



2024 Fire Mechanics Fall Conference

F1: Inspection, Maintenance, & Testing of Fire Apparatus

Instructor: Fox Valley Technical College

This workshop prepares the technician for the EVTCC F-1 exam and covers inspection, maintenance, and testing of fire apparatus. Topics covered include definitions and terms related to fire apparatus, general requirements for servicing fire apparatus, out-of-service criteria, inspection, diagnostic checks, and maintenance. You will also learn about road test and performance testing requirements.

F2: Design & Performance Standards

Instructor: Fox Valley Technical College

This workshop prepares the technician for the EVTCC F-2 exam and to understand the design and performance standards for fire apparatus in NFPA 1901, Standards for Automotive Fire Apparatus, and the general principles of preventive maintenance and servicing. You will learn the terms and phrases commonly used in connection with the fire apparatus, apparatus operations and/or testing of apparatus. You will also learn about the test and delivery data requirements for a Pumper Fire Apparatus, identify fire apparatus maintenance problems according to IFSTA's Pumping Apparatus Driver/Operator Handbook and Identify Out of Service Criteria as listed in NFPA 1915 Standard for Fire Apparatus Preventive Maintenance Program.

F3: Fire Pumps & Accessories

Instructor: Steve Towers

This is an interactive class that addresses each of the EVT objectives for F-3. The class will cover fire pump theory, maintenance, rebuild and procedures for the three major pump manufacturers. We will spend a full day pump testing and troubleshooting pump performance issues. We'll also cover the additional testing requirements of NFPA 1911 (2017 edition) for brush truck and ultra-high-pressure pumps. Bring a good attitude and anticipate a great time turning wrenches with your fellow fire mechanics.

Suggested items to bring: coveralls, work boots, hearing protection, safety glasses, and if you are taking the F-3 exam, have a copy of NFPA 1911 2017 edition and other recommended study material.





F4: Electrical Systems

Instructor: Fox Valley Technical College

This workshop prepares the technician for the EVTCC F-4 exam and covers basic electricity including electrical theory, battery theory, meters, wire and cables, alternators and cranking motors, advanced electricity, the application of the above theories plus troubleshooting of entire systems. The class covers the basic design and performance requirements of the fire apparatus electrical systems, components of electrical systems and preventive maintenance and troubleshooting activities. The technician will understand the use of diagnostic equipment, batteries, the construction, and operation of starting systems, charging systems and components, and the accepted practices used to diagnose and repair electrical systems.

F5 Aerial Maintenance

Instructor: Fox Valley Technical College

This course prepares the technician to take the EVTCC F5 exam. Course objectives are to define the terms and phrases commonly used with aerial fire apparatus, operations and/or testing; identify the design requirements for aerial fire apparatus stated in NFPA 1900; and understand the testing, inspection and documentation requirements of all aerial fire apparatus NFPA 1910; understand and identify hydraulic systems of an aerial apparatus; describe activities considered to be accepted practice in service and repair of aerial apparatus, understand the principles of operating aerial apparatus; and aerial out-of-service criteria. . There will be some hands-on activities during this course.

F6: Allison Transmissions

Instructor: Dan Cleveland

This is a two-day class covering the Allison transmissions found in fire trucks/emergency vehicles. Covered topics include:

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| -Reference Materials | -Output retarders |
| -Transmission identification | -Pump mode operation |
| -Torque converter theory, operation, and troubleshooting | -Preventive maintenance and operational procedures |
| -Clutches and clutch application | -Driveline troubleshooting |
| -Hydraulics Electronic controls and prognostics | -Data link operation and troubleshooting |





F7: Fire Apparatus Foam Systems

Instructor: Keith Klassen

This class is a prep class for the EVT F7 Foam test. There will be both didactic classroom and hands on instruction. Topics covered will include:

1. Basic foam properties.
2. Foam proportioners ranging from foam eductors through electronic injection systems.
3. CAFS compressor systems
4. Foam and CAFS maintenance
5. Proportioner calibration
6. Compressor tuning
7. System troubleshooting
8. Annual NFPA proportioner and compressor testing

Hydraulics Theory & Troubleshooting

Instructor: Tony Martin

Participants will need to bring their own laptop in order to fully participate in this class.

This course is designed for the emergency vehicle technician, focusing on best practices for diagnosis and service of mobile hydraulic systems. Major topics include:

- Hydraulic principles
- Hydraulic systems
 - Components
 - Schematics
 - Description of operation
 - Emergency vehicle applications
- Hydraulic system diagnosis
- Hydraulic system service

During the course, the technician will be provided with information to assist in preparation for the following exams administered by the Emergency Vehicle Technician Certification Commission (EVTCC): F5 – Aerial Fire Apparatus, F8 – Hydraulics Systems





Cummins Engine Diagnostic & Maintenance

Instructor: Tom Rayk

The day will be used to refine diagnostic methods and prevent down time on the Cummins engine family featuring the L9 platform. Systems like the EGR, DPF and SCR will be covered and advanced diagnostic methods will be discussed and shown on an actual vehicle located on site. Cummins InSite and Quick Serve will be shown for their diagnostic advantage. Nox sensors and emission devices will be covered in detail. Scan data will be shown on the big screen to involve the whole group. Sign up for this program soon as seats are limited. Lots of diagnostic Tips and methods will be covered. The information in this class can also be applied to other emission engines to further diagnostic speed.

Paccar Engine Diagnostic & Maintenance

Instructor: Tom Rayk

Join us for this detailed look at the PACCAR series of lightweight HD Diesel engines. There will be a truck available for hands-on diagnostic examples. Emission system components will be covered in detail. Why these systems are required how they work and troubleshooting tools and information. How to prevent unwanted service issues by properly maintaining and servicing this platform. Electrical diagnostic tips along with Networking tips will be presented. Oh, and did we mention emission scan tool tips.

Ford 6.7L Power stroke

Instructor: ATG Training

This seminar continues the ATG tradition of collecting the best practices and diagnostic tips from high-volume specialists around the nation. These methods are sorted into High Level Indicators to help you determine the root cause of high- and low-pressure fuel system faults while minimizing time-consuming physical testing. And while this seminar is about fuel systems, it includes instances where emissions, induction and mechanical faults affect fuel systems, such as DEF contamination, false DPF codes for fuel system faults, and telling the difference between poor injector contribution and actual mechanical fault





Ford Drivability and Code Diagnostic

Instructor: ATG Training

ATG's new Ford Drivability & Codes Diagnostics seminar follows the evolution of Ford engine management systems and their increased use of turbocharging, variable camshaft timing, combination port/direct injection system, and much more. As always, we review OEM system descriptions, and then test new and faulty vehicles to figure out how these systems really operate. The resulting seminar and manual are the definitive sources for diagnosing Ford engine performance symptoms and trouble codes. More importantly, we've included our 'High Level Indicator' philosophy and decision-making tables to help you choose the fastest diagnostic path.

Hale Fire Pumps

Instructor: Curtis Reinsma

HALE's basic pump and gear box class is a 2-day course which suites the needs of new technicians and serves as a refresher for the experienced EVT.

Day one is an in-class presentation covering HALE pump and gearbox theory. We will cover the different HALE components with the focus primarily being the midship pump configuration. Topics include pump drive source, driveline theory, gearboxes, VPS, pump interlock, Qmax impellor assemblies, Primer systems, MIVs, TPM system, TRV, Anodes, Drains, Customer Support, Idex university.

Day two the focus will be hands-on training. Teardown and rebuilding of HALE pump components. Components include the G & K series gear boxes, VPS, Impeller assembly, primer, relief valves.





Tire Info for the Technician

Instructor:

This class will cover:

- Tire and Rim Association Annual Yearbook
- Passenger and Light Truck Tire Conditions Manual
- Radial Tire Analysis Guide
- Who Makes it and Where
- Care and Service of Passenger and Light Truck Tires
- Care and Service of Commercial Truck
- Tires Tire Construction Video
- Why Tires are important
- Tire Performance Requirements
- Tire Construction Basics
- Vehicle Door Placard
- Load Index
- Tire Deflection
- Proper Tire Maintenance
- Tire Repairs
- Air pressure effects on tires
- Tire application Guidelines
- P-Metric vs. Euro Metric vs. Light Truck vs. Euro Commercial
- New Tire Technology

Weldon VMUX & Class 1 Es-Key

Instructor: Markus Kelley

Brief overview of the V-MUX and Es-Key hardware and Network typology with a focus on unique features that change the way we approach troubleshooting it

The 6 steps to troubleshooting as they apply to Electronics in general and how to apply that knowledge to V-MUX

1. Understanding the issue and scope of work area
2. Inputs
3. Outputs
4. Communication
5. Isolation
6. Assistance

We cover how-to troubleshooting with and without V-MUX Diagnostics so students can better understand how V-MUX Diagnostics changes troubleshooting.





Diagnostic Data Analysis Techniques

Instructor: Brent Delfel, Advanced Diagnostic Consulting

This class focuses on understanding what Module Data is associated with faults. The struggle technicians have is catching the failure while in the shop bay. Focusing on strategies to obtain the data needed to make accurate diagnostic decisions, participants will work through multiple diagnostic scenarios using best practices to prove root causes of the faults associated with each. Participants should expect to work with Excel spreadsheets, recorded data and Scope data to narrow down the root cause of each fault.

Each participant should have a laptop with Microsoft Excel and Pico7 software to maximize the class experience. (8 hours)

STIHL Saw

Instructor: JD Fernstrom

Each attendee should bring 1 - 2 STIHL products; cut-quick, chain saw, etc. that will be used during the training. The products can be new, used, broken, or running perfectly, the goal is to use the products you service on a regular basis to build familiarity with the product as well as the service and repair techniques that may be specific to the model. I also ask that you bring any basic tools you use in the shop as well as any spare parts you feel will be needed such as air filters, spark plugs, fuel filters, etc. STIHL NW will supply special tools, shop towels, and some lubricants. Lastly, please remove any fuel and bar oil as well as give a quick cleaning to keep our work area as clean as possible.

Stemco Wheel End

Instructor: Charles Parsons

This class will cover the following topics:

- Maintenance Intervals
- Lubricants
- Common Maintenance Issues





Fire Facilities Track

Class Descriptions

Building Fire Prevention Equipment Maintenance & Testing

TBA

Washington Clean Building Legislation:

Clean Buildings Performance Standard Requirements

Instructor: Washington State Department of Commerce

The Clean Buildings Performance Standard was updated February 2024. These changes include updates and clarifications to Tier 1 requirements and the addition of Tier 2 compliance requirements. At the Fire Mechanics Fall Conference, Commerce will cover:

- compliance requirements for Tier 1 and Tier 2 buildings.
- compliance timelines
- exemptions
- penalties
- incentives
- support and resources.

Vehicle Exhaust Extraction Systems (Nederman)

Instructor: Austin Smith, Benzco

TBA





NFPA Electrical Maintenance & Hot Work Safety

Instructor: Gary Honold, NFPA

The recent increase of fires in buildings under construction has emphasized the need for fire departments, construction companies, facility managers, and the community to look at this issue and use the tools available to lesson and mitigate those incidents. Fires in buildings under construction can cause a delay in finishing the project, or the project being abandoned altogether. There is also a significant risk to the workers on that project and the fire departments responding to those incidents.

This session will cover the history of fires in buildings under construction. The causes of those fires, and what everyone involved can do to lessen the risks of these incidents occurring. The attendees will learn about NFPA 241, Standard for Safeguarding Construction, Alterations and Demolition Operations. This document outlines the requirements for preventing fires during those operations, and the roles and responsibilities of everyone involved. This session will also emphasize the importance of having a fire prevention plan and a Fire Prevention Program Manager to develop that plan for all construction, alteration, and demolition operations

