



Truck and Heavy Equipment

Worldskills proud supporter

OFFERING YOU INTUITIVE SOLUTIONS

For more than 50 years, ConsuLab has devoted our business plan to offering intuitive solutions to educators. This is more than just a catchphrase or a marketing line; this is at the core of ConsuLab's beliefs. Since our beginnings in 1969, ConsuLab has specialized in manufacturing and distributing high-quality training equipment to help you teach ever-evolving technology.

Over this time, we have developed a reputation for quality and innovation in the fields of transportation technology, truck and heavy equipment and many programs dealing with electricity, electronics, hydraulics and pneumatics. We do not build simulators, we build training equipment that can be used for years. All of our educational training aids are built to better utilize instructors' time, to help students meet the requirements for their specific program and to prepare them to become a productive and successful part of the workforce.

We are devoted to the technical education industry. We employ former educators, we design and build training aids with educators in mind, and we take the concept of helping you teach technology very seriously by offering intuitive solutions through highly engineered and well-crafted training aids.

We partner with many organizations in the industry because we are passionate about developing the highest quality truck and heavy equipment technicians and assisting you in helping shape the future of the trades.

We thank you for this opportunity and encourage you to take time to look through this catalog to find intuitive solutions to today's transportation technology.



Kevin Boden, President

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Icon legend

	Electrical		Automobile vehicle platform
	Mechanical		Truck vehicle platform
	Pneumatic		Heavy equipment vehicle platform
	Defective part		Recycled parts

Documents provided

Operation manual	Student Assignments	Instructors Guide
PDF / Paper	PDF	PDF

Operation manual:

Setup, Safety and Use

Student Assignments:

Worksheets and any theory

Instructors Guide:

Schematics, Faults, Tips and Tricks

Air brake driving simulator

HV-125-BWP

The industry's first air brake driving simulator.

Imagine driving down the road with your class of students while demonstrating ABS, ATC and ESC functions on a complete air brake system with all students viewing the scan data and wheel speeds!

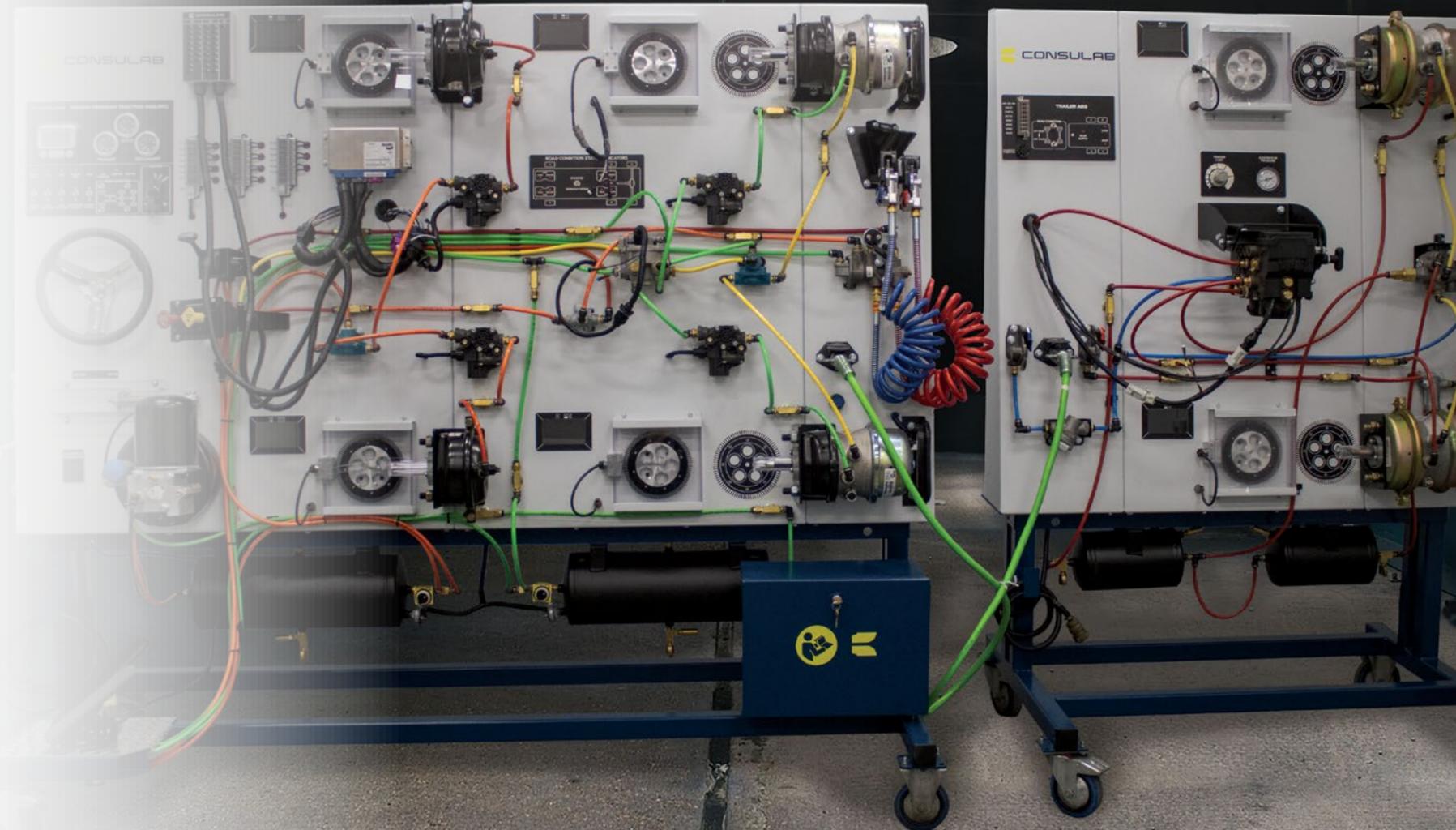
Take your class on a road test!

- Teach basic air brake inspections.
- Liberate yourself from lengthy setup times and exercise development.
- Be setup to teach in 5 minutes.
- Challenge your students with basic, intermediate, and advanced exercises.
- 30+ pneumatic and electrical faults.
- Hear, feel, and see system functions.
- Demonstrate ABS braking events.
- Teach diagnosis of air faults, electrical faults, and defective components.
- This trainer uses high quality Bendix™ components for years of useful service for your institution.

Optional accessories for your Air Brake Driving Simulator

- Set of Breakout Boxes with T-Harnesses for Premium (30255-7).
- Set of Defective Components for HV-125 (30256).
 - One (1) Bendix WS-24 Wheel Speed Sensor (93692-2).
 - Two (2) Bendix 12V ABS Modulator Valves (93692-4).
 - One (1) Bendix Quick Release and Double Check Valve (93692-9).
 - One (1) Bendix ATR-6 Traction Relay Valve (93692-6).

Faults 18 ⚡ 9 📊 4 ⚙️



Operation manual	Student Assignments	Instructors Guide
✓	39	✓

Foundation air brakes for driver training

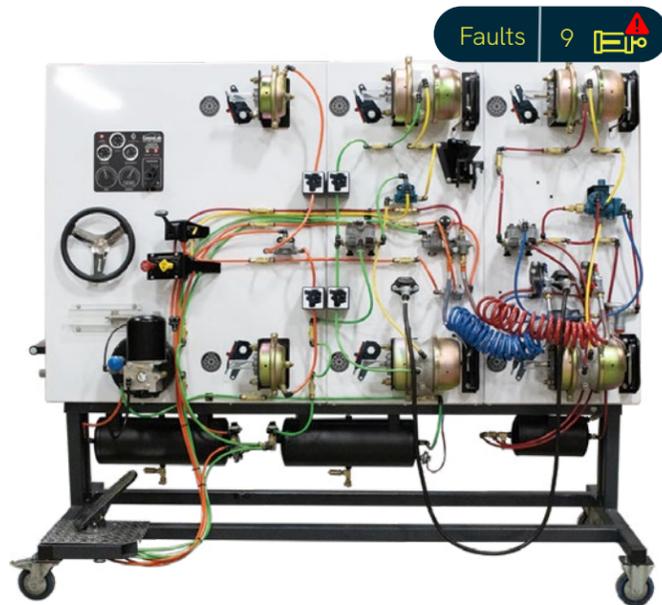
HV-120

Do you teach driver training? We have the air brake trainer for you!

A complete tractor and trailer system all on one product that will fit through a doorway and into your classroom. Efficiently teach drivers the importance of pre-trip inspections of the air brake system. Educational materials are designed to reinforce not only system operation, but also the importance of using checklists to document deficiencies and repairs. This will help reduce downtime of the whole fleet.

Curriculum

- Includes operation manual, pneumatic schematics with and without faults, instructor's guide and student assignments.
- 15+ student exercises.
- FMVSS121 compliant.
- DOT approved fittings.
- Contains no obsolete 1970s parts or configurations.
- Design based on 2021 truck fleet parts.
- This trainer makes training for the understanding of the air brake system. This prepares the learner to be accurate and efficient at pre-trip inspections.
- This trainer uses high quality Bendix™ components for years of useful service.



Operation manual	Student Assignments	Instructors Guide
✓	16	✓

Available wheel ends for HV-125:

Front Air Drum with no Spring Brake for HV-125

HV-124-FDM



Air Disc with Spring Brake for HV-125

HV-124-DC



Air Drum with Spring Brake for HV-125

HV-124-DM



Cutaway 30-30 Brake Chamber

EC-127

- Students can safely visualize the internal components and operation of the brake chamber
- Allows for the demonstration of both the service and parking circuits
- Clearly shows the mechanism that transfers the spring force to apply the parking brake



Air disc wheel end training system with cutaways

HV-126-DC

A complete functional disc wheel end with tank and valving.

- This is a standalone system that simply requires shop air to operate.
- Fully functioning cutaway that showcases the operation of the disc brake wheel end.
- Cutaway hub so that the learner can correctly adjust the wheel bearings as per the TMC RP-618 specification.
- This trainer makes training for the maintenance of the foundation brake and wheel end right up at the level where it is easy to see. This prepares the learner to be accurate and efficient at periodic wheel end maintenance.
- This trainer uses high quality Bendix™ components for years of useful service.



Operation manual	Student Assignments	Instructors Guide
✓	11	✓

Air drum wheel end training system with cutaways

HV-126-DM

A complete functional drum wheel end with tank and valving.

- Standalone system, just provide air.
- Strategic cutaways show bearings, bearing races, drum, and s-cam.
- Includes operation manual.
- FMVSS121 compliant.
- DOT approved fittings.



Operation manual	Student Assignments	Instructors Guide
✓	11	✓

Speed and position sensors trainer

EM-200-25

- Demonstrates the operation, diagnosis, and testing of common types of analog and digital speed and position sensors.
- Demonstrates analog and passive sensors; Magnetoresistive, hall effect, inductive.
- For use with an oscilloscope. (Required)
- Shaft with tone wheels and speed control.
- Uses real vehicle sensors.

Operation manual	Student Assignments	Instructors Guide
✓	13	✓



Functional cutaway diesel starter

EC-510HV

- Cutaway starter that still operates.
- Students can see the solenoid plunger move, and sparks fly!
- Complete system includes ignition switch, solenoid, and relay.
- All rotating components enclosed and safe.

Operation manual	Student Assignments
✓	5



Ohm's law and DC circuits trainer

CL-1919-06

Best selling ConsuLab product ever! Student tested proven design.

In use at 500+ schools around the world

- Built-in adjustable protected power supply.
- All components protected against incorrect wiring & short circuits!
- 1000s of students have learned ohm's law using this trainer!
- Industry leading curriculum package. (350+ pages).
- Complete course on Ohm's law, series parallel and more.
- Proven robust hardware.
- All components fixed to trainer.
- Easily sourced consumables (#194, 3157 etc.)
- Built-in multimeter
- Consistency across multiple units, easy setup, pre-written labs.
- Exquisite top-quality gold-plated jumper leads minimize voltage drops.



Operation manual	Student Assignments	Instructors Guide
✓	33 + 14 tests	✓

Heavy vehicle lighting system trainer

HV-1918-2S

Hands-on learning for truck lighting systems.

Saves teacher's time.

- Students can begin building circuits with less than 5 minutes of introduction!
- Consistency across multiple units, easy setup, pre-written labs.
- Exquisite top-quality gold-plated jumper leads minimize voltage drops.

Student tested, proven design.

- Robust hardware.
- Protected power supply.
- Modular Moduponent™ Design.
- Multiple configurations available to fit your class.

Teaches diagnostic procedures.

- Voltage drops.
- Open circuits.
- All faults are diagnosable.

Operation manual	Student Assignments	Instructors Guide
✓	18	✓

Configurations available:



CAN Bus multiplex trainer

MP-1918-2S

Help your students become multiplexing experts.

Are your students struggling with multiplexing? Build their understanding & diagnostic confidence hands-on!

Multiplexing made easy:

- Students perform wiring hands-on, building a 4-module multiplex system.
- Follows SAE J1939 protocols.

Teaches real-world diagnostic strategies:

- Lack of communication.
- Voltage drops.
- Open circuits.
- All faults are diagnosable.

Saves teacher's time.

- Consistency across multiple units, easy setup, pre-written labs.
- Exquisite top-quality gold-plated jumper leads minimize voltage drops.

Student tested, proven design.

- In use at hundreds of schools.
- Robust hardware.
- Protected power supply.
- Available as combination with other trainers (multiplex, heavy truck, etc.)



Operation manual	Student Assignments	Instructors Guide
✓	20	✓

Configurations available:



uScope classroom kit

AE-73-CK

- uScope master kit for instructor.
- 10 x basic uScope kits for students.
- Distribution harness.

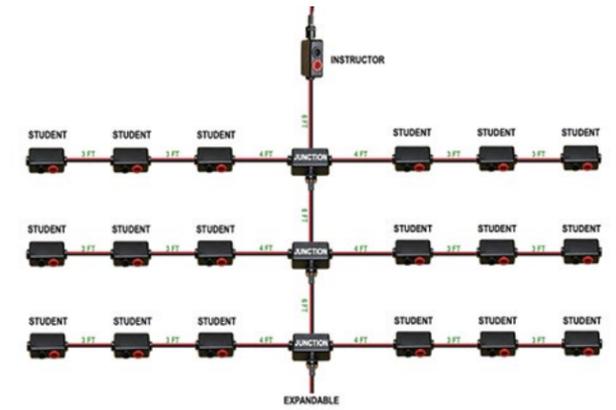
Also available in custom quantity



Signal distribution harness

AE-72-SD

- Flexible configurations for any classroom.
- Bring signals to each student.
- Easy to use BNC connectors.



uScope digital storage oscilloscope - basic kit

AE-70-BK

- Small powerful single channel oscilloscope.
- Boots up in 4 seconds.
- 12-bit A/D converter, samples at 1 MHz.
- Includes test leads and charge cable.



uScope digital storage oscilloscope - master kit

AE-71-MK

- Small powerful single channel oscilloscope.
- Boots up in 4 seconds.
- 12-bit A/D converter, samples at 1 MHz.
- Includes carrying case, low amp probe, COP paddle & accessories.



Electromagnetism trainer

CL-1902

Equip your students for the electrified future. Apply theory hands-on.

Do your students struggle with electricity? Do you have challenges capturing their attention and getting them interested in how electric motors work? Do you want to equip them with the skills and knowledge necessary to work on hybrid and electric vehicles?

The ConsuLab CL-1902 Electromagnetism trainer can help challenge your students and keep them engaged.

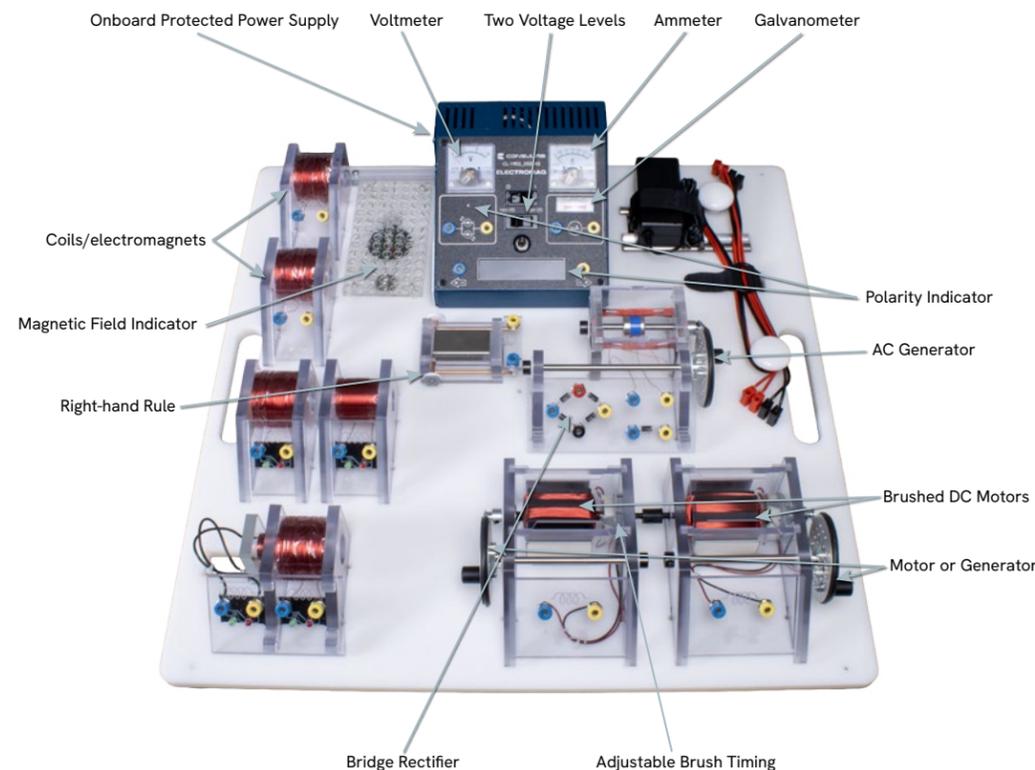
This trainer will challenge your students and keep them engaged.

- Minimal setup time < 5 minutes.
- Easy to inventory
- Up to 50+ hours of instructional time



Classroom kit

Operation manual	Student Assignments	Instructors Guide
✓	21	✓



Connector Trainer - circuit and signal acquisition

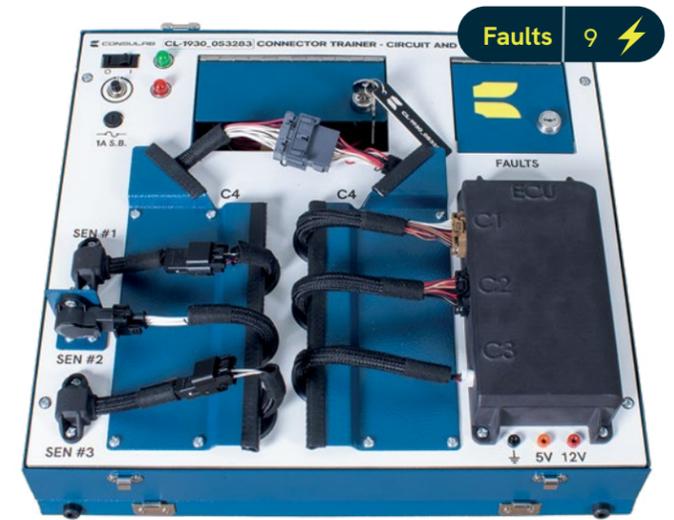
CL-1930

A robust, reliable way to teach back-probing and oscilloscope use!

The Connector Trainer is not just a training aid; it's a purpose-built system designed for mastering the art of back-probing connectors, promoting intricate oscilloscope readings, and honing advanced diagnostic skills. It is the opposite of a breakout box; it provides the ideal learning environment for students to practice real-world back-probing techniques.

- Diverse signal exploration, from digital square waves to sine waves and variable voltage outputs.
- Practice oscilloscope use, using various time bases and voltage scales.
- 9 fault scenarios, demonstrating frequency changes, voltage drops, and the effects on electronics.
- Field serviceable, easily provisioned, and replaceable terminals and connectors.

Operation manual	Student Assignments	Instructors Guide
✓	21	✓



Classroom kit

Cutaway battery

EC-520

- Small (14A-A2) 12 V lead acid battery.
- Battery case is cutaway to view internal plates.
- No electrolyte present.
- Comes with curriculum.



Drivability electronics kit

MD-4000-23

This trainer brings the fundamentals of engine performance sensors to the classroom environment. Equip your students with confidence before working on an engine bench or the real vehicle.

- Hands-on learning.
- Automotive drivability components.
- Saves teacher’s time.
- Consistency across multiple units, easy setup.
- Modular design.
- Can be upgraded/changed over time.



Classroom kit

Operation manual	Student Assignments	Instructors Guide
✓	14	✓

Advanced electronics kit

MD-4000-22

- This is for teaching advanced electronics, after students have learned the basics of electricity and ohm’s law.
- Fully self-contained.
- Student-led hands-on learning.
- Automotive electronics components.
- Full schematics.
- Saves teacher’s time.
- Consistency across multiple units, easy setup, pre-written labs.
- Modular design.
- Can be upgraded/changed over time.



Classroom kit

Operation manual	Student Assignments	Instructors Guide
✓	14	✓

ConsuKit Student-Built Brushless DC Motor

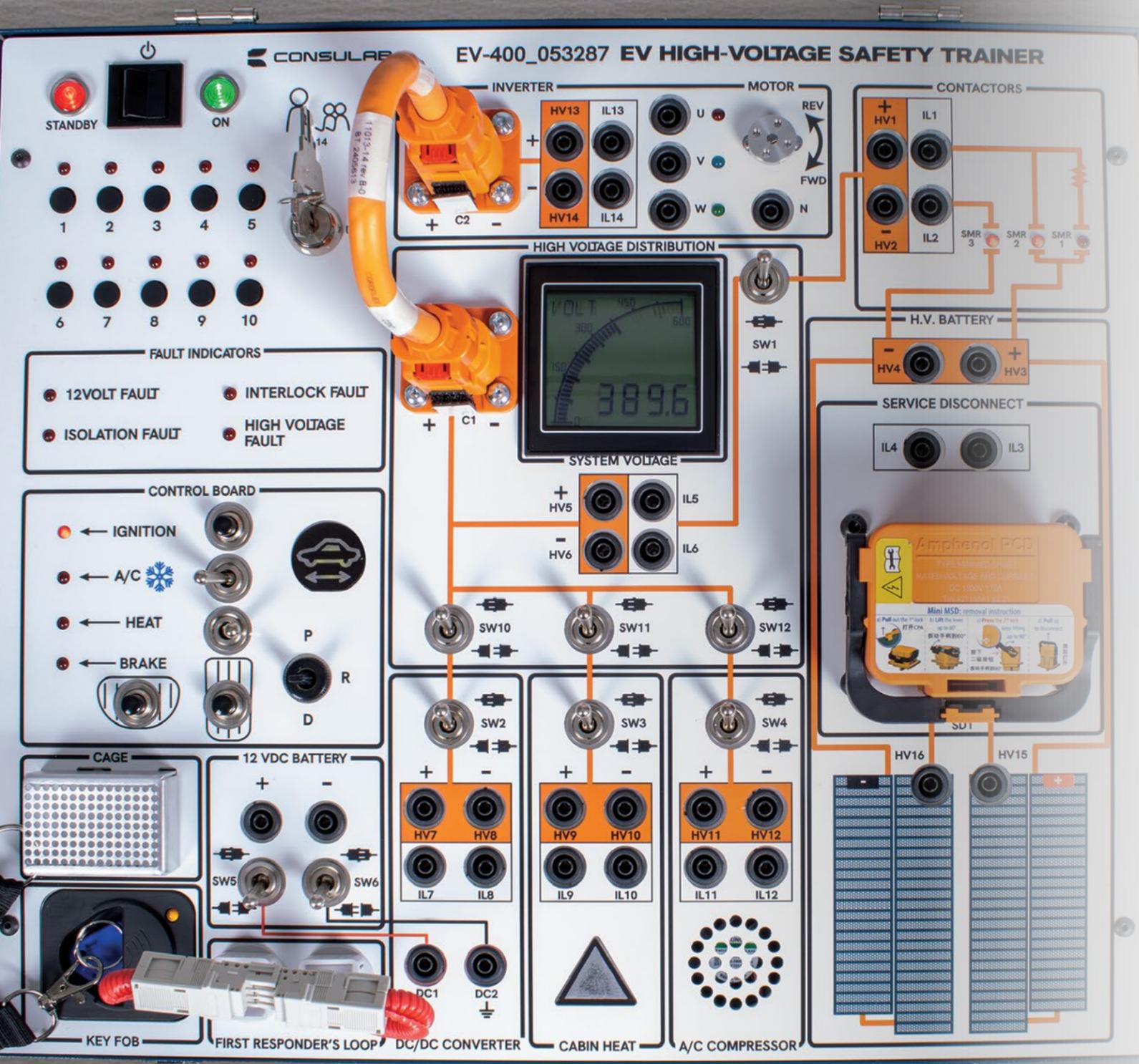
EV-100

Give your students hands-on experience by building a working 3-phase permanent magnet motor with the EV-100. Designed for middle school to college, this classroom-ready kit makes concepts in electricity, magnetism, and energy systems come alive—connecting directly to technologies in EVs, robotics, and STEM. Students learn by doing as they assemble, test, and prove their motor works.

- Complete 3-phase permanent magnet motor assembly kit. Everything you need is in each kit
- Students wind, connect, and arrange their own stator coils.
- Configurable as motor or generator for dual functionality. (M/G)
- Operates safely from 12V DC supply.
- Motors that are found increasingly in automotive (fuel pumps, EVs, fans, actuators)
- Testable with standard multimeters for resistance and AC output.
- Supports coil insulation and continuity checks with meggers.
- Allows oscilloscope analysis of 3-phase waveforms.
- Demonstrates magnetic field rotation and torque production.
- Provides measurable performance outcomes during operation.
- Enables efficiency testing in motor and generator modes from troubleshooting.
- Mirrors BLDC/EV motor operation principles in small and large applications.
- Designed for repeatable builds from one kit by students
- Comes with build guide, worksheets and troubleshoot guide for the instructor



Operation manual	Instructors Guide
✓	✓



EV High-Voltage Safety Trainer

Faults 10 ⚡ 1 ⚙️

EV-400

Measure 400V DC in a completely safe, controlled, classroom environment.

Teach High-Voltage Safety in a compact classroom sized package through an intuitive, hands-on experiences for high-voltage testing, Personal Protective Equipment (PPE) use including gloves and insulated tools, high voltage isolation testing with a mega-ohmmeter, high voltage interlock circuits, first responders' loops, three phase motor control, high voltage power distribution, and much more.

The product has a fault box and a faulty component, allowing diagnostic practice. The system reacts as a real EV, demonstrating functions of various scenarios and components.

EV-400 transcends the limitations of traditional trainers. It's not just about demonstration; it's about active engagement, hands-on learning, and real-world application.

- High voltage loss of isolation
- High voltage interlock loop
- 12V supply problems
- Air condition faults
- PTC heater faults
- Component faults
- Harness faults
- Contactor problems



This product is perfect for the following:

- Technical training programs: automotive, electrical engineering, emergency response.
- Educational institutions: motive power trades, vocational schools, community colleges, and high schools.
- EV manufacturers and repair shops: upskilling technicians and ensuring safety protocols.

Includes an isolation meter and a set of large high voltage gloves.

Operation manual	Student Assignments	Instructors Guide
✓	27	✓



ConsuLab offers a wide range of diesel engines, both on-highway truck engines and off-road heavy equipment engines.

Teach the latest diesel and after treatment system technologies with ConsuLab diesel engine benches!

- High pressure common rail injection.
- Diesel oxidation catalyst (DOC).
- Cooled exhaust gas recirculation (EGR).
- Selective catalytic reduction (SCR).
- Diesel particulate filter (DPF).
- Diesel exhaust fluid (DEF).

Our diesel engines include the following features:

- Fault insertion.
- Breakout box test points.
- Deutsch 9 pin DLC J1939.
- OEM DTCs.
- Radiator and cooling package with protective guards.
- Programmable digital display.
- ECM breakout box.
- Ignition key switch w/test points.
- Indicator lamps.
- Enabling/disabling switches.
- DLC using SAE J1939 protocols.
- Foot operated fuel pedal.

Model	Description	Typical Application	Emissions	Parts	Best for
HV-950-B6.7_035101	ConsuLink engine bench Cummins B6.7 EPA 2021 new	Medium duty trucks	EPA2021	New	Most diesel programs
HV-950-QSB_035106	Diesel engine bench Cummins QSB6.7 TIER 4F new	Heavy equipment	Tier 4 final	New	Off road heavy equipment
HV-950-C4.4-TIER4_035153	Diesel engine bench CAT C4.4 TIER4F new	Heavy equipment	Tier 4 final	New	Mining, heavy equipment off road
HV-950-C7.1-TIER4_035154	Diesel engine bench, CAT C7.1 TIER4F new	Heavy equipment	Tier 4 final	New	Mining, heavy equipment off road
HV-950-DD15-DD16_035163	Diesel engine bench GHG17 recycled	Class 8 trucks	GHG17	Recycled	Truck diesel programs
HV-950-X15_035103	Diesel engine bench Cummins X15 EPA 2017 recycled	Class 8 trucks	EPA2021	Recycled	Truck diesel programs

ConsuLink engine bench Cummins B6.7 EPA 2021 new

HV-950-B6.7

Now with the ConsuLink™ Student learning platform

The HV-950-B6.7_035105 Cummins diesel engine bench w/EGR, DPF, SCR, is mounted on a tubing steel stand. Completely operational and safe, this standard trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors and electronics. This engine is primarily used for over-the-road markets.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓

Student Led Case Study	Instructor Led Case Study
6	2

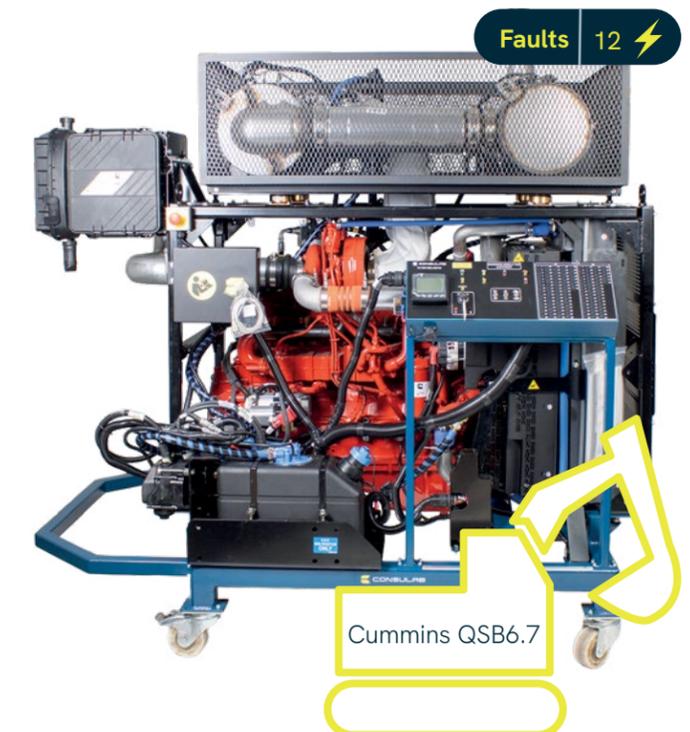


Diesel engine bench Cummins QSB6.7 TIER 4F new

HV-950-QSB

The Cummins QSB6.7 Diesel Engine Bench is mounted on a tubing steel stand. Completely operational and safe, this standard trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors and electronics. Meets TIER 4F emissions regulations. This engine is aimed at industrial, agricultural, construction and power gen markets.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓



Diesel engine bench CAT C4.4 TIER4F new

HV-950-C4.4-TIER4

The Caterpillar C4.4 diesel engine bench is mounted on a tubing steel stand. Completely operational and safe, this standard 4.4L diesel engine trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors, and electronics. Meets TIER 4 emissions regulations.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓



Diesel engine bench CAT C7.1 TIER4F new

HV-950-C7.1-TIER4

The new Caterpillar C7.1 diesel engine bench is mounted on a tubing steel stand. Completely operational and safe, this standard trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors and electronics. Meets TIER 4 Final emissions regulations.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓



Diesel engine bench Detroit Diesel GHG17 recycled

HV-950-DD15-DD16

Specially built to meet all diesel engine performance and repair tasks. The recycled EPA 2013 Detroit Diesel DD15/DD16 diesel engine bench w/EGR, DPF, SCR, is mounted on a tubing steel stand. Completely operational and safe, this standard trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors and electronics.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓

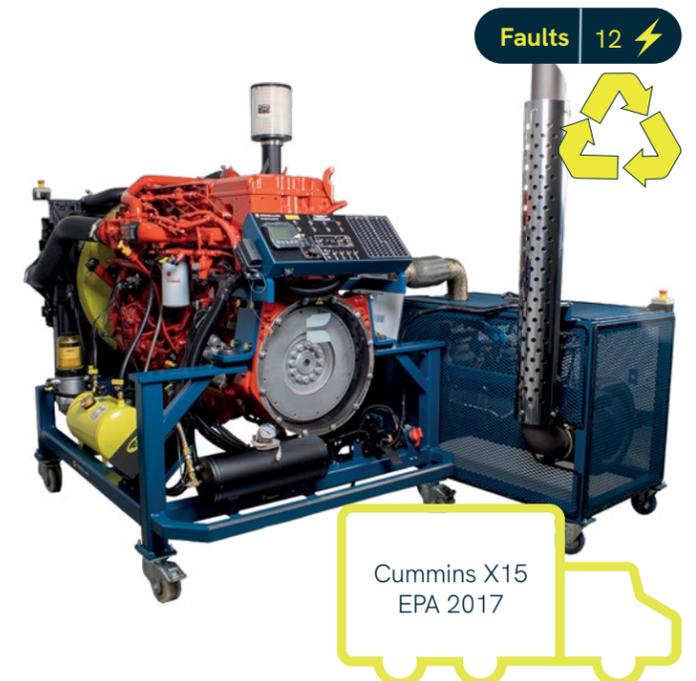


Diesel engine bench Cummins X15 EPA 2017 recycled

HV-950-X15

Especially built to meet all diesel engine performance and repair tasks. The Cummins X15 EPA 2017 diesel engine bench w/EGR, DPF, SCR, is mounted on a tubing steel stand. Completely operational and safe, this standard trainer is easy to work on and complies with manufacturer rules and specifications related to all OEM codes, colors and electronics.

Operation manual	Student Assignments	Instructors Guide
✓	9	✓



CONSULINK™

ConsuLink™ Student Learning Platform

You can now interact with ConsuLab product in the new following ways.

ConsuLink is another intuitive solution we now offer with some of our products. This tablet-based learning platform resonates with today's students as it has a familiar touchscreen interface and all assignments, faults, schematics and tasks are preloaded onto the tablet.

Reference information — No more hunting paperwork

Student mode

Student case studies

We give the students the customer complaint and instructions for them to diagnose the problem.

Scenario numbers

Allow an instructor to assign students any pre-set fault or case study, without the students knowing what it is. Liberating instructor time.

Instructor mode

Instructor case studies

Gives you all the answer keys and reasoning for each student case study.

Instructor led lessons

Instructions and pre-sets prepared by educational experts like having a room full of mentors!

Faults & Schematics

Gives you all the information you need on each fault.

Manual fault insertion

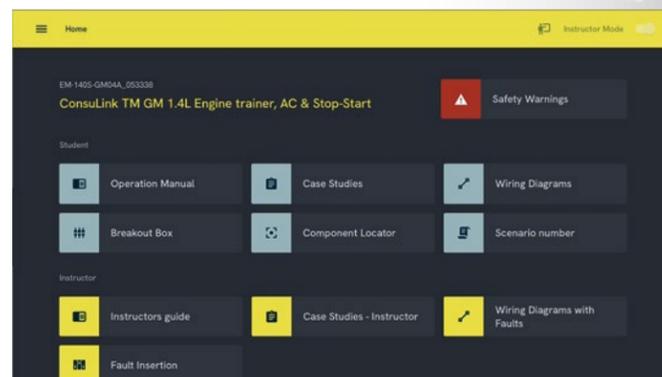
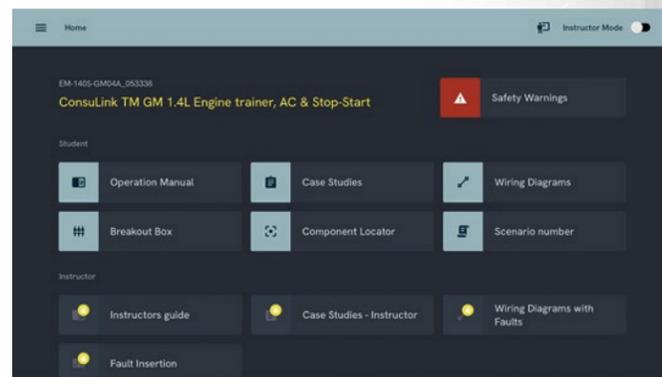
Ability to create your own customized case studies.

Products with ConsuLink

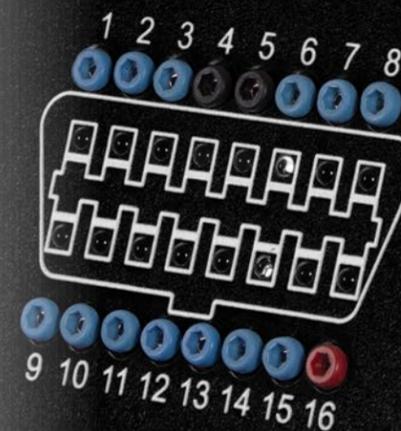
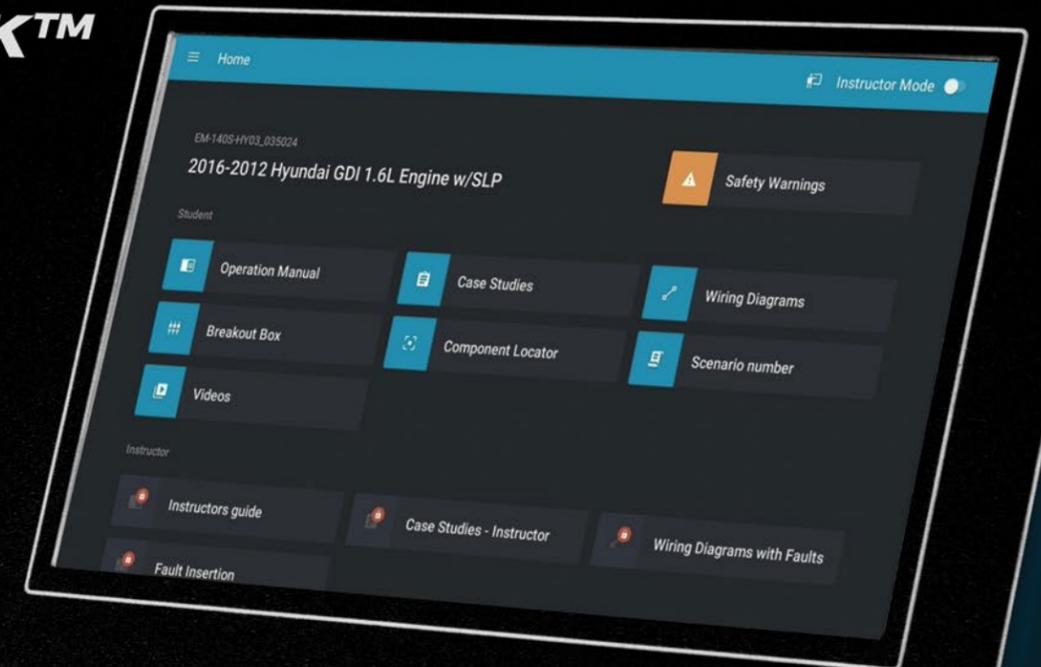
ConsuLink™ GM 1.4L Engine trainer, AC & Stop-start, ConsuLink™ 2016-2012 Hyundai GDI 1.6L engine, ConsuLink 2017 Ram 6.7L diesel engine trainer and ConsuLink engine bench Cummins B6.7 EPA 2021 new

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CONSULINK™



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CONSULAB

HYUNDAI ACCENT 1.6L
EM-140S-HY03_035039



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Diesel repair trainer 2-cyl mechanical injection

HV-145S-KB02

Create intrinsic motivation with your students!

The ConsuLab HV-145S-KB02_053277 is a diesel engine repair trainer with a Kubota 2-cylinder mechanically injected diesel engine on a swivel stand. This stand is designed for student instruction and practice covering engine mechanical inspection, disassembly, measurement, and reassembly. The product is designed to facilitate quick and easy setup to run and test each engine in a safe, and controlled environment. It includes two sub-assemblies: a swivel engine stand and a starting station.

What activities do the students perform with this product?

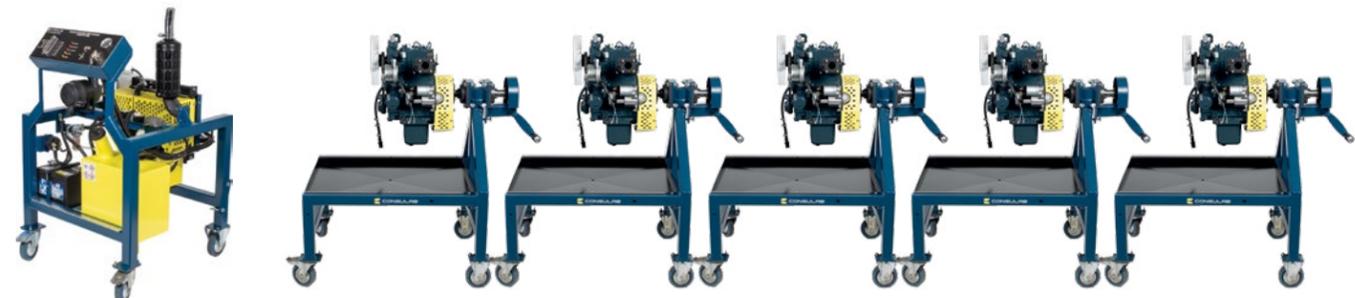
- Engine identification to facilitate the location of operation, service, and parts manuals.
- Engine disassembly and reassembly.
- Engine diagnostics.
- Component measurements.
- Compression testing.
- Engine mechanical diagnostic testing procedures.
- Starting and charging system operation.
- Engine emissions testing.
- Component identification.

Support materials – more than just the trainer!



Kubota Z482

Operation manual	Student Assignments
✓	10



*Recommended ratio (1:5)

Cutaway diesel exhaust aftertreatment system

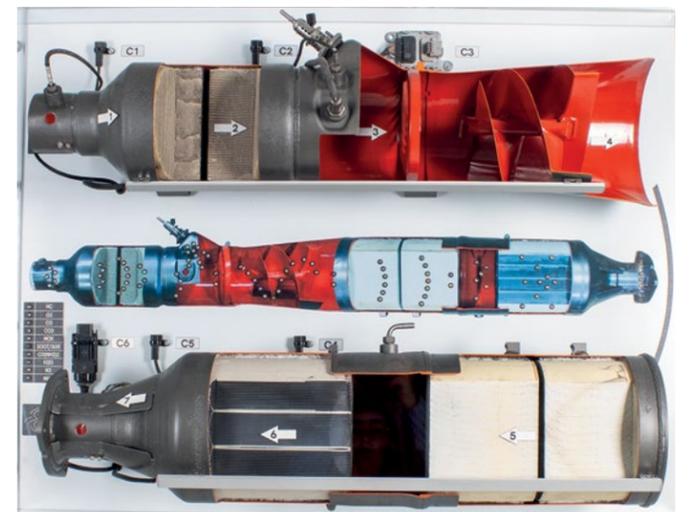
EC-490

- Visualize the stages of aftertreatment & chemical reactions in the exhaust system.
- Shows the flow of exhaust and the changes of gases as they pass through each component.
- Includes all modern systems:
 - DOC (diesel oxidation catalyst).
 - DPF (diesel particulate filter).
 - SCR (selective catalytic reduction).
 - DEF injection (diesel exhaust fluid, urea).
- Every pollutant, gas and molecule represented by a different color LED.
- Adjust the speed and flow of the reactions, go step-by-step or automatic.
- Be able to demonstrate and show the purpose of the DOC in the exhaust.
- Show how the lean NOx trap works in the SCR
- Easy to demonstrate and show the reduction and oxidation process in the exhaust.
- Be able to demonstrate and show the function of UREA in the aftertreatment system.
- Show the maintenance items of the different components.
- Completely enclosed and safe.
- Uses real vehicle catalysts, components & sensors.
- Provides an easy way to explain and demonstrate post-treatment of diesel exhaust pollution.

Operation manual	Student Assignments	Instructors Guide
✓	8	✓



2017 and 2020 Ford F250SD/ F350SD



Heavy truck steering system trainer

HV-130

Complete operating front axle system of a truck in your classroom

Designed for complete, safe and protected steering component accessibility for teaching steering, alignment and service while maximizing lab space utilization and minimizing teacher setup and prep time.



Operation manual	Student Assignments
✓	5



Heavy vehicle HVAC trainer - Freightliner M2

HV-101

A complete standalone HVAC system from a truck.

Built from brand-new components.

- Clear tubing visualizes refrigerant change of state.
- Built in pressure gauges.
- R134A refrigerant.
- Thermostatic expansion valve (TXV).
- Electronically operated mode and blend doors.
- OEM service ports.

Operation manual
✓



Faults 4 ⚡



Cutaway TXV H-block

EC-2100

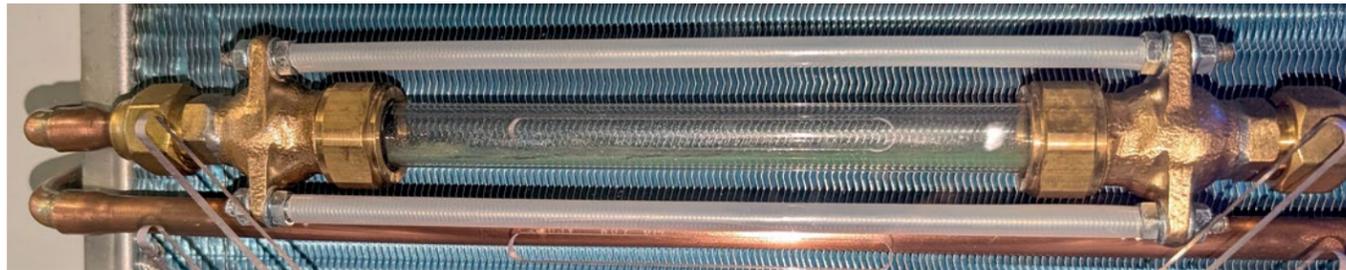
- Allows easy visualization of valve function.



The EM-2000 Series A/C systems trainers

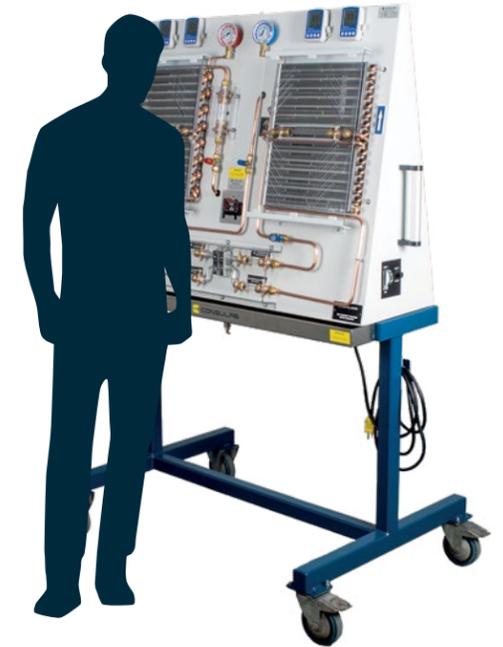
The ConsuLab EM-2000 Air Conditioning trainer are a complete A/C system with unique features designed to enhance the instruction of air conditioning physics.

Seeing refrigerant change of state is believing how it works



- Utilizes a hermetically sealed and internally protected compressor.
- 30 inch wide, fits through a classroom door.
- 15A circuit.
- Larger drip pan.

Operation manual	Student Assignments	Instructors Guide
✓	3	✓

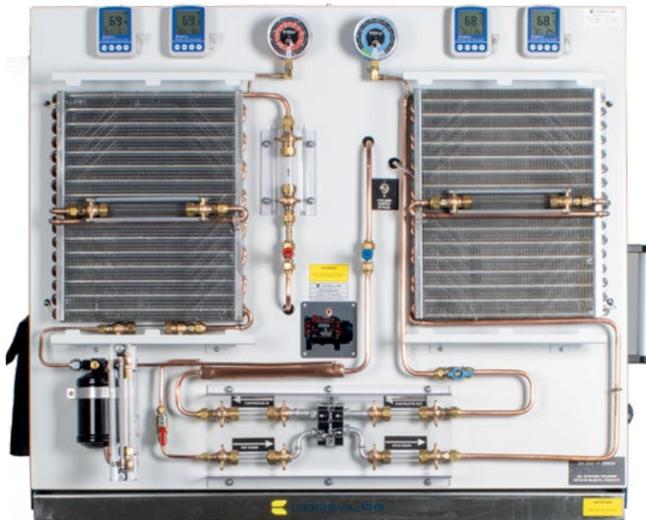


AC system trainer with H-Block, R1234YF

EM-2000-YF

A/C system with orifice tube

EM-2000-OT



- Uses the H-Block TXV design with R1234yf flow control.

- Uses the orifice tube design of refrigerant flow control.

A/C system with TXV

EM-2000-TXV

A/C system with H-block (TXV)

EM-2000-HB



- Uses the TXV (Thermal Expansion Valve) design of refrigerant flow control.

- Uses the H-Block TXV design of refrigerant flow control.



HVAC electronics Moduponent™ kit

MD-4000-24

This trainer brings the fundamentals of HVAC system electrical sensors to the classroom environment. Equip your students with confidence before working on an engine bench or the real vehicle.

- Hands-on learning.
- Automotive HVAC components.
- Saves teacher's time.
- Consistency across multiple units, easy setup.
- Modular design.
- Can be upgraded/changed over time.



Operation manual	Student Assignments	Instructors Guide
✓	14	✓

Basic through advanced hydraulics

FP-MF102

The best and safest hydraulic training system available.

Configurable to meet your needs.

The trainer teaches:

- Fixed displacement pumps.
- Pressure compensated pumps.
- Directional control valves (6)
 - Tandem center
 - Closed center
 - Float center
 - Monoblock
- Relief valves
 - Pilot operated
 - Direct operated
- Hydraulic cylinders – with a load.
- Hydraulic motors – with a load.
- And much more!

Includes curriculum and worksheet.

NO MORE MESS with Flat faced leakless hydraulic couplers.



Model	Description	Workstations	Troubleshooting	Best for
FP-MF102S-H	Basic through advanced hydraulics - single station	One	None	Fundamentals – high schools
FP-MF102D-H	Basic through advanced hydraulics, double station	Two	None	Fundamentals – high schools
FP-MF102S-H-TS	Basic/advanced hydraulics w/TS, single station	One	Yes	Advanced
FP-MF102D-H-TS	Basic/advanced hydraulics w/TS, double station	Two	Yes	Advanced
FP-MF102S-H-TSE	Basic/advanced hydraulics w/touchscreen, single	One	Touchscreen, student-led	Flagship diesel and hydraulic programs
FP-MF102D-H-TSE	Basic/advanced hydraulics w/touchscreen, double	Two	Touchscreen, student-led	Flagship diesel and hydraulic programs

Basic hydraulics

FP-MF100S-BH

- Modular system.
- Plug and play components.
- Teaches fundamentals.
- Configurable to your program.
- For entry level programs.
- Available single or double workstation.



Pump cavitation simulator

FP-MF200-CAV

- Perform live cavitation demonstrations that your student can hear, see and feel.
- Differentiate between cavitation and pseudo-cavitation.
- Clear reservoir shows vortex.
- Pressure gauges show differential.
- Clear tubes show aeration.



Steering system & hydrostatic transmission

FP-MF300-VCLS

- Fit a complete hydrostatic system through any door.
- Teaches Orbitrol steering.
- Available with troubleshooting option.



Hydraulic cylinder rebuild station

FP-MF400-HCTS

Designed to help instructors teach and students learn how to safely and correctly perform the following skills:

- Overhaul a hydraulic cylinder.
- Identify and use the tools needed to overhaul a hydraulic cylinder.
- Inspect the components in a hydraulic cylinder to determine the root cause of a failure.
- Replace piston and gland seals.
- Test a hydraulic cylinder.
- Air bleed a hydraulic cylinder.



Pneumatic bench

FP-MF700S-PN

- Ability to accept almost any, and every, type of pneumatic component, including your own.
- Ability to adapt to any skill level from basics through electro-pneumatics.
- Have industry-standard safety lockout valves: the same ones used in industry so you can teach your students to think safety and work safely.
- Light-weight frame that is compact, rigid, mobile, and extremely durable.
- Handcrafted with pride in the USA with unrivalled quality.
- Ability to grow as your needs and budget grow.



One-Human power basic hydraulics simulator

FP-MF600-1HP

- Boom cylinder permits students to see how pressure responds to changes in surface area when the load is constant.
- Due to the fact the student is the prime mover, the student can see first-hand how changes in pedal speed relate to changes in actuator speed.
- This also allows student to see first-hand how they must respond by exerting more or less power in response to changes in flow and pressure.



Hydrostatic transmission - implement and steering

FP-MF500-HT-TSE

- Simulates real-world hydrostatic drive conditions including uphill, downhill, level, and runaway scenarios to reinforce system behavior under load
- Designed for safe, hands-on training in fluid power and hydrostatic transmission without the risks of live machinery or confined spaces
- Allows instructors to demonstrate diagnostics and system response in a group setting, overcoming the limitations of compact equipment
- Built-in safety features eliminate rotating shafts, hot engine parts, and moving vehicles, making it ideal for classroom and lab environments
- Supports curriculum objectives in troubleshooting, performance analysis, and system design with real-time feedback and control
- Equipped with a 25 HP (15 kW) TEFC electric motor, 1800 RPM, 3-phase 460V (optional 230V), with an available diesel engine version for flexible installation and training environments



Hydraulic Implement and Articulated Steering System Module (optional)

FP-MF500-IS-TSE



Cutaway Over-center, variable displacement pump

FP-VDP-CM



Cutaway Orbitrol steering valve

FP-OSV-CM



Cutaway Pilot-operated pressure relief valve

FP-PORV-CM



Cutaway D08 Directional control valve

FP-DCV-08-CM



Cutaway Axial piston, variable volume pressure-compensated pump

FP-PCP-CM



Cutaway Mobile directional control valve

FP-MDCV-CM



Cutaway Cylinder (double-acting, single-rod)

FP-DAC-CM



Cutaway Mobile directional control valve with load-sense

FP-MDCV-LS-CM



Cutaway Gear pump

FP-GP-CM



Planetary gear set trainer

EM-1100

- Easy student visualization of planetary operation.
- Sun, ring gear and carrier can be held, driven, or allowed to react.
- Demonstration of seven gear ratios is available.
- Tabletop portability.



Driveshaft working angle trainer

EM-200-28

- Variances in speed caused by the universal joint flexing can be audibly demonstrated using toothed wheels.
- Incorporates a slip clutch so the driveshaft can be handled and stopped by hand without injury.
- Different driveshaft angles can be selected using the adjustment system.



Operation manual



Cutaway Allison transmission - 1000 series

EC-1106-01

- All clutches and bands activated by air pressure.
- Demonstrate all transmission speeds.

Operation manual ✓



Allison 1000 Series

Cutaway Allison transmission - 3000 series

EC-1106-03

- Driven by hand crank.
- Allows visualization of gear changes, planetary gear sets and clutches.
- Gear changes can be made using regulated air pressure and provided controls.

Operation manual ✓



Allison 3000 Series

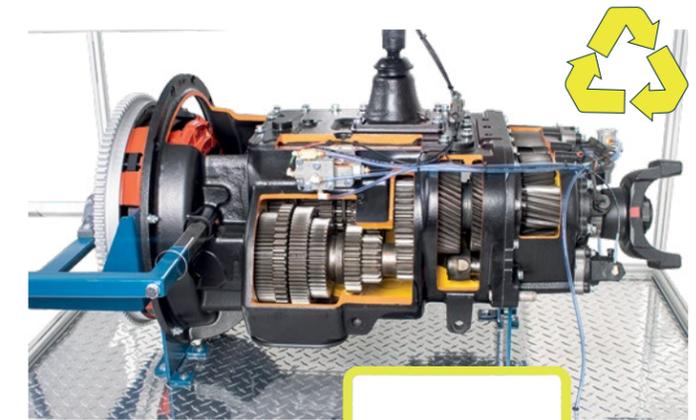
Cutaway Eaton transmission

EC-1108

The EC-1108 cutaway Eaton transmission has been designed for teaching Eaton heavy-duty transmission theory and operation. This model provides several forward speeds and reverses, consisting of a front section and an auxiliary section. The auxiliary section contains LO and HI range ratios, and the L and H splitter gear ratios. When in HI range, the gear ratios can be split by using the splitter control button.

- Driven by hand crank.
- Allows visualization of gear changes.
- Gear changes can be made using regulated air pressure and provided controls.

Operation manual ✓



Eaton-Fuller 13-speed

Main Features of ConsuLab products

- Mobility
- Short set-up time
- Circuit components arranged in logical order
- Components and corresponding symbols are visible
- Occupies only a small area of the work bench
- Easily stored
- Additional components may be added to modules
- Designed with student safety in mind
- In tune with industry practices

Limited warranty

ConsuLab warrants that all systems which it manufactures are free from defects in workmanship and materials, provided that they are used under normal conditions and within the limits of the relevant specifications. This warranty is effective for one year from the date of delivery, and excludes any other warranty, whether oral or implied, such as (but not restricted to) any warranty as to fitness for a particular use.

ConsuLab will repair or replace at its sole discretion any part found to be defective during the period of the warranty. The liability of ConsuLab is limited to repairing or replacing parts in the system found to be defective and under no circumstances will ConsuLab assume responsibility for losses or other expenses which arise directly or indirectly from any malfunction of the system.

In no circumstances can ConsuLab be held liable for any personal injury or material loss or damage to any person or equipment, which is caused by any defect in the system other than as covered in this warranty. This warranty is not transferable. Any unauthorized modification in the system, or any falsification or removal of the serial number will immediately render this warranty null and void.

Catalog Contents

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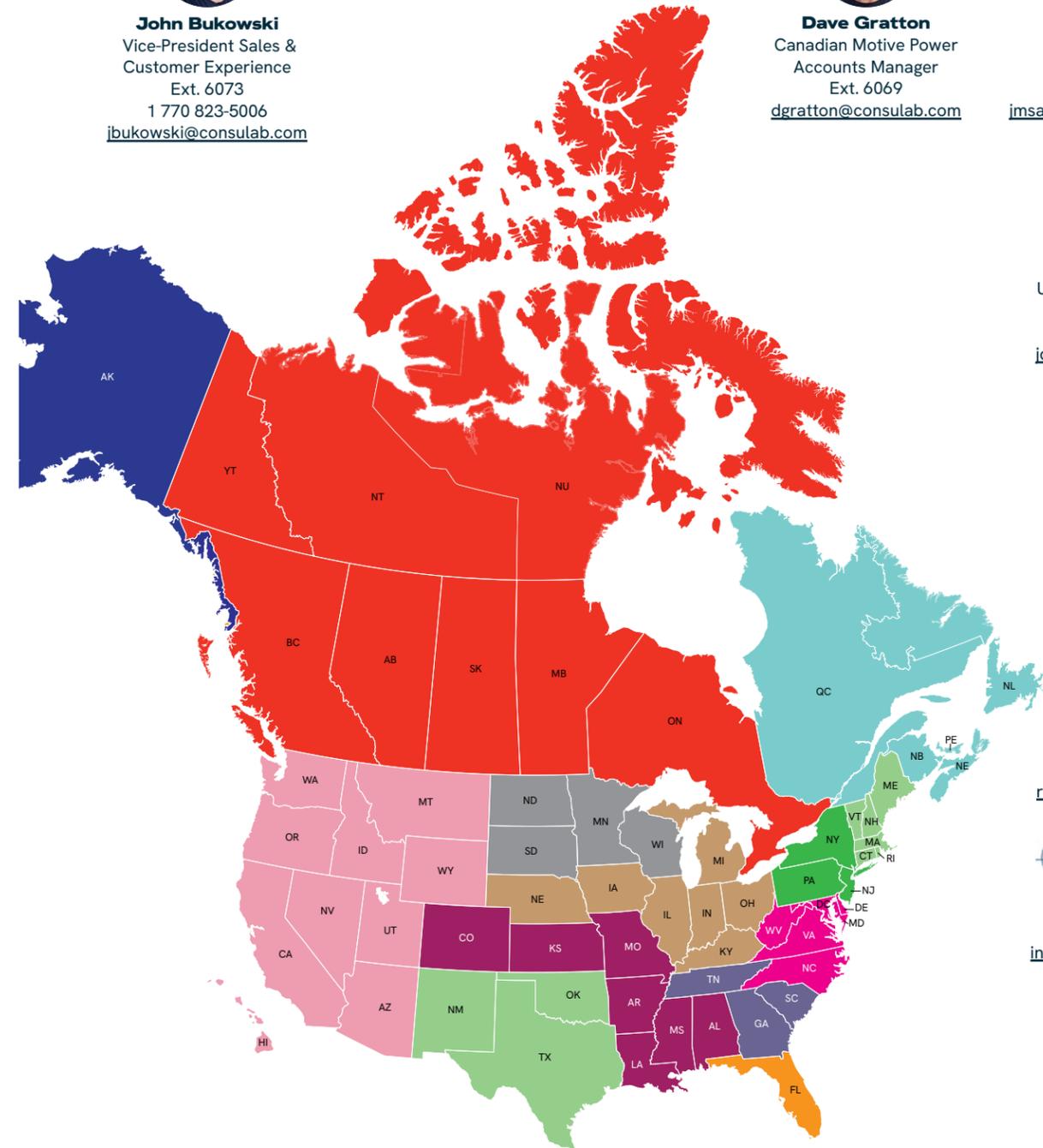
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