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*Performance, Reliability, Commitment.*

# **WHAT YOU DON'T KNOW COULD BURN YOU!**

*How To Avoid The Unknown Dangers Of Handling  
Fuel In Your Shop*

## If you don't think worse things can happen...think again:

### HEADLINE: One injured in Johnson City auto repair shop fire and explosion.

"According to the Johnson City Press a fire at Auto Repair was caused by an exploding gas tank...One mechanic was injured in the blaze...The fire started when a gas tank fell from a car and ruptured...and the gas somehow ignited."



### HEADLINE: Fire heavily guts Broadway garage.

"An intense fire late Thursday destroyed most of a downtown car repair garage that has been owned by the same family for decades. Mechanics were replacing the gas tank on a car...when a spark from a welder ignited gasoline fumes."

## And if you don't think OSHA is paying attention...think again:

### OSHA Citation - Section 5(a)(1) of the Occupational Safety and Health Act of 1970:

*"Employees were exposed to burns from the ignition of gasoline vapor while transferring gasoline from a vehicle fuel tank to a container located on a makeshift stand when an unapproved drop light fell into spilled gasoline".* **Fine \$6,000.**

### OSHA Citation - Section 5(a)(1) of the Occupational Safety and Health Act of 1970:

*"Service Department: Employees who transfer gasoline from automobile fuel tanks during operations such as, but not limited to, fuel pump repairs, did not use the appropriate equipment, such as but not limited to, an approved gas caddy..."* **Fine \$13,078.**

Obviously no one wants or expects these things to happen. But if you are doing auto repairs you're probably servicing or replacing fuel pumps. And that can require the gasoline tank to be drained and/or removed.

If you're not following proper procedures or using the proper equipment, then you too could be in the headlines, or writing a check to OSHA..

## What You Need To Know

Today, gasoline tanks are frequently removed or drained to replace the fuel pump, service the fuel pump, replace the tank because of damage or to remove contaminated fuel. These services can be performed safely and efficiently if you know and follow proper procedures and use approved and certified equipment.

The purpose of this guide is to educate you on the best practices for handling gasoline and other fuels in your service department. Plus it will bring you up to speed on the equipment available, the certification requirements, and what that means to you and your operation.

# Safety

The biggest danger with gasoline are the vapors. They are highly volatile. Not that gasoline spilled on the shop floor isn't a problem. But gasoline vapors are heavier than air and can travel quite a distance through the shop. And it doesn't take much to ignite them - a drop light or extension cord, or a spark from a tool, grinding or welding, or even smoking. That is why OSHA regulations apply.

## OSHA

That's right. OSHA has regulations that cover the handling of gasoline in an auto repair shop. *It's OSHA Regulation 1910.106 - Flammable and Combustible Liquids.*

**This regulation makes it “the employer’s responsibility to protect its employees from workplace hazards through providing appropriate methods of hazard control.”**

In other words - make sure your employees are trained in the proper methods of handling gasoline and that the proper “OSHA approved” equipment is available for them to use.

## Best Practices

The proper methods and/or procedures for handling\* gasoline are more common sense than anything else. Let's forget the equipment for the moment and look at what we'll call “best practices”.

### Ignition Source Control

- Make sure the work area is well ventilated. Do the work outside of the building if possible.
- “NO SMOKING” signs should be posted and enforced.
- Replace incandescent trouble lights with fluorescent lights.
- Prohibit any welding, grinding, etc. within 20 feet or less of where the tank is being serviced.
- Keep multipurpose fire extinguishers available and near the work area.

### Fuel Removal and Storage

- The work should only be performed by employees with sufficient skill and training.
- Before doing any work on or in a gasoline tank - completely drain the fuel.
- Only use a portable pump and storage tank (gas caddy) that is Underwriters' Laboratory listed or Factory Mutual approved.
- Gasoline drained from the tank should only be stored in approved storage containers.
- Never drain or store fuel in an open container. Siphoning by mouth should be strictly prohibited.
- If the tank needs to be removed from the vehicle, use a good jack with an adapter designed to support the tank.
- Before beginning any repair, relieve the fuel system pressure and disconnect the battery.

**Cover these procedures with your employees and make sure they are being followed.**

*\*(By handling” we mean - (1) removal of fuel from the gasoline tank; (2) storage the fuel; and (3) refilling the gasoline tank.)*

# OSHA Approved Equipment

What is “OSHA approved equipment” and how does it benefit you?

Under OSHA regulation 29 CFR 1910.106- OSHA approved equipment must be tested, certified, and listed by a National Testing Laboratory, based on an approval standard of that lab. These labs include Universal Underwriters (UL) and Factory Mutual (FM). After July 2010, Listed products will only carry the UL designation.

For the purpose of this guide we will refer to the “approved equipment” as a gas caddy.

## Gas Caddy

A gas caddy is a portable steel tank with a portable pump and hose attached. Its primary purpose is to safely transfer fuel from the gasoline tank; safely store the fuel during the repair process; and, safely transfer the fuel back into the gasoline tank after the repair is made.

This definition might seem over simplified but that is basically the function of a gas caddy. But there are two things to keep in mind:

## Safety And Efficiency

In order to obtain UL certification, a gas caddy is tested for stability, strength, and fire safety. You certainly don't want to take 15-gallons of gasoline out of a vehicle and then worry about the caddy splitting apart, or falling over or leaking.

That's why UL approval is important. It gives you the assurance that the gas caddy has been built to OSHA approved standards. The design of these gas caddies requires flame arresters on the openings, grounding cables, non sparking skids, and fill gauges. And the pump must be constructed to prevent fumes leaking from the interior of the tank.

They are vigorously tested for leakage, rupture, stability, abuse and endurance. All are tests that make safety the number one priority.

In addition to the physical tests, an examination of manufacturing facilities and quality control procedures is conducted to evaluate the manufacturer's ability to produce the product that has been tested.

**How do you know if a gas caddy is UL or FM approved?** Look for one of these markings on the product and owners' manual:

**UL approved equipment will have this mark:**



**Products manufactured prior to July 2010, may carry the FM logo shown:**



# Efficiency

A gas caddy can make draining or filling a fuel tank much faster and easier (and safer) than any other method. This speeds the repair time which means more profit.

Let's look at the task of draining 15 gallons of fuel from a vehicle.

## Without a gas caddy:

**Option 1** - if you're lucky enough the tank will have a drain plug. Raise the car a couple of feet off of the ground; slide a catch pan or bucket under the tank; remove the plug and let the gasoline drain back into the bucket. And make sure the bucket is clean. You don't want to contaminate the gasoline before it is put back in the vehicle. That could cause more problems or negate the repair you just made.

**Option 2** - without a drain plug in the tank you might be able to slide a hose down the filler neck and siphon the gas out into a drum or pan. This could take awhile. Even at 1-gallon a minute you are probably looking at a half hour. Worry about getting the fuel back into the tank later.

**Option 3** - raise the vehicle and disconnect the tank, fuel lines, filler neck, etc. Get two or three fellow employees (it probably weighs 200+ lbs.) to grab the tank and lower it to the ground. Find a way to remove the fuel and then proceed with the repair.

Obviously these examples are a little extreme - but not far from what happens in some shops. And definitely not safe or efficient. Remember the headlines?



Draining gasoline into an open container is not safe or efficient and not a recommended practice.

## With a gas caddy:

In some cases, not all, you can feed the hose from the pump down the filler neck. If you can't get the hose down the filler neck then you can raise the vehicle and remove the filler neck from the tank and slide the hose into the tank that way.

Turn the pump handle and begin transferring the fuel from the tank and into the gas caddy. The pump should transfer at a rate of 7-gallons a minute. So in 2 or 3 minutes, you are ready to go. To get the fuel back into the tank after the repair - reverse the pump direction.





# Gas Caddies

Gas caddies are available from several manufacturers in sizes ranging from 25-gallons to 250-gallons.

The “approved” equipment we are discussing here are gas caddies constructed of steel - not to be confused with other gas caddies available made of molded plastic. These plastic caddies do not meet OSHA requirements and are not designed for professional use - but are used by homeowners and hobbyists for transporting and dispensing small amounts of gasoline and other fuels.



30-Gallon Gas Caddy for use on cars and light trucks.



250-Gallon Gas Caddy typically used for large vehicles and salvage yards.

When purchasing a gas caddy consider the following:

## FM or UL

Make sure it is UL or FM approved. Both the tank and pump carry separate UL and/or FM approvals. There are steel gas caddies on the market that are not UL or FM approved - so make sure the FM or UL mark is on the tank and pump.

## Size

Determine the size you need based on the vehicles you normally service. The 25 or 30 gallon gas caddies are the most popular sizes for normal repair where fuel is removed from the tank and then returned after the repair is made. If your primary purpose is to remove fuel from the tank and store it, like in a salvage yard, then a larger capacity is probably needed.

## Type of Pump

Gas caddies are available with two types of pumps - hand operated and air operated. Your choice depends on how fast you need to transfer fuel in and out, and how much physical effort you want to exert.

A good manual pump should transfer about seven gallons a minute when turning at a normal rate. An air operated pump will transfer twice that amount.

Again your choice depends on how much fuel you are moving and how often.

## Type of Fuel

Obviously you can't mix fuels in the same tank - like gasoline and diesel - so the gas caddy you purchase must be dedicated to a specific type of fuel.

If you plan on servicing cars that use E85 ethanol make sure the gas caddy is E85 compatible. Ethanol is very corrosive and can cause damage to a non-compatible caddy. It can also cause fuel contamination.

## Filters

To avoid putting contaminated fuel back into the vehicle you just serviced, using a gas caddy with a filtration system is a good idea.

In-line filters are standard equipment on some gas caddies. Filter kits can be purchased separately as an add-on accessory. Some systems only filter the fuel one-way and others are designed to filter the fuel both from the tank to the caddy and from the caddy to the tank.



## Fuel Tank Adapters

To make removing a fuel tank from a vehicle safer and easier consider purchasing a fuel tank adapter. This adapter sits on top of your transmission jack. You can strap the tank to the adapter and safely lower it to the ground.



## Conclusion

With a commitment to safety and a modest investment in equipment, you can have a safe workplace, comply with OSHA regulations, and become a more efficient and profitable business. So...

- Invest in a FM or UL approved gas caddy and a fuel tank adapter - and make sure your techs know how to use them.
- Make safety the number one priority by training your employees in the proper methods of handling gasoline.

**For Information On Gas Caddies Contact Your Local Equipment Distributor Or Log On To  
[www.fuelchief.com](http://www.fuelchief.com) Or [www.johndow.com](http://www.johndow.com)**

**Information On OSHA Regulations Can Be Found On  
[www.OSHA.gov](http://www.OSHA.gov)**

**Check the UL Approvals Guide at  
[www.UL.com](http://www.UL.com)**

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