AFSA45
GAUGING YOUR ACCURACY:
GAUGE SELECTION AND PUMP TESTING
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SAN ANTONIO, TX
AFSA
American Fire Sprinkler Association

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Eric Andresen is the technical training specialist for the American Fire Sprinkler Association (AFSA). He has experience with risk engineering applied to fire protection system analysis and the inspection, testing, and maintenance of fire protection systems for the insurance industry. Andresen has experience in the hands-on training of water-based fire protection system for risk engineers and facilities management staff. Andresen received his Bachelor of Science degree in fire protection and safety engineering technology from Oklahoma State University.
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HOUSEKEEPING ITEMS
TO RECEIVE CREDIT FOR THIS SEMINAR, YOU MUST:
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The authority on fire, electrical, and building safety
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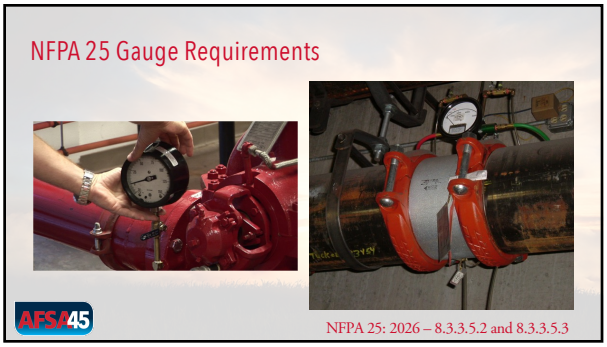
NFPA 25 Gauge Requirements
NFPA 25: 2026 – 8.3.3.5.2 and 8.3.3.5.3
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Air vs Liquid
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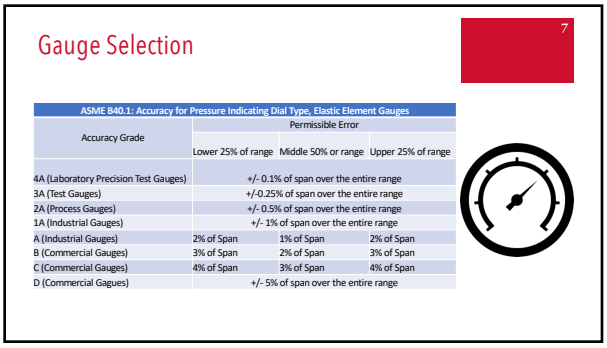
Gauge Selection
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ASME B40.1: Accuracy for Pressure Indicating Dial Type, Elastic Element Gauges
Accuracy Grade
Permissible Error
Lower 25% of range
Middle 50% or range
Upper 25% of range
4A (Laboratory Precision Test Gauges) +/- 0.1% of span over the entire range
3A (Test Gauges) +/-0.25% of span over the entire range
2A (Process Gauges) +/- 0.5% of span over the entire range
1A (Industrial Gauges) +/- 1% of span over the entire range
A (Industrial Gauges) 2% of Span 1% of Span 2% of Span
B (Commercial Gauges) 3% of Span 2% of Span 3% of Span
C (Commercial Gauges) 4% of Span 3% of Span 4% of Span
D (Commercial Gauges) +/- 5% of span over the entire range

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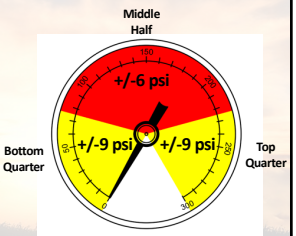
Gauge Selection

- Typical reference gauge
- Class B Gauge – 300 psi
- 3-2-3% Accuracy



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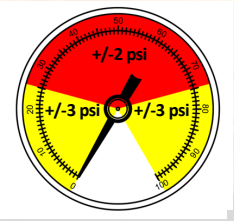
Gauge Selection

- Consider using the lowest pressure range that will do the job to improve accuracy.
- Class B Gauge – 100 psi
- 3-2-3% Accuracy



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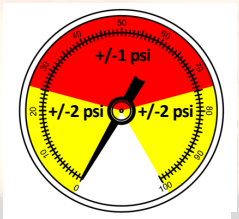
Gauge Selection

- Water flow testing needs a more precise gauge
- Class A Gauge – 100 psi
- 2-1-2% Accuracy



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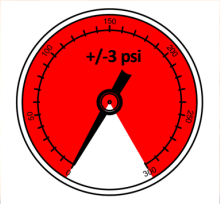
Gauge Selection

- How Accurate is a 1% Gauge?
- Class 1 Gauge – 300 psi
- 1% of Full Range



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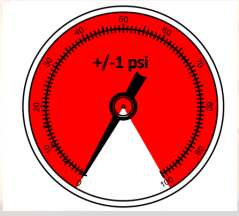
Gauge Selection

- Even More Accurate
- Class 1 Gauge – 100 psi
- 1% Accuracy



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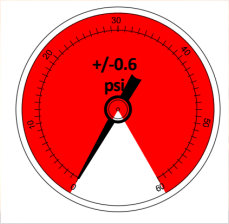
Gauge Selection

- Even More Accurate
- Class 1 Gauge – 60 psi
- 1% Accuracy



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Properly Reading a Gauge

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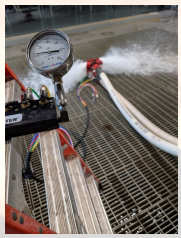
Using A Testing Manifold



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Using A Testing Manifold

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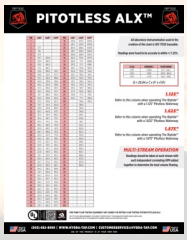
Why Does It Matter?



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Why Does It Matter?

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Evaluating Annual Fire Pump Test Results

Pump Net Performance Evaluation Procedure:

1. Adjust recorded gross flow and pressure recorded performance data to manufactures rated speed at each point utilizing Affinity Law calculations.
2. Plot speed-adjusted performance curve overlaid on manufacturers original pump curve.
3. Determine if performance meets the requirement of 8.3.6.2.3 (i.e., a 5% drop in recorded performance from "new").

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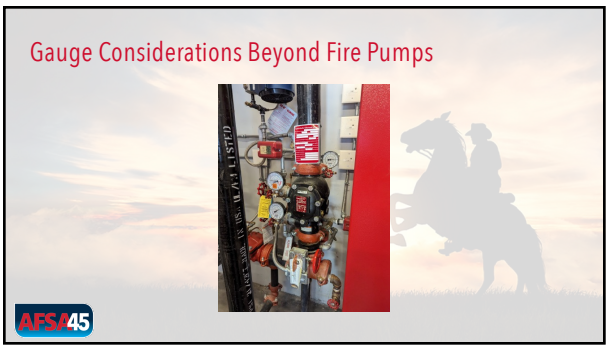
Gauge Considerations Beyond Fire Pumps
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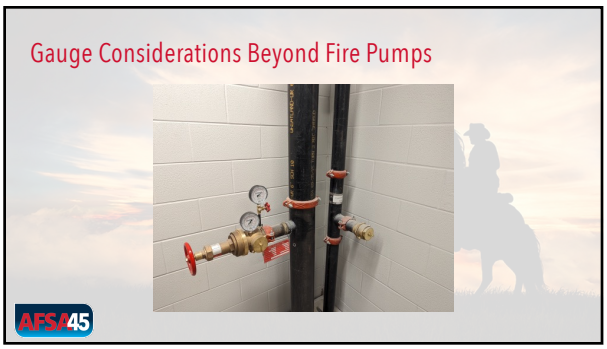
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REQUIRED
FOR CEU CREDIT:
✓ Badge scanned at start of seminar
✓ Attend full seminar
✓ Complete survey 1 of 2 ways:
✓ Survey link is emailed to attendees with scanned badges
✓ Event app by EventsAir
• Login to app
• Navigate to seminar survey
✓ Surveys close 10/31/26
Thank you!
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Scan QR code to submit questions for Ask the Experts!

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2027 Training Schedule

WEBINARS

1/6	Updates to NFPA 20
1/20	Calculating Pressure Reducing Hose Valves
2/3	Consumer Alert: Nitrogen in Sprinkler Systems
2/17	Reviewing Hydraulic Calculations
3/3	Updates to NFPA 13, 2028 Ed.
3/17	Updates to NFPA 13R & 13D, 2028 Eds.
4/7	Topic Coming Soon
4/21	NFPA 25: Roles & Responsibilities
5/5	Standpipe Flow Test Procedures
5/19	Storage 101
6/2	NFPA Technical Meeting - Voting Guide
6/16	Topic Coming Soon
6/30	Topic Coming Soon
7/7	Updates to NFPA 14, 2027 Edition
7/21	Adjacent Hazards & Design Methods
8/4	Acceptance Testing
8/18	Modifications to Existing Systems
9/22	Topic Coming Soon
10/6	Seismic 101
10/20	Proposed Updates to NFPA 25, 2029 Ed.
11/3	Evaluating Fire Pump Flow Tests
11/17	Top 10 Tech Reviews
12/1	Designing Water Storage Tanks
12/15	Pump Room Layout

PROGRAMS

Feb 9 - Mar 5 Apr 20 - May 14 Aug 3 - Aug 27** Oct 26 - Nov 19	Beginning Design School*
Apr 26 - May 7 Nov 1 - 12	Intermediate Design School*
Feb 8 - 10** Apr 12 - 14 Jul 12 - 14 Oct 11 - 13	Sprinkler Hydraulics Calculations Workshop
Apr 19 - 21 Oct 18 - 20	Advanced Hydraulics Calculations Workshop
Feb 11** Apr 30 Jul 23 Sep 24	Introduction to the Fire Sprinkler Industry
Mar 1 - 3 May 17 - 19 Aug 16 - 18 Oct 18 - 20**	NFPA 25 Essentials Workshop
Jun 7 - 10 Sep 20 - 23	Experienced Inspector Skills Lab
Mar 4 - 5 May 20 - 21 Aug 19 - 20 Oct 21 - 22**	NFPA 25 Fire Pump Workshop
Spring Summer Fall	ITM Inspector Development Program* *This program is 20 months.*

** Hybrid course **At General Air Products Lab, Exton, PA*

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September 8-11	Manchester Grand Hyatt San Diego, CA

For More Details Visit:
firesprinkler.org

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Dates subject to change. Programs subject to minimum registrations.

rev 9/14/2026

Virtual Instruction Path (VIP)

for Sprinkler Fitting Apprentices

Level 1 - Begins January 2027

Level 2 - Begins February 2027

Level 3 - Begins January 2027

Level 4 - Begins March 2027

www.firesprinkler.org/VIP

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HANDS-ON WORKSHOPS FOR 2027

FEATURING AFSA'S TRAINING LAB

NFPA 25 Essentials Workshop

Mar | May | Aug | Oct

Description: Understand roles, responsibilities, and NFPA 25 ITM procedures through hands-on testing of wet systems, dry systems, and fire pumps.

NFPA 25 Fire Pump Workshop

Mar | May | Aug | Oct

Description: Develop practical NFPA 25 fire pump ITM skills, including no-flow and full-flow testing, water supply graphing, and performance evaluation.

Introduction to the Fire Sprinkler Industry

Feb | Apr | Jul | Sep

Description: This course is designed for those new to the industry. An introductory, wide-ranging 8-hour course that provides a broad overview of core fire sprinkler industry concepts for those new to the field.

Experienced Inspector Skills Lab NEW

Mar | Sep

Description: Take your ITM expertise beyond the basics. Designed for experienced technicians, this course combines focused classroom instruction with hands-on system lab training to strengthen your application of current NFPA 25 inspection, testing, and maintenance requirements. Refine fire sprinkler testing practices, improve documentation, deliver more consistent service, and help reduce liability while reinforcing knowledge commonly covered on certification exams.

Learn more about AFSA's fire sprinkler lab featuring functional risers, a spray room, fire pumps, and an interactive classroom.

firesprinkler.org/lab