

Propane Autogas

Incidents, Accidents & Lessons Learned

*PATF Meeting
June 2017*

Primary Causes of Automotive Incidents & Accidents

- Mechanical failures.
- Electrical failures.
- Poor maintenance practices.
- Intentional damage – vandalism and arson.
- Human error.

Conventional Fuels Perspective

SCHOOL BUS THERMAL EVENTS

Oregon District Fixing School Buses After 2 Fires

Thomas McMahon | | Posted on March 14, 2017



Following two recent bus fires, Klamath County School District sidelined 14 buses of the same model and year. Now the district is making changes to wires and hydraulic lines. Photo courtesy Klamath CSD

KLAMATH FALLS, Ore. — A school district here is making mechanical changes in more than a dozen school buses after experiencing two bus fires in recent months.

On Dec. 14, a Klamath County School District bus caught fire after it had finished its route. No students were on or near the bus at the time. The district launched an investigation into the cause of the fire.

Less than two months later, on Feb. 7, another Klamath school bus caught fire. The bus was of the same make, model, and year as the bus in the

December incident. Again, there were no students on board.

Students OK aft Spartanburg Co.

WSPA Staff
Published: May 9, 2017, 7:39 am



DUNCAN, S.C. (WSPA) – Stud Tuesday morning, according



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1080p HD



RT SERIES AC Freeblow Rooftop Systems for School

land on September 12, 2016 LOCAL

@ Email



on board caught fire Monday in and without any injuries, reports CBS Baltimore.

Propane Autogas Facts

- 200,000+/- U. S. vehicles.
- 13,000 +/- U. S. school buses.
 - Transporting approximately 800,000 students daily.
- To date, no catastrophic accidents or incidents caused caused by our fuel or fuel systems.
- The media tends to vilify propane autogas regardless of the cause of the incident or accident.



Island Explorer Bus
Ellsworth, Maine
July 2011

Blue Bird Commercial Bus
Fuel system unknown – WP 5.9L?

Cause – undetermined – no
indication propane was a factor.

No injuries.

East Ridge, Georgia
U-Haul Location
April 2013
Blue Bird Vision

Causes - mechanical issues and driver error – failing to notice warning lights and smoke coming from front axle area.

No injuries reported

Propane fuel system performed as designed.

Blast from propane-powered Bluebird school bus shakes East Ridge

August 19th, 2013 | by Alex Green | in Local Regional News | Read Time: 1 min.



A propane powered bus sits burnt out after it exploded at 5618 Ringgold Road on Sunday.

Photo by C. B. Schmelzer /Times Free Press.

A brand-new, propane-powered Bluebird school bus went up in a blast of flame Sunday just feet from a propane fueling



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Report: Propane leaks from Shelton school bus inside garage

By Shelton Herald on September 15, 2014 in [Lead News](#), [Police & Fire](#) - 0 Comments

About author



Shelton Herald

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The incident at the school bus maintenance facility on Riverdale Avenue in Shelton involves a school bus that is leaking propane.

Nick Verdicchio, Shelton Fire Department spokesman, said it appears the bus was inside the garage undergoing maintenance when some type of leak occurred. "They're now trying to control the leak," he said.

Verdicchio stressed no children are involved in the incident since the school bus was not in use at the time.

One of the city's new propane-powered school buses.

One of the city's new propane-powered school buses. (File photo)

It's unclear the amount of propane that may have leaked.

Crews from Echo Hose Hook & Ladder responded to the scene just before 1:30 p.m. on Monday.

The bus garage recently was renovated to take care of the city's new school bus fleet, which operates on propane. There also is a propane filling station in the area for the buses, which are stored across the street in an outdoor parking lot.

The maintenance garage and bus storage lot are near the Shelton Animal Shelter and Water Pollution Control Authority treatment facility.

Shelton Public Schools
Shelton, Connecticut
September 2014

Blue Bird Vision

Cause of propane leak is unknown.

Incident was contained by staff and local fire fighters.

No injuries reported.

Home / News / Articles / Three-alarm fire at Turano Baking Company garage in Oak Park

Three-alarm fire at Turano Baking Company garage in Oak Park

Tuesday, November 11th, 2014 3:11 PM

Updated: Tuesday, November 11th, 2014 5:22 PM

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The scene down Roosevelt Road from East Avenue of fire fighters battle flames and thick smoke coming from the Turano Bakery garage. (David Pierini/staff photographer)

Turano Baking Company
Oak Park, Illinois
November 2014

AAF Bi-fuel system.

Cause - human error – mechanics failed to evacuate the propane fuel tank prior to initiating repairs.

Suspect fuel tanks and installation.

Four persons injured.

Explosion at school bus garage in Rochester injures 1, damages 5 buses

Image Gallery

2 PHOTOS



Photo Courtesy: Rochester Fire Department

First Student
Rochester, Minnesota
February 2017

Thomas Minotour Type A

Cause – mechanics failed to evacuate fuel tank prior to initiating diagnosis and repairs. Multiple ignition sources in vicinity.

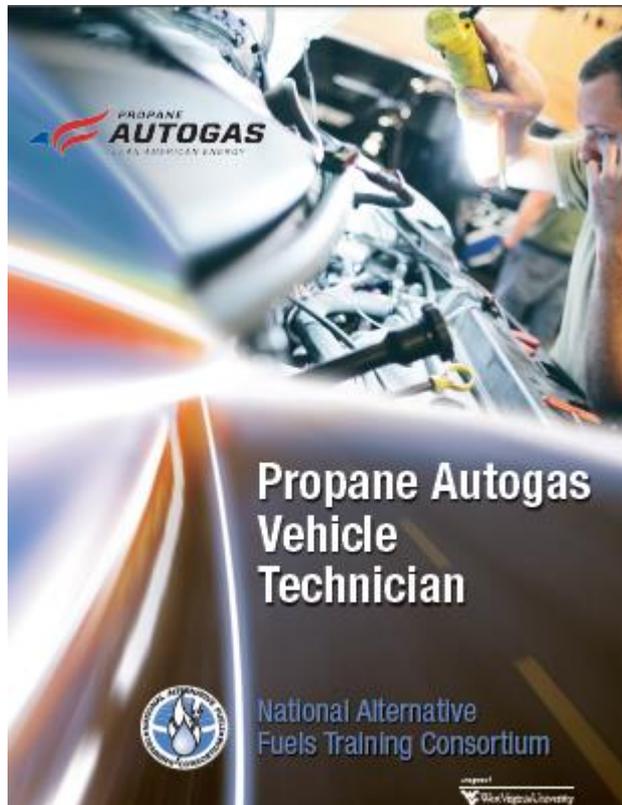
One injured.

Questionable training for staff.

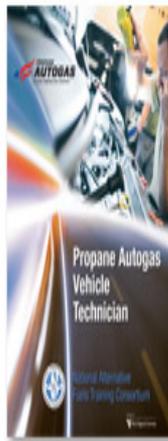
Lessons Learned

- Education, re-education and comprehensive training are perpetual requirements.
- Mechanical and electrical malfunctions as well as human error cannot be eliminated.
- Raise awareness about EPA & CARB certified systems.
- Our industry must proactively promote and defend our propane autogas safety record.

PERC TRAINING & RESOURCES



Free Propane Autogas Technician Training



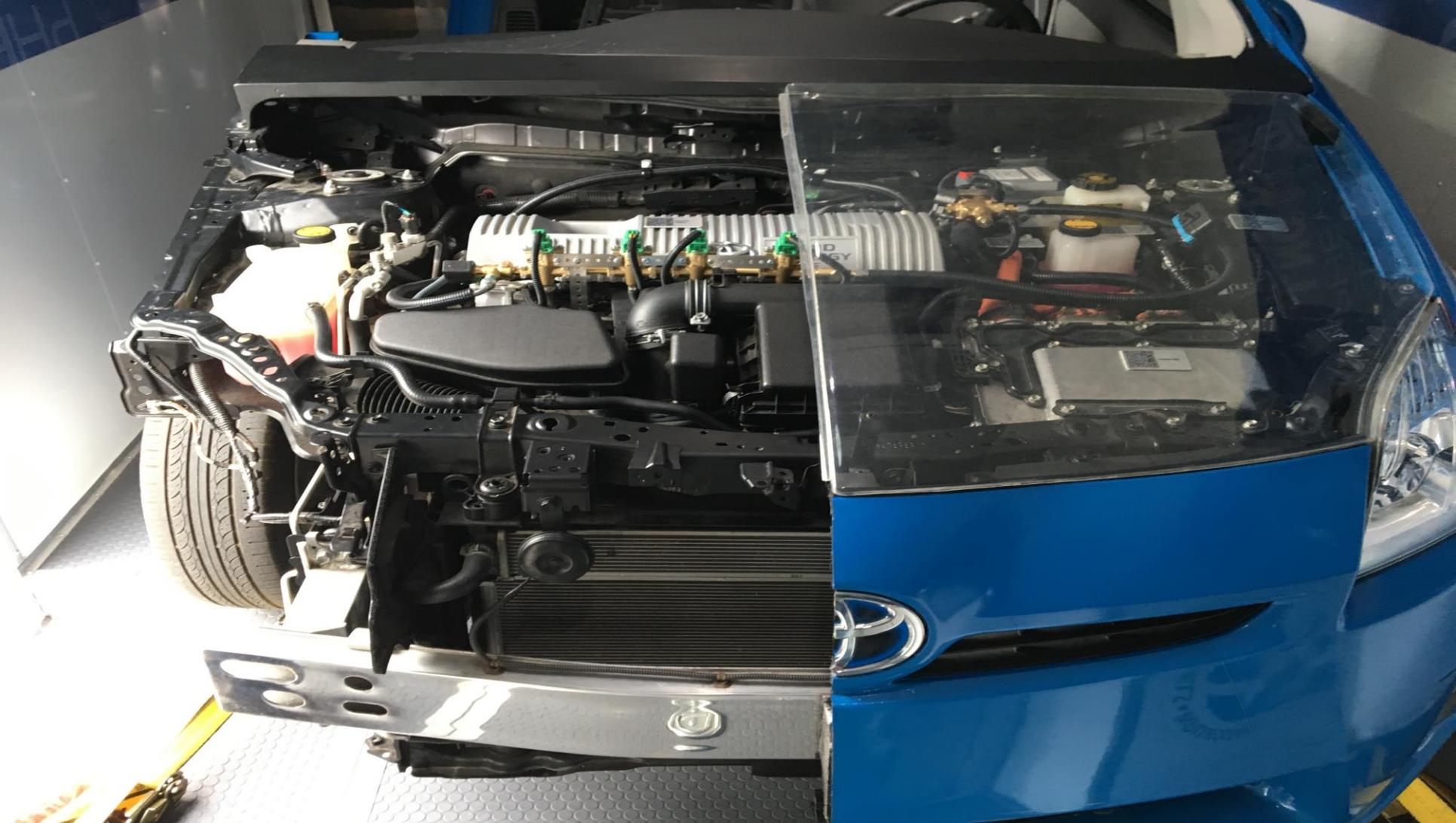
The Propane Education & Research Council funded the development of propane autogas training for vehicle technicians in partnership with the **National Alternative Fuels Training Consortium** (NAFTC). Technicians are invited to attend the training at no cost.

The three-day, comprehensive course covers propane characteristics, fuel systems, vehicle compatibility, system components, and safety. Participants will walk away with an in-depth understanding of servicing and maintaining propane autogas vehicles, plus

a free copy of the new propane autogas technician training manual.

To see if a free training session is coming to your area, [view the full schedule](#).

http://naftc.wvu.edu/course_workshop_information/training_schedule



First Responder Training



International Association of Fire Chiefs



You are logged in as: Stuart Flatow



LESSON PROGRESS 0/2

STATUS: IN PROGRESS

Resources

Terms & Conditions

Propane Emergencies

The IAFC and Propane Industry have created an online training based upon the text Propane Emergencies... [More](#)

Tags Propane Featured

Propane Emergencies Modules 1-5

▶ Propane Emergencies **Launch**

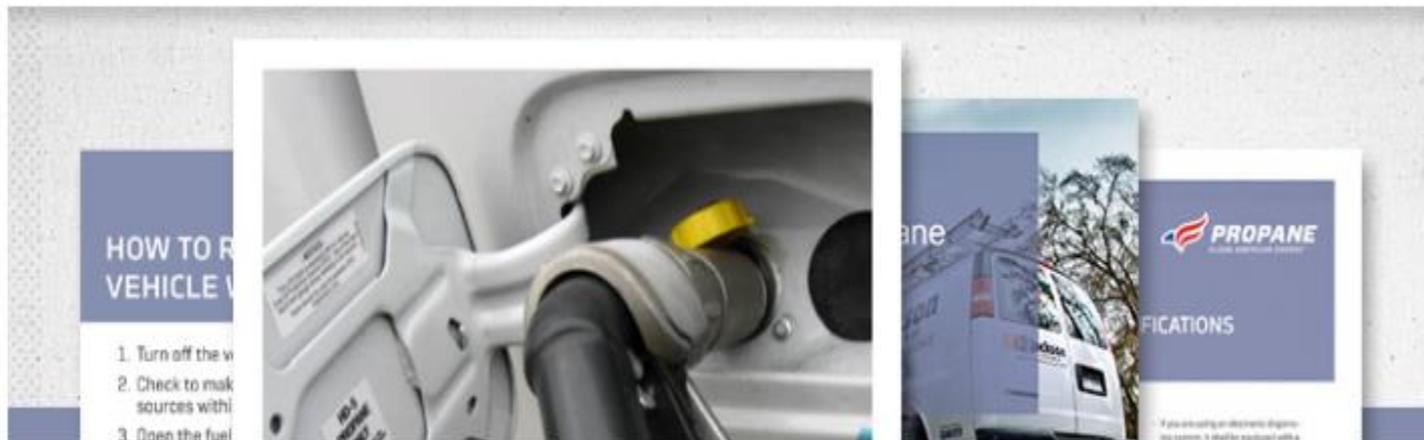
Evaluation

! Course Evaluation **Launch**

Privacy Policy Language: English

Dispensing Propane Autogas Training Program

This program was developed to train individuals who fuel propane-autogas-powered vehicles for fleet or other commercial operations.



[Download Training Manual](#)

[Download Quick Reference Card](#)

[Download Instructor Guide — PowerPoint Presentation](#)

[Download Dispenser Specifications](#)



PROPANE AUTOGAS

REPAIR & MAINTENANCE FACILITY REQUIREMENTS

 PROPANE EDUCATION & RESEARCH COUNCIL

 PROPANE
AUTOGAS
CLEAN ADVANCED ENERGY

PROPANE INDUSTRY BOBTAIL SPECIFICATION

BOBTAIL TRUCK SPECIFICATION



CONVENTIONAL CAB & CHASSIS

Straight Truck Provision for Pickup and Delivery Short Haul Service
 Truck Body Length: 26' 5" - 28' 7" / 31.7' - 34.0 Inches
 8 Percent Maximum Exposed Grade
 - Typical operation on most roads
 - Steep inclines up to 20 percent for some routes

In-Transit Terrain Road Surface
 - 70 - 100 percent smooth concrete or asphalt pavement
 - 0 - 30 percent dirt or gravel

WHEELBASE & FRAME

Wheelbase: 134" - 158 Inches
 Frame Length Overall: 338 Inches
 Frame Rails: Provider Chassis Steel Rails 11, 9x13 - 1, 9x14 - 15 / 16 Inch Frame (8.73x14x27.73x14x15.9x13.25x14 inch) 12K/15

Clear Frame Rail from Transmission PTO Opening to 76 Inches Back of Cab

Back of Cab to Rear Suspension Cvt. (CA): 174" - 138 Inches

Dashboard Inside Below LH Rail (No air tanks within area from 42 to 76 inches BOC)

Rear Frame Overhang: 66" - 101 Inches

Three-Place 14 Inch Chromed Steel Bumper with Collapsible Ends

Rear Tow Hook - Frame Mounted

BARREL

3,000 Gallons Length: 169 Inches /
 Height: 79" - 82.5 Inches / CA 131"

3,000 Gallons Length: 169 - 171 Inches /
 Height: 79" - 82.5 Inches / CA 131"

GROSS VEHICLE WEIGHT CAPACITY: 33,000 LBS.

WHEELS

22.5x8.25 Asymetric Steel Pattern Standard
 OPTIONS
 - Polished aluminum
 - Hub pilot, 100 lugs

TIRES

Standard: 11.0PZ.5
 OPTIONS
 - 205/75R low profile

TRANSMISSION

Allison 3,000 RDS Automatic Transmission with PTO Provision with Auto Neutral
 OPTIONS
 - 3,000 RDS Automatic Transmission with PTO Provision with Auto Neutral

Transmission In-Rear

BOBTAIL TRUCK SPECIFICATION



ENGINE

260 HP @ 2,000 RPM
 OPTIONS
 - 270 HP @ 2,000 RPM
 - 300 HP @ 2,000 RPM
 - 330 HP @ 4,100 RPM (20% companion)

Torque
 - 700 lb.ft. @ 1,300 RPM
 - 880 lb.ft. @ 1,400 RPM
 - 1,000 lb.ft. @ 1,400 RPM

Governor: 70 MPH road speed limit
 OPTIONS
 - 65 MPH road speed limit

PTO

Chassis 2700NHP-8030 / C8 (Check 50M)
 OPTIONS
 - Manual H24

Engine RPM Limit: 350 - 1,000 RPM

Brake Override: Service Brake Applied

PTO RPM with Cruise Set Switch:
 900 - 1,000 RPM

PTO RPM with Cruise Resume Switch: 900 RPM

PTO Idle Control Vehicle Speed: 5 MPH
 Set cancel with disengagement of brakes and transmission in gear

PTO Governor Ramp Rate: 200 RPM/Sec
 - Optional ON/OFF with no ramp rate

PTO Minimum RPM: 800 RPM
 - Optional ON/OFF with no minimum RPM setting

AIR COMPRESSOR

18.7 CFM with Inertial Safety Valve
 OPTIONS
 - 13.2 CFM with Inertial Safety Valve

BATTERIES

CCA: 2 - 1,200
 Optional CCA range: 1,400 - 1,400 - 2,850

Single Battery Box, Frame Mounted,
 LH or RH Driver Cab

Wire ground return for battery cables with additional frame ground return required
 master cutoff switch. Cite Horse manual switch, back of cab, frame mounted, labeled for identification

Options
 - Cite Inertial manual switch, battery box mount, labeled for identification
 - Electronic master cutoff switch control, mounted interior driver side on floor area near driver's door, labeled for identification
 - Jump assist, frame mounted, labeled for identification

EXHAUST SYSTEM

Shields rear exhaust system
 Curved horizontal tailpipe, RH or LH mount, exiting forward of rear wheels

Options
 - Curved horizontal tailpipe, RH or LH mount, exiting behind rear wheels
 - Vertical discharge mounted curb side of cab

AXLES & SUSPENSION

Front Axle Load: 12,000 - 13,000 lbs.
 Maximums from vehicle bushings
 - Front shock absorbers

Rear Drive Axle(s): 20,000 - 21,000 lbs.
 - Ratio(s): 5.13 - 5.25 - 5.28 - 5.37 - 5.50
 6.14 - 6.30 automatic / 4.33 manual
 Rear shock absorbers

Driver controlled differential lock - axle lock

BRAKES

Air Disk Brake Package
 WABCO SS-1,200 Plus Air Dryer with Integral Air Governor and Heater, Dryer Mounted Under Hood

Options
 - Air drum brake package
 - Engine brake assist system

Depends on air dryer with integral air governor and heater, mounted to air tank reservoir in driver step area

ADDITIONAL PROPANE INDUSTRY OPTIONS

Enhanced Stability Control for rollover protection

Lane Departure Avoidance

Collision Avoidance

Rear Backing Camera

Four Auxiliary Reducible Switches, mounted in dash display, back of for identification, connected behind the cab or end of frame

Two Wiring Harnesses:

(1) Multi-function engine connector
 (2) Remote throttle and engine activation functions

Body Manufacturer Electrical Junction Box, sealed to protect against moisture and corrosion, mounted under hood or back of cab for easy access to wiring and connections

Rear Facing Spotlights

Engine Interface

Heated and Power Mirrors

Right Fender Mounted Mirror

Specification Committee

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 Eddie Waldrop
 Bill Platz
 Steve Moore
 Mike Abrams
 Mark Goldsmith
 Ken Green
 Jay Hilliard
 Julie Johnson
 Mark Mosher
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The Autogas Refuel is a quarterly newsletter tailored to transportation professionals interested in propane autogas. Subscribe to The Autogas Refuel for emissions news, propane autogas case studies, videos, and more.

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TECHNICAL SAFETY & SERVICE BULLETIN 516

Stäubli GBV 14 nozzles – for Autoogas (LPG) vehicles

Application:

This bulletin applies to all of the Stäubli GBV 14 nozzles distributed by Blossman Services. If you are not the end user of this product, as is the case with our authorized resellers, please communicate this information to all parties responsible for the proper care and servicing of this equipment.

There are several Stäubli documents attached here and not all may directly apply to your nozzle. This bulletin is intended to make the understanding of these documents simpler.

*****PLEASE NOTE: YOUR IMMEDIATE ATTENTION IS REQUIRED FOR THE CONTINUED SAFE AND RELIABLE OPERATION OF THESE NOZZLES!**

Identification:

There are two types of Stäubli nozzles distributed by Blossman Services:

- UL approved (without a locking mechanism on the trigger)
- Non-UL approved (with a locking mechanism on the trigger)

Aside from having a mechanism to lock the trigger in the "dispensing fuel" position, these two nozzles are essentially same in all other respects. Although separate documents are included for each type, at this time, the maintenance and service procedures are the same for both.

Three of these procedures require your immediate attention:

Maintenance Procedure One - Lubrication:

Blossman Services is recommending that the Stäubli nozzle be lubricated no less than once per month with:

WD-40 Specialist Spray and Stay Gel Lubricant



More applications of lubricant may be required in high traffic applications! Please refer to the following Stäubli documents for proper application and lubricant specifications:

- Stäubli GBV14 Instructions RV1030100E (non-UL type)
- Stäubli GBV14 Instructions RV1030600C (UL type)
- Stäubli TDS GBV14 Jamming Issue Data sheet

TECHNICAL SAFETY & SERVICE BULLETIN 516

Stäubli GBV 14 nozzles – for Autoogas (LPG) vehicles

Maintenance Procedure Two – Front Screw check:

Blossman Services is recommending that the Stäubli nozzle's front screws be checked regularly for proper tightness. If any screws are found to have loosened, they should be removed and reinstalled, one at a time, adding a drop of Loctite® Threadlocker Blue 242® before tightening to 3nm (44in/lbs.).

An inexpensive tool can be found [here](#):

Do not over torque these screws!



IF A NOZZLE BECOMES DIFFICULT TO CONNECT OR DISCONNECT FROM A VEHICLE'S FILL PORT, LUBRICATION AND THIS SCREW TORQUE CHECK IS THE FIRST COURSE OF ACTION.

Please refer to the following Stäubli documents for proper seal and spring replacement procedures:

- Stäubli GBV14 Instructions RV1030100E (non-UL type)
- Stäubli GBV14 Instructions RV1030600C (UL type)

Maintenance Procedure Three – Seal and spring replacement:

Blossman Services is recommending that the Stäubli nozzle's front seal and locking sleeve spring be replaced annually. Please refer to the following Stäubli documents for proper seal and spring replacement procedures:

- Stäubli GBV14 Instructions RV1030100E (non-UL type)
- Stäubli GBV14 Instructions RV1030600C (UL type)

Lessons Learned

- Education and re-education are ongoing requirements
- Comprehensive up to date training is a requirement.
- Mechanical and electrical malfunctions are inevitable.
- Human error cannot be eliminated.
- Propane autogas is safe fuel for all vehicles.

MICHAEL TAYLOR

DIRECTOR OF AUTOGAS BUSINESS DEVELOPMENT
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