyor, as identified by ASSE Standard 5120, a backflow prevention assembly repairer, as identified by ASSE Standard 5130, a fire protection system cross-connection control tester, as identified by ASSE Standard 5140, or as required by local jurisdiction.

3.0 General Knowledge

3.1 The program administrator shall be knowledgeable on codes and regulations from the federal, state and local levels, and on approved listing agencies pertaining to cross-connection control and backflow prevention. The individual shall be knowledgeable on the proper implementation of a backflow prevention and maintenance program under all applicable ASSE standards that pertain to containment protection.

3.2

The program administrator shall be knowledgeable of all professional requirements stated in ASSE Series 5000's professionals qualifications standards for backflow prevention assembly testers, repairers and surveyors. At a minimum, backflow prevention assemblies shall be tested upon installation, annually and immediately after repair. The test shall be performed by a trained and certified backflow tester.

3.3

The program administrator shall be able to identify and describe the basic hydraulics pertaining to:

- A. Air gap
- B. Absolute pressure
- C. Atmospheric pressure
- D. Backflow
- E. Backpressure
- F. Backsiphonage
- G. Barometric loop
- H. Bernoulli's principle
- I. Cavitation
- J. Containment
- K. Degree of hazard
- L. Differential pressure
- M. Direct cross-connections
- N. Gauge pressure
- O. Head pressure
- P. Indirect cross-connections
- Q. Isolation
- R. Negative pressure
- S. Pressure equalization
- T. Pressure loss
- U. Static pressure
- V. Thermal expansion
- W. Turbulence
- X. Vacuum
- Y. Venturi

4.0

Safety

The backflow prevention program administrator shall describe the safety precautions and hazards during backflow prevention assembly testing and surveying relating to:

- A. Coordination of fire department/monitoring company when necessary
- B. Confined spaces
- C. Electricity
- D. General safety
- E. Traffic safety
- F. Site specific safety requirements

5.0 Conducting a Survey

The backflow prevention program Administrator shall demonstrate knowledge of the degree of hazard and its importance when conducting a cross-connection control survey and shall demonstrate knowledge of (common, potential, recurring and protected) cross-connections found within the water distribution systems.

- 5.1 Identify and describe the actions a backflow prevention program administrator shall take prior to conducting a cross-connection control containment survey inspection.

- A. Notification to proper authorities
- B. Notification to premise occupant/owner
- C. Pre-survey documentation and materials
- D. Display proper identification

- 5.2 Identify and describe the actions a backflow prevention program administrator shall take when conducting a cross-connection control containment survey inspection.

- A. Complete a cross-connection control containment survey checklist, which includes:
 - 1. Degree of hazard of service connections
 - 2. Size of service connections
 - 3. Assembly type, model, serial number, location and proper installation
 - 4. Location of all containment air gaps and documentation to verify the air gaps are adequate
 - 5. Documentation of all cross-connections, both protected and unprotected
 - 6. Signature of surveyor and date containment survey was conducted
- B. Completion of a cross-connection control isolation survey checklist, which includes:
 - 1. Degree of hazard at the point of use
 - 2. Pipe size at point of use
 - 3. Assembly type, model, manufacturer, serial number, location and proper installation
 - 4. Location of all isolation air gaps and documentation to verify the air gaps are adequate
 - 5. Documentation of all cross-connections, both protected and unprotected
 - 6. Signature of surveyor and date isolation survey was conducted

- 5.3 Identify and describe the actions a surveyor shall take after completing a cross-connection control survey inspection:

- A. Complete the proper documentation, including the containment/isolation survey checklist
- B. Notify the owner of survey completion and required corrective action(s).

6.0 Product Performance Knowledge

- 6.1 The program administrator shall be able to identify the major components of backflow prevention assemblies that are suitable for containment protection.

- 6.2 The program administrator shall be able to describe the proper application of backflow prevention assemblies used for containment and their limitations with respect to:

- A. Backflow
 - 1. Backpressure
 - 2. Backsiphonage
- B. Degree of hazard
- C. Assembly working pressures (minimum and maximum)
- D. Assembly working temperatures (minimum and maximum)
- E. Pressure loss
- F. Continuous pressure
- G. Installation limitations
 - 1. Assembly/device orientation
 - 2. Direction of flow
 - 3. Elevation
 - 4. Installation clearances
- H. Applicable plumbing codes

- 6.3 The program administrator shall be able to describe the operating principles and/or performance characteristics of the following components for the backflow prevention assemblies listed in Section 6.4 of this standard:

- A. Air inlet valves
- B. Check valve
- C. Differential pressure relief valves
- D. Shutoff valves
- E. Test cocks

- 6.4 The program administrator shall be able to identify and describe the performance characteristics of the following backflow prevention devices, assemblies and methods:

- A. Air Gaps in Plumbing Systems (ANSI A112.1.2)
- B. Reduced Pressure Principle Assembly (ASSE 1013, current edition)
- C. Double Check Valve Assembly (ASSE 1015, current edition)
- D. Pressure Vacuum Breaker Assembly (ASSE 1020, current edition)

- E. Dual Check Backflow Preventer (ASSE 1024, current edition)
- F. Reduced Pressure Detector Fire Protection Backflow Preventer (ASSE 1047, current edition)
- G. Double Check Detector Fire Protection Backflow Preventer (ASSE 1048, current edition)
- H. Hose Connection Backflow Preventers (ASSE 1052, current edition)
- I. Spill Resistant Vacuum Breaker (ASSE 1056, current edition)
- J. Inflow Preventers (ASSE 1063, current edition)

6.5 The backflow prevention program administrator shall be able to describe the proper installation requirements for containment backflow prevention assemblies relating to:

- A. Manufacturer recommendations
- B. Physical location and accessibility
- C. Local jurisdiction requirements

6.6 The program administrator shall be able to identify and describe the problems resulting from the improper installation of backflow prevention assemblies.

7.0 Cross-Connection Control Program Knowledge

7.1 The backflow prevention program administrator shall demonstrate an understanding of the elements of a cross-connection control program, including the following:

- A. Understanding cross-connection control concepts
- B. Understanding the importance of a legal foundation
- C. Establishment of a priority system for implementation
- D. Estimating customer implementation costs
- E. Development of an implementation time table
- F. Reviewing the proposed plan with government agencies and local code enforcement
- G. Creating a public education program
- H. Creating a customer notification program
- I. Creating a data management program and monitoring program progress
- J. Initiation and maintenance of a testing program
- K. Establishing backflow incident protocol and emergency management plan
- J. Temporary connection program and requirements

7.2 The backflow prevention program administrator shall be able to identify problems in the distribution system that could indicate an unprotected cross-

connection, or a failing backflow prevention assembly or air gap, and be able to assess the actual or potential threat that could threaten the health of the public water supply customers.

8.0 Terminology

8.1 The backflow prevention program administrator shall demonstrate a basic working knowledge of the terms located in Appendix G.

9.0 Test Equipment Knowledge

9.1 The program administrator shall have knowledge of ASSE Standard 1064, *Performance Requirements for Backflow Prevention Assembly Field Test Kits*. All testing equipment shall be verified for accuracy and proper operation in accordance with ASSE 1064, at a minimum annually.

9.2 Test equipment verification documentation shall be requested annually from all testers performing tests within the program administrator's jurisdiction and shall be retained for a minimum of five (5) years.

10.0 Certification of Backflow Prevention Program Administrators

10.1 Eligibility Requirements for Certification

- A. Successful completion of a minimum 32-hour training course covering all aspects of ASSE 5150.
- B. Successfully passing a 50-question exam with a score of 70% or higher.
- C. Successfully passing a 25-question practical exam with a score of 70% or higher.
- D. Certification to this standard shall be through a nationally recognized third-party certification agency.
- E. Certification shall be for a three (3) year period.

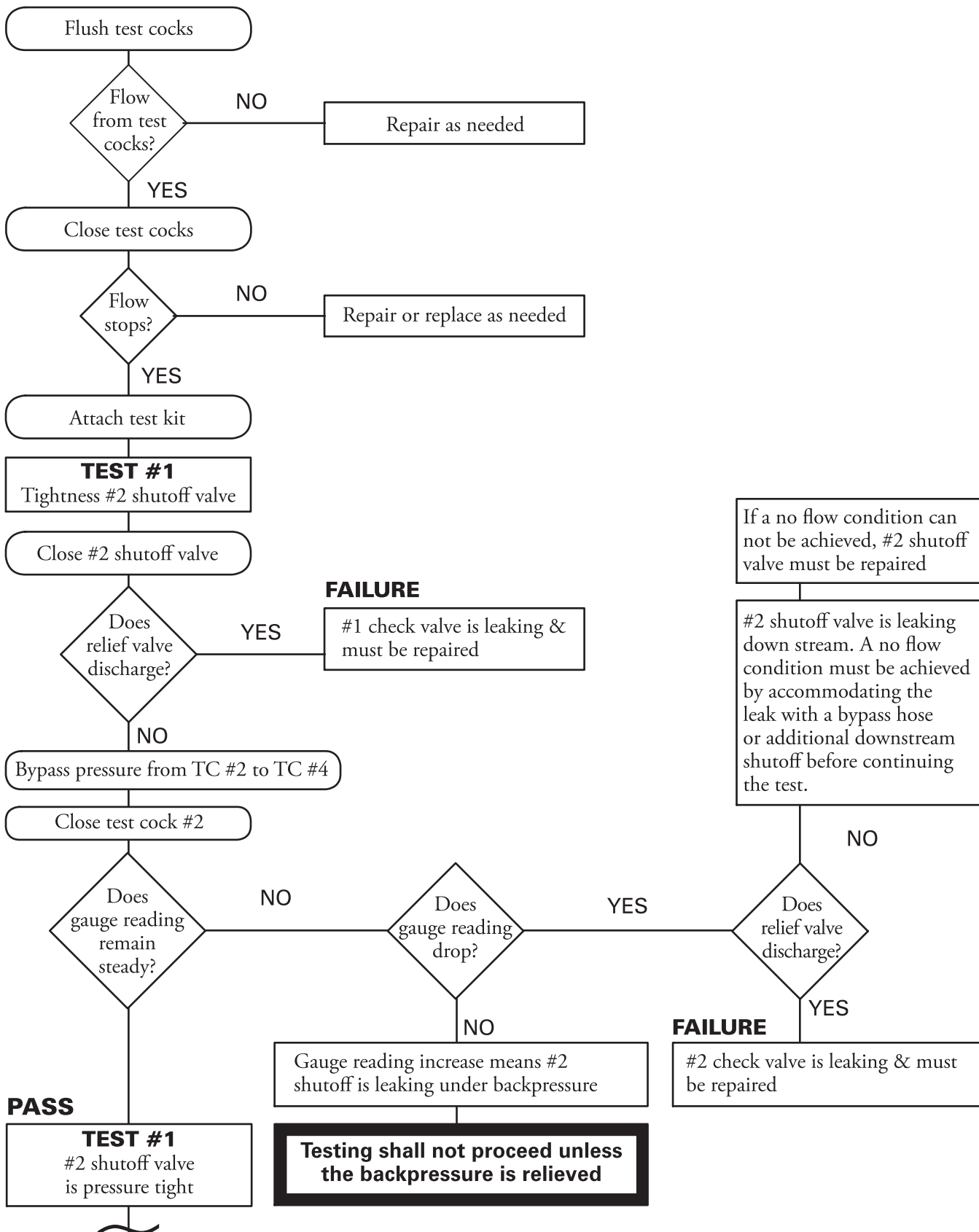
10.2 Recertification of Backflow Prevention Program Administrators

- A. Must have a valid, current ASSE 5150 backflow prevention administrator certification.
- B. Successful completion of a minimum eight (8) hour training course on ASSE 5150.
- C. Successfully passing a 25-question written exam with a score of 70% or higher.

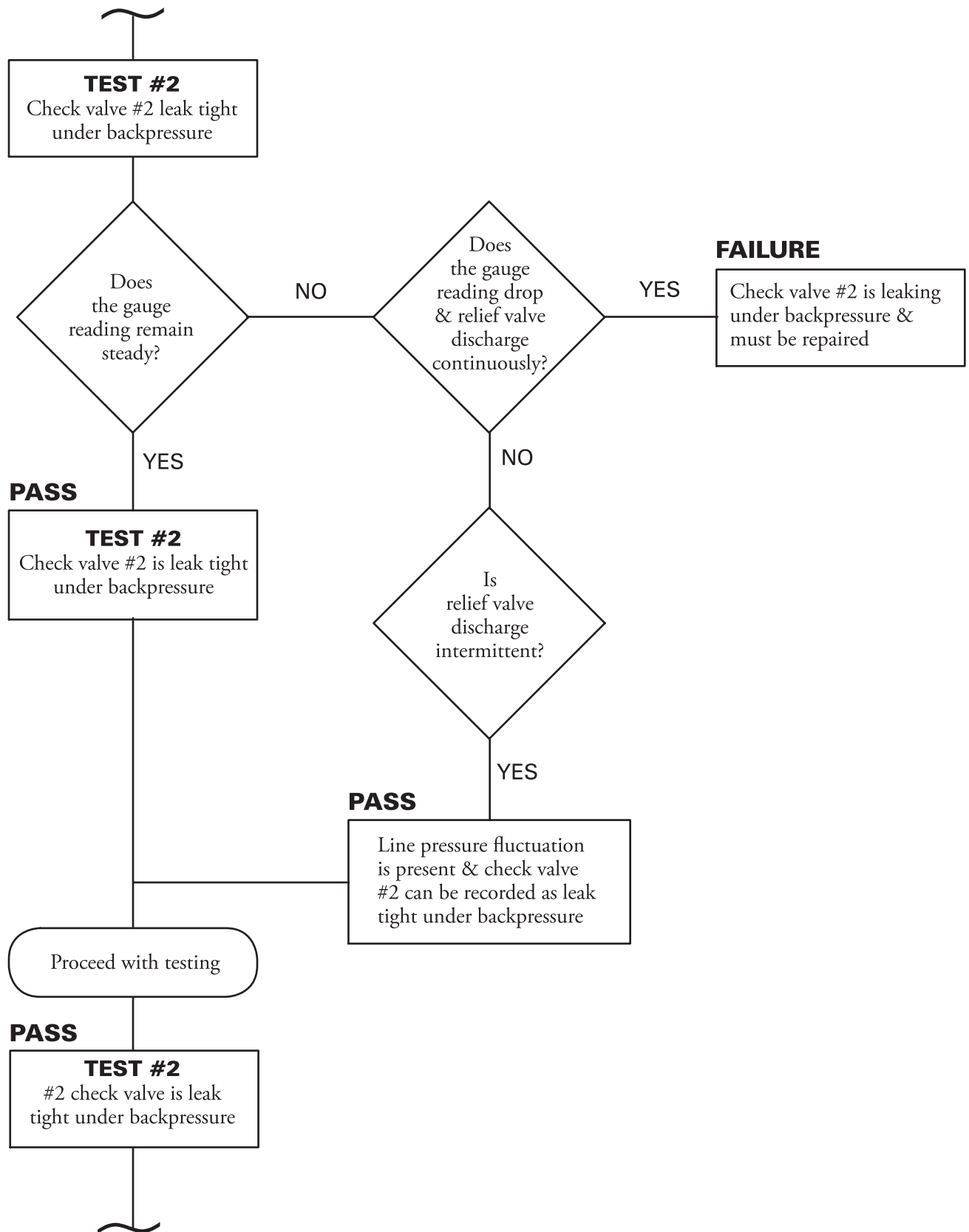
SERIES 5000 • APPENDIX A

Troubleshooting Flowcharts *ASSE Test Procedure Flowcharts*

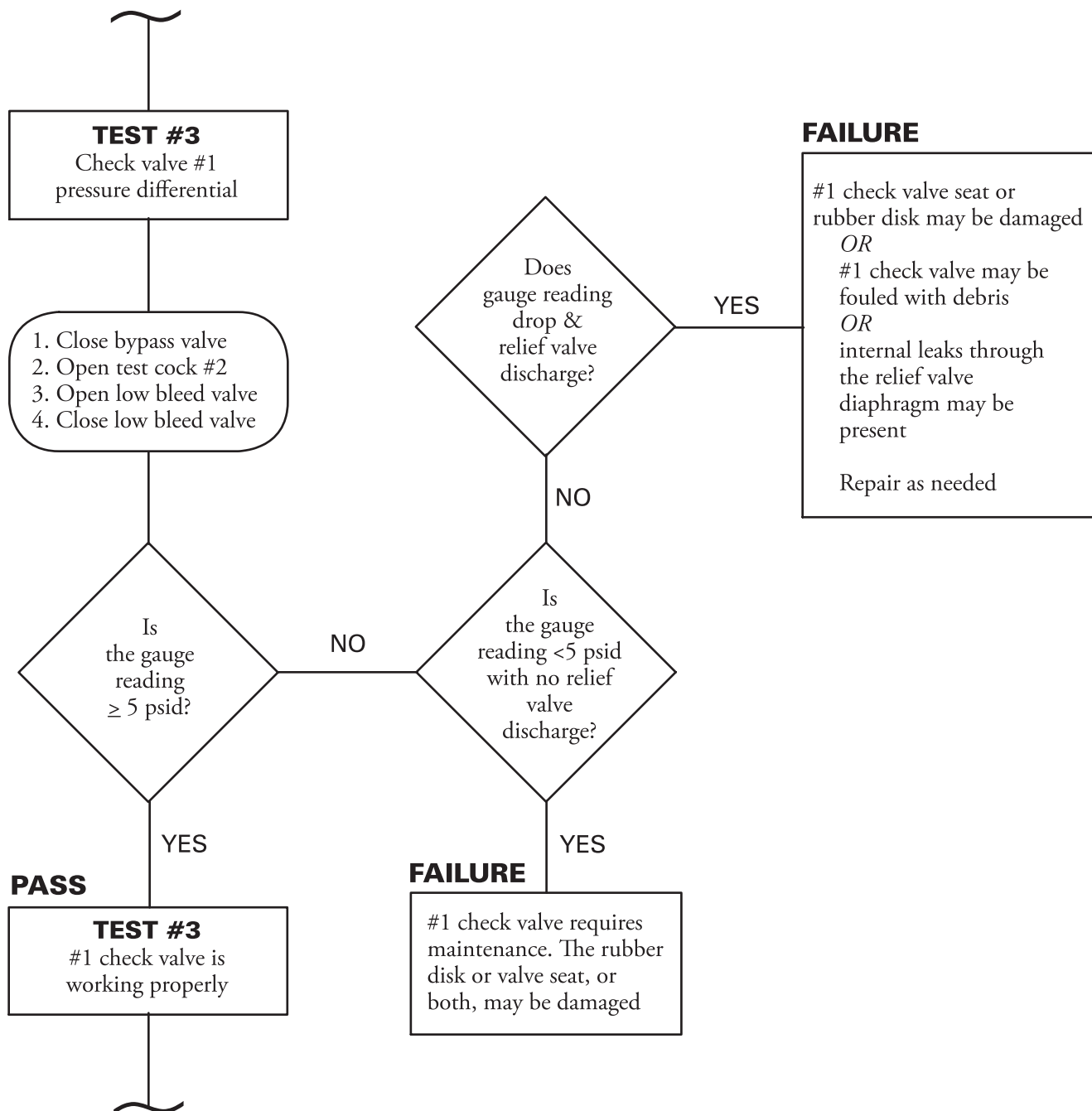
ASSE Test Procedure Flowchart for ASSE 1013 (RP and RPF) Assemblies



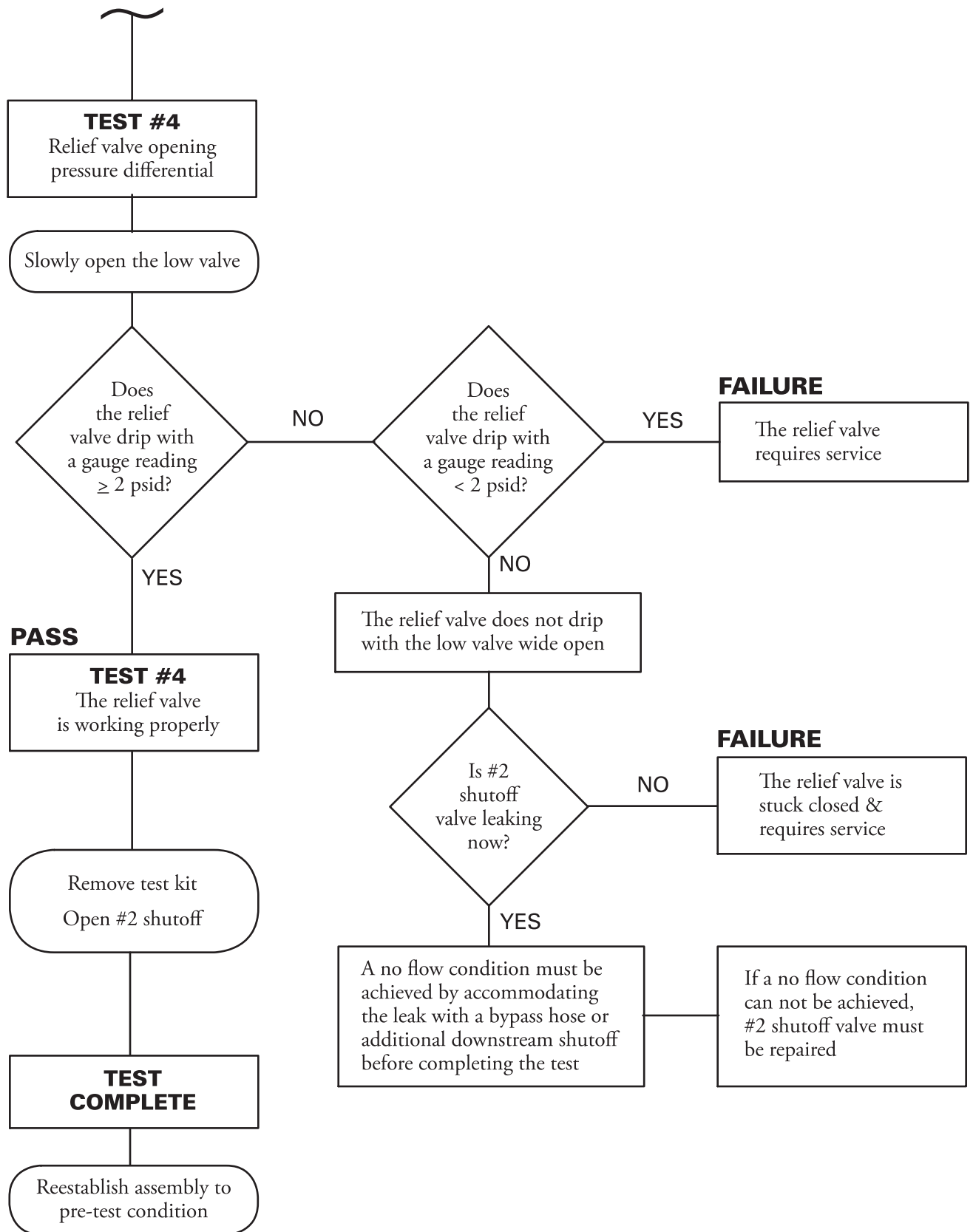
ASSE Test Procedure Flowchart for ASSE 1013 (RP and RPF) Assemblies



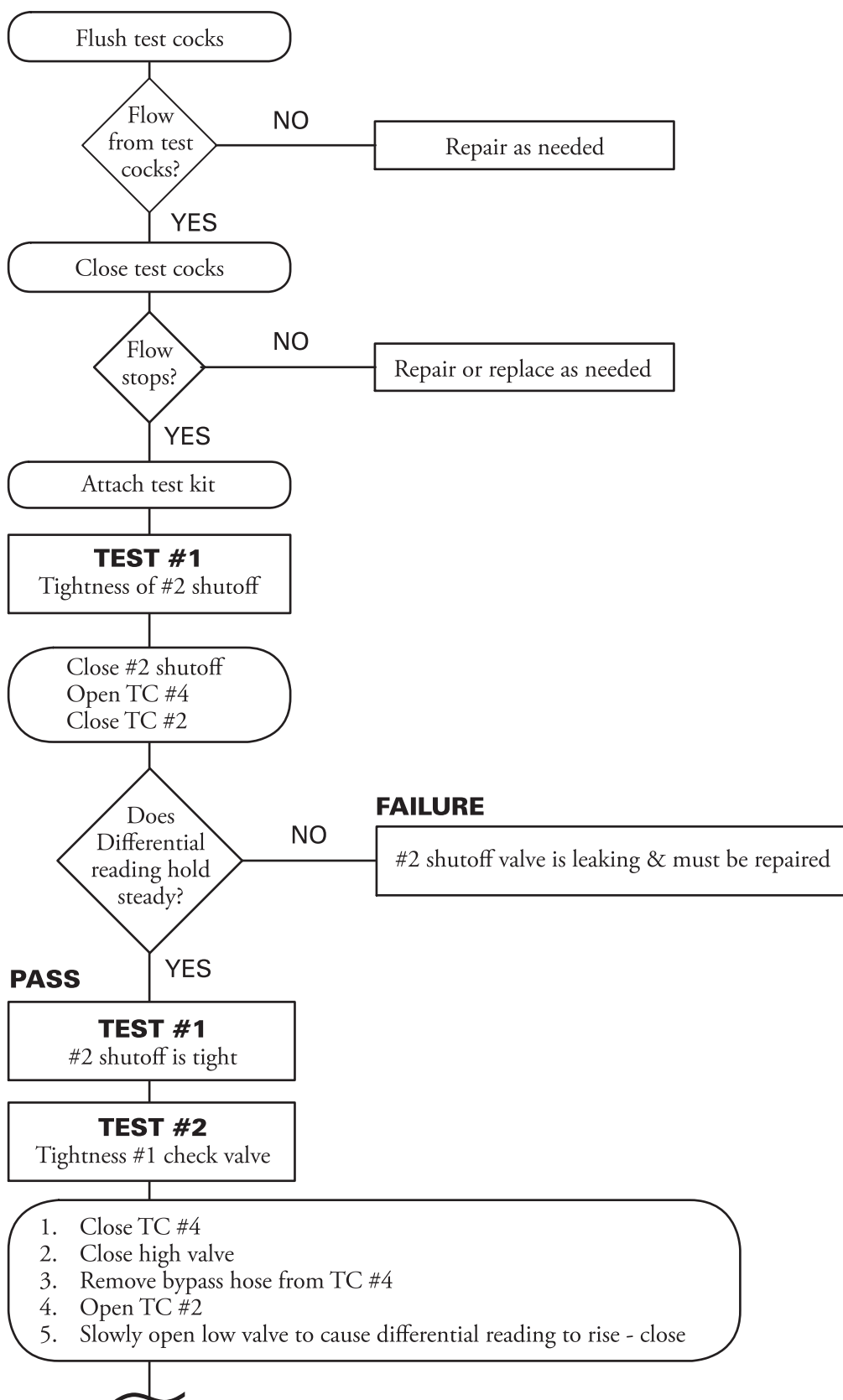
ASSE Test Procedure Flowchart for ASSE 1013 (RP and RPF) Assemblies



ASSE Test Procedure Flowchart for ASSE 1013 (RP and RPF) Assemblies



ASSE Test Procedure Flowchart for ASSE 1015 (DC and DCF) Assemblies



ASSE Test Procedure Flowchart for ASSE 1015 (DC and DCF) Assemblies

