Cycle Tank Repair & Restoration
A Do It Yourself Guide for the Home Restorer
By Mike Brown
DIY Gas Tank Repair was written based on procedures repeatedly tested/employed over 10 years for use for successful repair and restoration of common motorcycle gas tank problems. However, the author/publisher assumes no responsibility nor assures your safety/success for these procedures. It is the reader’s sole responsibility to judge whether such repairs are prudent and safe for each individual circumstance and application and whether specific procedures are within the skill level of the repair technician. Consequently, no warranty and/or liability is expressed or implied. Gas tanks, due to their very nature as storage devices for highly volatile fuel, can be extremely dangerous around heat and flames, both of which will be employed in this manual for some repairs. Extreme care must be taken or fatal results are possible.

Be Clean or Be Gone

If you plan to use any sort of heat on a gas tank, it must be scrupulously cleaned and flushed. Use a strong detergent and lots of water pressure to flush the tank after the petcocks have been removed. Let the tank sit until it’s perfectly dry. Then flush it again and allow for a second drying. If it’s been plastic coated, this must be removed before flushing with either acetone or MEK and then again carefully cleaned and flushed several times with water and detergent under pressure. One of the best ways to flush a given tank is at a commercial high pressure car wash. Use the soap setting for this. Having a radiator shop boil out the tank before repair is even better.

This booklet also contains information on electrolysis that the author believes may make tanks even safer to work on as the process works from inside out to remove corrosion by the migration of electrons from the tank to an electrode immersed in a water solution. This electrochemical bubbling activity may well alleviate concerns of fuel trapped in the tiny pores of the tank surface.

Ventilate It!

All repairs requiring heat on a fuel tank must be done with the petcocks removed and the gas cap off or fully open, otherwise dangerous pressure can build up inside of the tank.
Tank Evaluation

Selecting/evaluating a used tank

Let’s start here because you can use this process to decide whether or not to work on your old tank or go for a good replacement to fix or use as is.

The first criteria to take into consideration is the approximate value of the tank in good condition. This can be easily established by shopping around places like Ebay and the swap meets in your area. Once you’ve established value, it’s time to consider options. The reason we do this is to avoid putting $500 worth of labor into a $50 tank. It just does not make good economical sense. Conversely, the more valuable the tank, the more trouble it’s worth to put back into service.

Inspect outer finish.

The very best you can hope for is factory stock paint. This will almost always mean no repair work has been done and that there isn’t 50 pounds of Bondo hidden somewhere. Be careful, however, with claims of NOS finishes as some unscrupulous people are pretty good at reproducing stock paint jobs. Of course, an old stock paint job will show its age and maybe a lot of dings too, but you can be relatively assured there are no hidden secrets. Small chips and dings are easy fixes, damage more than a 1/4 inch deep will require a lot more work and this should be considered as part of the analysis.

You can check for plastic filler in a steel tank easily with a magnet wrapped in a clean cloth. Slide the magnet all over the tank. When filler is encountered, you’ll feel no pull against the magnet.

Some genius filled this badge recess with bondo, and since it was too deep, it cracked. Lots of work will be involved to correct this mess.
If the tank meets your standards so far, pop the gas cap and take a good look inside using a flashlight. Almost all old tanks will have some light surface rust, but anything accumulating a fine powder at the base of the tank should raise concerns. Big rusty pieces are very bad news. Invert the tank and shake it now. If it snows rust, you will at least need to coat it, but the rust could be so bad that the structural integrity of the tank is questionable.

Should the price be right with one of these, get permission to use a small nail to check the bottom of the tank. Poke it around all over. With a rusty piece of junk, before you get too far you’ll poke right through the tank. If this doesn’t happen, you most likely have enough good steel to work with. If you do poke through, walk away unless you have no other alternative.

Of course, gas tanks shouldn’t leak, but you can’t tell without testing. On Ebay or mailorder, assume the tank does leak unless you get firm assurances otherwise. Remember, gas is a lot thinner than water, so just because it holds water do not assume it’s leak free. Kerosene is a good test fluid for this purpose. If you have a way to put a small amount of pressurized air into the tank (a special cap with an air connection is often used for this purpose) using this with kerosene is the best test of all. But speaking of pressurizing, forget about using air pressure to pop out dents. I don’t know who started this rumor, but it won’t work, and you may well wreck your tank by trying this. Same goes for filling it with water and freezing it; you’ll just rupture the seams or otherwise deform the tank.

If your tank passes all the above tests, you’ve got a pretty good tank on your hands. If not, let’s go about fixing common problems.
Level of Repair/Intent

Now that you’ve been sufficiently terrified and the trial lawyers placated, please understand this manual is designed for non-professionals without extensive experience in sheet metal repair. The contents include simple repairs anyone can employ and others further up the skill scale. It must be known, however, that often the very best way to restore a gas tank involves skills that are generally way beyond the average cycle owner. Professionals employ a great deal of time-earned metal working skill along with special tools and equipment to achieve results that are as good as, if not better than, factory original work. However, due to these factors and the time-consuming nature of the process, gas tank restoration by many of these means is very expensive. This manual is designed to provide far more affordable procedures that are frequently well within the range of skills possessed by the average home restorer. When used appropriately, these procedures have produced extremely satisfactory results. However, only you can judge individual skill level. Also, be advised that certain tanks, for example chrome plated ones, are best left to professional hands entirely as many of the following fixes will employ some plastic body filler which will not allow plating. It is possible, however, to use lead filler that allows for plating and is also preferred by many professional restorers. Lead filler, though, is another process that takes time and experience to master. Also important, working with lead can be very hazardous to your health.

Stripping a tank to bare metal is best. Here one is about to be media blasted.
Quick/Emergency Leak Fixes

This category of repair is for those with emergency situations which require methods that are fast acting and allow the tank to be put in service quickly.

The first of these is commercial gas tank stop leak of which there are several brands. These are generally available at most autoparts stores in tube or paste form. Many actually work while the gas is still leaking from the tank and are surprisingly effective for short-term emergency repairs. Such repairs, however, are not to be trusted for long-term fixes and should only be used when there is no other recourse.

A simple fiberglass patch also works well and is much more permanent. Use of fiberglass for cycle fuel tanks however is no longer allowed in many places and its outlawing was the result of fiberglass not having the same level of damage resistance and long term durability of steel. Also, gas must not be leaking during repair so the tank will either have to be removed or drained. All paint must be removed from the patch area with medium grit sandpaper or equivalent.

If you still plan to use fiberglass, once the paint is removed in the leak area, cut two patch pieces if possible, although one will do but won’t be as strong, while three will be even stronger. Mix glass resin and hardener in a small flat container like a pie tin and dip the fiberglass cloth into this mixture and then smooth this over the leak area. Repeat the same process with the next piece or pieces.

If properly mixed, the glass sets up quickly and can be put into service after only a short wait. However, it’s best to let this fix cure overnight if time allows.

Fast-curing epoxy is my favorite roadside fix because it’s easy to tote on a scooter as it comes in two small tubes that fit nicely into any tool bag. Again, this fix will require draining the tank and possibly removing it depending on where the leak is.

Mix the epoxy putty 50/50 and spread it over the leak area using whatever you have available. With rust caused pinhole leaks, try to press the epoxy into the tank holes to facilitate the epoxy filling up the hole all the way through into the tank. I’ve put tanks back into service within an hour and they held well. And if allowed to cure longer, epoxy can last, too. I used epoxy on an old BSA tank and it held for five years of frequent riding on a bike that vibrates like a jackhammer.
Internal Plastic Coating

The most popular DIY fix for both automotive and cycle tanks is plastic coating, and for the appropriate application, it can work well. However, it can also fail miserably too, and this can either be the cause of incorrect application or use on a tank that is beyond the limits of simple coating. Let’s study both of these issues first.

Too Far Gone

Tank sealer is most effective on leaks that are almost too small to see without magnification. Setting a specific hole limit diameter is difficult, but let’s just say if you can see the hole it’s probably beyond the range of fixing with a simple coating. The hole will have to be filled or covered. The safest and easiest way is to employ either fiberglass or epoxy, but it’s advisable to weld or braze to restore a tank for good, at least in the spot of repair. Should either of the processes be beyond your skill level, take the tank to someone who can do the job for you. A simple heliarc weld will hold forever and will not be very expensive either.

Failure to Read Directions

Also just as frequent in tank seal failures is incorrect application, beginning with a failure to remove/neutralize rust. Getting a handle on rust is mission one for tank R&R, so let’s cover this now.
Rust Removal/Conversion

Rust is like cancer and pretty much needs to be treated with the same degree of vigor. If it isn’t, you’ll soon be having the Rusty Mess Blues all over again, either in the form of leaks, bubbling paint, or both. And like cancer, rust is often terminal if left to go too far.

Gas tanks present special problems because much of the rust can be located in areas impossible to reach by most conventional means. On the exterior, rust removal is easy and media blasting is the best way to remove all of it. Fine sand or glass beads do an excellent job.

If you lack the equipment to do this, building a simple blasting box and getting a media blasting kit often known as a “Bucket Blaster” can introduce you to the world of media blasting quickly and inexpensively. Tanks can even be blasted outside without an enclosure, but this is pretty messy. Of course, you’ll need a good compressor for media blasting, and if this isn’t an option, there are others.

A wire wheel and vigorous sanding do a good job but often won’t get down into pits made by more severe rust. In these cases, you’ll have to use a chemical rust converter after removing as much rust as you can get to. Most work pretty much the same way, so follow the directions given for the respective product used.

Internal rust presents more problems. The first task is to loosen what you can and remove it before further treatment. Pieces of chain, nuts and bolts, small rocks, etc. can be placed in the tank and shaken around. Some recommend marbles to prevent stray sparks, but you should always completely clean any tanks before working on it anyway as explained earlier, so there’s nothing flammable to ignite in the first place.

Once you’ve removed all loose rust, it’s time for metal chemo. The most common method again is to use one of many commercial solutions according to the manufacturer’s directions. The most inexpensive ones are available at stores specializing in paint and auto body supplies. The most expensive are parts of tank coating kits.

Message: Just buy the final coating separately.

Chemical conversion is the quickest and easiest, hence it’s most commonly used. In most cases, you dilute the rust converter, generally a relatively mild acid, and then either brush it on the external surface, or let it soak inside the tank. The amount of time it takes

At right is all you need to convert rust using electrolysis. At left is the process in action. Also shown in right photo is one of many chemical rust converters available. Mechanical, chemical and electrical processes will be employed to throughly remove and kill rust.

8
depends on the solution used and the amount of rust in or on the tank. In most cases, I’ll fill the tank right up to the filler neck and let it sit for 24 hours before continuing the repair process. This also can show leaks that weren’t discovered earlier.

If you have a small battery charger for about two bucks you can use electrolysis to kill and convert rust for dozens of projects. Electrolysis actually turns the rust process backwards and does not remove any good metal as blasting and sanding can and is both a chemical and electrical process. It’s sort of like plating in reverse. Electrolysis has a second advantage over chemical processes in that it works from inside out and will actually loosen rust that’s almost impossible to get to. Consequently, I use this as the second step in the treatment process. Once I remove as much rust as I can with the chain/bolts method, I let electrolysis go to work. After 24 hours, I drain the tank, and again work to remove the rust loosened by the electrolysis before flushing and then treating with a chemical converter. The two pronged attack works extremely well and is highly recommended.

To use electrolysis, you’ll need a small box of washing soda, you can get it at most big grocery stores, to make a rust solution of one tablespoon of washing soda for each gallon of tank capacity. Block the petcock holes and fill the tank right up to the filler neck so that all inside metal is covered with the water/soda solution.

Next, construct a simple electrode out of just about anything steel, a large washer, piece of flat bar stock, etc. Just be sure it’s small enough to fit into the tank filler neck. Connect a wire to this setup and be sure it is insulated above the electrode because you don’t want the wire to ground out against the tank. Suspend the electrode inside the tank and be sure it does not touch any part of the tank. Connect the electrode wire then to the negative side of the battery charger. Connect the positive side to the tank, an easy place being to the metal plug you used to block off the petcock holes. Shown in this

Rust at left has worked it’s way off the inside of the tank and either into a solution that will be dumped or on to the electrode. At right, this was one of three dumps from an old tank. It shows the nuts used to break off loose rust and the rust itself.
booklet are air tool attachments that have the same thread size as lots of Brit tanks I generally work on and I use these with a piece of blocked off hose. This also works well when draining plastic coating out of the tank as it keeps the coating off the tank, imperative when working with a tank that still has decent paint.

Pretty quick after turning on the charger you’ll start to see bubbles form and these will soon take on a brown cast, which is rust that’s been lifted from the tank. Periodically, it helps to clean off the electrode to get peak efficacy. Just how long the complete rust transformation process takes depends on the size of the tank, amperage used, and the severity of the rust problem. I generally let them work at least overnight. Don’t try to hook up your arc welder as a power supply source; this is definitely a low current job, and that’s what makes it safe. No dangerous gases are formed. A three-amp charger was used for the process detailed here and worked at about one amp.

Once rust is converted by any given process, it generally takes on a glossy blackish cast which is very suitable for coating or painting. With either chemical or electrochemical process, you’ll have to remove all water/moisture and immediately treat with either acetone or MEK. Both of these destroy paint quickly, so either cover the tank with thick plastic or do all of this work prior to painting, the wisest method.

Right after the acetone treatment, it’s time to coat the tank. If you followed these directions, you have an ideal surface to work on.

Tank has been chemically stripped of paint and now receives a rust converting solution.
Pulling Tank Dents

Dents over a 1/4 inch in depth must be worked out of the tank if a long service life is expected. Speaking of long service life, beware of the swap meet hustlers who don’t care how long a repair holds and just want to make a fast buck. These guys will fill huge dents with layers of thick Bondo. Then they’ll do a quick sanding job over the half-assed repair and hit the tank with a coat of cheap primer. Finally, they’ll hang a sign on the tank saying “Ready for Your Paint.” I know a guy who bought one of these and the tank held over 1/2 gallon less fuel than it should because of all the space taken up by the dents! Even without the loss of fuel capacity, too thick filler well soon shrink and/or crack and ruin a good paint job. Conversely, properly used filler will generally outlast the paint job and need not be feared or considered a shoddy repair.

The basic problem with gas tank dents is that there’s no easy way to get behind the dent to knock it back into shape as one would with something like a fender. Many times, the only way to get access to the dent is to cut a section out of the tank. This requires quite a bit of metal fabricating and welding skill. If you’re up to this, go for it. If not, here’s a much easier alternative: pulling the dent from outside the tank.

Pulling a tank dent is relatively easy and only requires one specialized tool, an

This dent will have to be pulled as it’s way too deep for body filler. Tank will also be completely stripped to bare metal as it appears to have many coats of previous paint and who knows how much filler.
inexpensive slap hammer/puller. You can find one for about five bucks at almost every auto parts store. You’ll also need access to a means of adhering the puller to the dent. A commercial tool that spot welds a special device to pull on is available, and if you have the skills and welding tools, this is a good option. Any small spot weld will work fine too if you have the tools/talent, the best being heliarc which in the right hands is the best tool for tank construction and repair.

For this publication, we’ll use an old school tool most hobbyists have around, an acetelene torch with brass rod. Brass is amazingly strong but melts well before steel does which means you are much less likely to make matters worse by burning a new hole into your tank, although this is possible.

If you haven’t been around brass much, practicing on an old tank or piece of sheet metal is highly advisable. The idea is to get the tank hot enough to flow brass, but not so hot that it burns though steel. This is pretty easy with a bit of practice, and even if you do actually burn though the tank, the hole will be at the bottom of the dent being pulled and easy to fill with brass rod.

To pull a dent, first analyze the dent itself as you will want to employ reverse force much as it was first used to damage the metal. In this booklet, we illustrate the pull of a nasty dent that appears to have been made by some sort of narrow shape. To pull it, we attached a section of bar stock to which our anchor, this time a small screw, was brazed first.

Lots of objects sit around most shops that will make suitable anchors to which you attach the puller tool, like screws, nails, small bolts, etc. In our second example, I used a small nail in the center of a depression made when a fork tube smashed into the tank when the bike was dropped.

The easiest way to hold an anchor in initial position is to have a helper hold it with
a pliers while you lay down a spot of brass to keep it in place. Several large hose clamps put together and placed around the tank will also serve well to position anchors prior to attachment.

Once your puller is in secure, concentrate the torch heat on the thicker part first, the anchor, and then move the torch a bit to the tank area and then back again to anchor. You don’t have to flow a lot of brass; look at the pictures to get an idea. Use as little heat as possible to minimize metal distortion.

Once the puller is secured, attach the slap hammer and hold the tank securely while you work the weight briskly back against the tool handle. Don’t be afraid to use a good deal of force, you’ll need it to pull out the metal and the brass will hold against a lot of force. Speaking of force, don’t try to use most other dent pullers sold down at the local auto parts store to pull tank dents. These tools are designed for use on modern, super-thin sheet metal in use today and do not have the metal pulling power to work on old gas tanks.

Continue to work your pulling tool until the dent is less than a quarter inch at it’s deepest, but don’t be afraid to pull too far, either, because high spots can be lowered with a few moderate shots with a body hammer.

When the dent is pulled to your satisfaction, it’s time to remove the brazed on anchor. To do so, grip the anchor with a pair of locking pliers while you heat the brass. Very soon it will become plastic and you can just bend the anchor and then pull it right off. At this time you can puddle the left over brass so it’s easily covered with filler. Small anchors are easy to just cut off and then grind smooth if you don’t want to reheat the tank.

Several large hose clamps hold puller in place prior to attachment.
Top: Small nail is placed inside of puller tip before brazing.
Bottom: Close up view of anchor being connected to tank prior to pulling.
Top: Slap hammer tool is attached to anchor.

Bottom: Long, deep narrow dent called for different shape of anchor. Try to match your anchor to the dent. This photo was taken about halfway through the pulling process.
Top: Anchor can be cut and ground or removed by reheating the brass.  
Bottom: Clean off all flux prior to filling. Dent is now either completely removed or well under 1/8 inch in depth, suitable for use of plastic filler. Be careful not to fill screw holes as this will greatly lessen tank value.
Permanent Leak Repair

Once the inner tank surface has been cleaned and rust-treated, coating with a commercial sealant is pretty simple. Step one requires a wash in acetone to remove any traces of water and to prepare the surface for good adhesion of the sealant. This process will require sealing the tank opening and petcock holes and also inverting the tank, and this will invariably cause some fluid to leak out of the filler hole onto the outer surface of the tank. Acetone is one fine paint remover. Should you be working on a tank that has good paint, one can avoid damaging it by wrapping the tank carefully in thick plastic at least twice the thickness of conventional garbage bags. Try the really thick bags used by contractors to haul waste. Also make a gasket for the gas cap. Secure the gas cap over the plastic gasket. This might leak a little when inverting the

This leak was underneath mounting bracket which had to be removed for access.
tank but the small drips will fall harmlessly on the plastic covering the tank, and not on a painted surface. Drain the acetone through the petcock holes and then again plug the arrangement.

After the acetone treatment, repeat the process with the sealer, and drain the sealant into a clean receptacle, because you can reuse it for at least one more tank instead of wasting it. Let the coating dry for 24 hours at least, maybe longer depending on temperature. When the sealant is completely dry, remove the plastic mask if you used one. That’s it!

More/Less Involved.

It’s a bunch easier to coat tanks when there’s no concern for the outer surface. If a paint job is planned, all the prep work to protect the outer portion is unnecessary, except for the gasket to cover the gas cap. You don’t want the coating on the cap because it can block the air hole, hence the need for the plastic to protect it. After coating the tank, remove the gas cap and any stray sealant by wiping it off with an acetone soaked rag. Be sure to check the air hole is free by blowing it out with compressed air.

Unfortunately, many older tanks are so far gone as to be beyond conventional sealers. It should also be understood that the only way to really guarantee a leak free tank with long service life is to remove all paint and go down to bare metal to find all the damage.

Leaks can be darn hard to pinpoint even with bare tanks, as it can appear that the leak originates in one place when it's really seeping from another. Be advised also that tanks can hold water but not gas because water is thicker. Since this is the case, final leak tests must be run on an equivalent fluid, and I’ve grown partial to dyed kerosene as its easy to see and not as volatile as gasoline. Making a cap to put light air pressure inside the tank to check for leaks is also fairly easy to do by brazing an air fitting on an old tank cap.

The very best way to repair tank leaks is to weld the leak area completely. A good weld repair restores the tank area to better than new. Really bad tanks may require entire sections to be welded into the tank.

Quite frankly, welding sheet metal without destroying it is an acquired art that takes both time and practice to acquire. I learned by practicing on junk tanks until I felt comfortable enough to try one for real.

Brazing is a lot easier because the temperatures are
lower and the likelihood of burning through the tank greatly decreased. Brass is also a lot easier to shape and grind if a final finish is needed in an exposed area. Most times, though, leaks are on tank undersides no one will see so perfection grinding isn’t necessary.

To fill a hole, with either steel or brass, you have to make concentric circles around the hole, each one progressively smaller until the entire hole is filled.

A tank can be soldered, too, but I don’t like to use this in a stress area, and the heat required isn’t all that much less than with brass. However while brass is much stronger, it can be infuriating as a leak sealer and solder does seem to seal holes better.

Several kinds of solder are often used on tanks. Silver solder, frequently used in boiler construction, is high strength but a bit expensive. Solder with a high tin content, like that commonly used for radiator repair can also be used to good effect.

For both brass and solder, the idea is to get the metal hot enough so that the metal flows smoothly. If it balls up, you aren’t using enough heat. Both solder and brass require flux and absolutely clean metal surfaces to adhere to metal. The smallest amount of contaminant, like an oil smear for example, will cause a poor bond and most definitely a failed leak repair.

Tank is being welded with conventional torch. This takes practice to learn.
This area had been repaired once before with brass, so welding wasn’t an option. Area was filled as shown in brass and leak tested. Be sure to avoid rapid cooling of brass as this tends to cause it to leak for some reason.

Old tank mount was reattached after leak repair.

Rust clings to this electrode that originally was stuck to tank, even after repeated efforts to dislodge it using mechanical means. Electrolysis works from the inside out and frees up stuck rust most chemicals never touch. Also, it converts forming rust back into good metal. Use of this process and a good rust converting wash are recommended.
Painting

General Information

While I do not personally know anyone who’s been seriously injured working on a gas tank, I can’t say the same for painting. Modern paints contain a number of very nasty chemicals, isocyanates topping the list. Isocyanates are close cousins to cyanide, a deadly poison, and are used in most two-pack paints, the kind that requires a catalyst to cure. These paints are now used more often than any other automotive paint due to the relative ease of application and extremely durable finish. While the paint may be durable, I’m not so sure about a lot of painters. I know a number of painters who have serious respiratory problems attributed to isocyanate exposure. Now these are pro painters who shot this stuff daily for years, and in conditions that did not meet standards for this paint.

Official industry standards call for only positive ventilation masks and fully protective suits when working with isocyanate paints, yet I still frequently see painters using only cartridge masks, and confess this is what I use too. Just how damaging this is, according to experts, is hard to gauge because the affects vary from individual to individual. The first time I used two-pack paint I stupidly applied it without any protection at all. Obviously, I’m still alive and in apparent good health, but the health warnings about these paint systems are prolific. Here’s but one example of many I’ve read.

According to the Saskatchewan Department of Labor’s Web Site, it’s a hit or miss as to who might have problems with isocyanate paint, and the adverse effects are equally unpredictable. “Breathing unreacted airborne isocyanate can cause coughing, chest tightness, fever, fatigue…Once a worker is sensitized, further exposure to even small amounts of isocyanate will
Painting a tank requires a lot of initial investment if one does not have supplies from a previous job. Materials shown above were about $180 for a base coat/clear coat job.

cause distressing asthma-like symptoms. The reaction may occur immediately or several hours after exposure. One exposure to a high airborne concentration or several exposures to lower concentrations may result in sensitization. There is no proven method for predicting whether any particular person will become sensitized if exposed to isocyanates.”

OK, now most of us don’t have a space suit to paint in, so does that mean two-pack paint like the popular base coat/clear coat systems are forbidden? That depends on priorities I guess but I can’t honestly recommend someone use this paint without all the bells and whistles.

What do I do? Fair question. Since I shoot maybe 10 projects a year max, tons less than someone doing a full time paint gig, I feel a little safer. I also wear a good cartridge mask (see photo) every time I paint and also set up ventilation in my work area. I also hedge my bets a little further, and think you should too if using this sort of paint, and that’s by using High Velocity Low Pressure (HVLP) equipment.

HVLP equipment is now required by law in some states, and has several distinct advantages. With respect to health, it uses a lot less pressure and consequently drastically cuts down on over spray and paint fumes. I was amazed at the difference between it and my other gun. With my conventional gun, I’d paint the inside of my garage every time I did a bike. Now I don’t find any stray paint at all. Truly amazing. Coupled with a quality respirator, I figure, at the least, I’ve cut way down on potential exposure to isocyanates. Quite frankly, I’ll
never try spraying any two-pack paint again unless I use HVLP equipment. Another big bonus is that HVLP guns use a lot less paint, like about a third less, which saves considerably on material costs.

We’ll go into specific paints a bit more later, but now let’s look at the most critical part of any good paint job, regardless of material used.

A most disappointing final finish after hours of labor restoring an old tank often occurs because of poor paint prep work, which to me is highly ironic because as far as skill goes, preparing a surface to paint is one of the easiest processes to get right or correct if it isn’t. Note that I said nothing about time and effort, and that’s because surface preparation is labor intensive and fairly boring, and that’s exactly why people frequently rush through it, and wish later they hadn’t. Yeah, I’ve done it too, but I’ve reformed.

As explained earlier, starting off a tank project when it’s down to bare metal is the best way to begin, but if the original surface isn’t rusted or time is an issue, it’s quite possible to leave some old paint providing it’s still securely adhered to the tank and there’s no evidence of pealing, flaking or rust bubbles.

In any case, the entire surface will need to be carefully sanded with progressively finer
sandpaper. How fine to start with depends on the surface being worked, but with lots of cruddy old tanks I begin with a grit of around 120 and then go to 240, which gives a good surface for most primers.

Before this, however, you’ll need to complete all filler work as this has to be finished before the overall tank sanding so that everything blends in.

Let’s talk a bit about filler now and please understand this is also a hotly debated subject. Feel free to get a “second opinion” as they say.

It’s been my experience that good auto body filler today is light years away from a lot of junk used in the past that gave easy to use fillers a bad name. That being said, there’s still a lot of bad filler mass marketed, so to find out what works; check with a pro and use the same stuff. The filler pictured in this manual works well and has excellent durability. It was purchased at a pro paint/body supply store, a good place to pick up useful tips. Pick up some spot putty at the same time that’s recommended for use with the filler.

But even the right filler won’t work well if it isn’t mixed right. Note the can and the small tube shown in this manual. That small tube is enough to catalyze the entire can, but far too many people go way too heavy with it, making the filler prone to cracking and hard to work with. Just a little bit will do. Again, practice with it some before tackling your
real project.

Filler should be spread in one direction only in thin layers to avoid air pockets. Once it begins to set up you can use a body file to rough shape it. Coarse sandpaper works well too and is easier to use on rounded tank surfaces.

Once the shape is just about right, go down to finer sandpaper, ending off with 240 grit. I like to hit the repair with a shot of fast-drying red oxide primer I get in a rattle can and then take a close look. The filler should be invisible and seamless. If you do see any outline or imperfect surface, you’ve got more sanding to do. Conversely, if you have dark spots that generally means a low area that needs more filler. Tiny pinholes can be filled with spot putty. Continue this process of filling, sanding, inspecting, and spot patching if necessary until you achieve perfection, and this you must, because if you can see any irregularity through the primer, it will be magnified by the final coat. Don’t kid yourself otherwise. Once things look perfect here, it’s time for one more sanding, this time with 400 grit wet/dry paper. Finer grits are sometimes employed depending on the paint used, and there are many opinions as to just what’s right. Again, ask for recommendations when you buy your paint.

OK, so now we have a perfect primed surface. What do we use for paint? That depends on a number of variables, so let’s study them a bit.

Most paints require application with a good spray gun in a clean, well-lit area. As you might already know, painting is an art too and I’m afraid some people just aren’t cut out for this task. That’s not to say that the average Joe can’t produce a decent job, but one should not expect show quality on their first attempt, or even their 20th. Those really trick paint jobs you see on show bikes are laid down by master craftsmen who, in many cases, have decades of experience and acquired skills. Quite frankly, while I’ve grown pleased by my efforts, if I want a custom job, I hire out the final finish to a pro.

With respect to final finish,
it’s always a lot more economical to go in with a friend or two and split costs. Honestly, if you only want a single tank painted, it often isn’t worth the time or expense. After you add up the cost of all the materials, many times it’s almost the same price you’d pay to let someone else shoot your tank.

Speaking of time and expense, perhaps the best route for many home builders is to do the prep work and leave all final painting to the pros. I’d conservatively estimate that there’s five times more work in preparing a given part for painting than there is in shooting the paint itself. That’s why a pro is often willing to give you a considerable discount if you bring in a tank all ready for shooting.

Try not to be in a hurry if you want to save even more money jobbing out a paint shoot, because a lot of painters will also cut you an additional break if you let them shoot your parts as part of another job. That way, they don’t have to mix up a particular order of paint and get to stretch their material costs as well.

As for shooting the base coat/clear coat paint yourself, this is the easiest part, but understand once mixed, you must use base coat/clear coat and two-pack primer if used because the catalyst will quickly turn the paint rock hard. The time it takes varies from manufacturer to manufacturer, so ask down at the paint store and read and follow directions to the letter. Also clean your gun right after use; it’ll be worthless if you let the paint dry up inside of it and impossible to clean or fix later.

I sometimes use a two-pack filler primer that required sanding, and learned that during the sanding process you still have to wear a respirator because the dust is hazardous, too. You also want to do the sanding in a different area, as this will raise a dust storm, or at least wet the area down again before final painting.

Just where you shoot your paint has a direct bearing on the quality of the job. The very best option is a professional paint booth, but most of us don’t have this option. However, if you’re located near a trade school many times you can contract time in their booth for a very reasonable price and also get to use all the neat safety equipment.

However, lots of us will be shooting in the garage, so let’s prepare it as best we can. The first chore is to clean up as thoroughly as possible to minimize stray particles in your paint. Note I said minimize, as it’s almost impossible to avoid some small contamination on a job done in a conventional garage. Still, if you’re careful, about the only one who’ll ever notice the tiny speck or two will be you, but if you’re a perfectionist, better find yourself a spray booth

This neat mixing cup takes all the math out of mixing paint. Get one when you buy your supplies.
Lighting is critical, but you can rig just about any area with adequate lighting. Use florescent shop lights because it’s a lot easier to see what you’re doing as opposed to incandescent bulbs. Why this is so, I don’t know, but it’s a big difference.

If you plan to paint using a fixed structure like a block or sawhorse to hold the tank, you’ll need to place a light on the floor so you can see the bottom of the tank. This is especially critical when clear coating.

Option two is even better, at least I think so, and that’s to devise a way to hold your tank so that it can be rotated, sort of like a piece of meat on a grill. What you use can be elaborate and a permanent paint tool or as simple as a big wooden dowel spanning two saw horses and held in place with a couple of U-bolts tightened just enough to allow rotation of the tank but not so loose that it won’t stay in place while you paint.

With base coat/clear coat, shoot the base using the pressure recommend by the manufacturer. Overlap each pass by 50 percent until the tank is covered. With base coat you only need to cover the tank completely and don’t need to worry about gloss as this will come with the clear coat. If you’re shooting metalics, use checkerboard pattern and reverse the direction on each pass so that the flakes settle right. Personally, I’d leave metal flake to the pros; it’s pretty tricky for amateurs to get right.

You need to be a lot closer to the surface being painted with HLVP equipment, just how close depends on how fast you move as a painter, the paint itself, and the gun/pressure used. A lot of variables here, and the only way to learn what works for you is to practice and evaluate the results. I shoot a tack coat followed by a full wet coat for both the primer and color coat. The time between coating is also variable, depending on the paint and temperature.

Clear coating is the most difficult, because it’s harder to see, but with good florescent lighting isn’t too difficult. Band the front and side areas first, then go over the top with a good tack coat. Let it sit a bit, and then follow with a full wet coat. End up with what’s called a mist coat, holding the gun at a greater distance and letting the mist fall on the tank.

Other options

You might have noticed the pictures of my friend John Rorerich, a custom pro painter doing me a favor by painting a chrome BSA tank. This was done outdoors five years ago when it was still legal in Texas to sell lacquer paint. I learned to shoot paint using lacquer and recommended it for all

Note one small tube of hardner is enough for entire can of filler. Overuse of hardner is a frequent cause of filler problems.

27
backyard jobs because it’s a very forgiving paint and not nearly as toxic as two-pack systems. A second major advantage is an extremely rapid drying time. Actually, if it isn’t mixed right it will dry as it shoots out of the gun! Lacquer made outdoor painting very possible because, on a relatively wind free day, you could get a great job with hardly any contamination. Alas, these days are over for many. Maybe it’s for the best. Anyway, two-pack paint is a lot more durable and resists the occasional gas drips that are inevitable.

You can, however, still get lacquer in aerosol cans, and I’ve seen some surprisingly good jobs done the rattle can way, although this too takes some practice. If you don’t have the equipment, this may be your only option, so let’s end with this.

This is the tank shown during the leak/weld repair. It gets a lot of high vibration abuse but serves well. May your project be as successful.

Again, you must have a perfect surface to get a decent job. Apply the color coat over this and then let it dry completely. Once it has, lacquer requires color sanding that I do dry with 400 grit paper to avoid sanding through the color coat. The surface will be dull, but that’s ok, the clear coat will bring out the shine. Some folks recommend sanding the clear coat with 600 and then 1200 grit, and this does work, but, depending on how well you did the clear coat, may not be necessary.

I’ve also seen some admirable jobs done with enamel, and this is still available too, in both rattle can and for use in a regular or HVLP gun. With a rattle can enamel job, however, the paint will be very soft for a long time, like a month, and will scratch if you so much as spit on it before it fully cures.

Well, it’s the end off the road mate. If you traveled this route carefully, you’ll get years of beauty and service out of your nicely restored tank. So, as they say, keep the shiny side up, not so much to avoid damaging all your hard work, but to keep yourself alive and well. Be careful out there friend. Live to ride another day.

Mike