COMPLETE GUIDE to SHORT & LONG-TERM MOTORCYCLE STORING

Preparing your motorcycle properly for storage depends on how long you expect it to be in storage. Preparations are very different depending on the length of inactivity. However, the ultimate goal of your preparation is the same, that is to counter environmental factors that will damage your motorcycle over time.

Key to preparation is to fight oxidation, fuel degradation and damage due to static pressure. For 3 months plus, a typical winter or off-season storage period – clean the bike, remove the battery, add a quality ethanol free gasoline, and or add some fuel stabilizer. Lift both wheels off the ground, cover securely and lock it up and close off the storage area.

It is surprising how the length of time in storage changes the best methods used. In addition to going over the basics of motorcycle storage, I've included extra tips that will make the job more effective.

Why Prep at all?

Several storage prep processes are aimed at combating oxidation and separation of fuel inside the motorcycle. Oxidation is commonly known as rust, but it can show up as a whiteish surface on aluminum parts and discoloration on chrome. Oxidation is also the main cause of rubber components degrading, becoming brittle and possibly cracking. In colder climates, the deep cold is also a factor that needs consideration.

Other things to consider are physical storage location, security and even the possibility of animals intruding on or around your cherished motorcycle. Mice and chipmunks are particularly numerous and intrusive in my area and I have found some nonlethal ways to persuade them to go elsewhere.

The BIG Question – How Long?

A key factor in the way you will prep is dependent on how long your motorcycle will remain inactive and in storage. When in doubt simple default to the next longer level and store in that manner. There are three different lengths of storage to consider 2 weeks or longer, up to 3 months (typical winter storage), and indefinitely. On the flip side, especially for off-season (winter) storage is the prospect of a break in the weather that will tempt you to get back on the road. If you have cocooned your ride it's unlikely you will want to or even have the time to get out of stage – personal consideration,

Ethanol a Real Problem

Ethanol has only recently added to gasoline, it is a biofuel usually derived from corn. The problems for storage is that it absorbs water (hygroscopic) and over time goes through a phase separation and drops in the gas tank. Over time ethanol also deposits a thick gum on internal fuels system components. And as an added bonus ethanol is a very powerful solvent washing away lubrication and causing wear. The absorbed

water, corrosiveness can lead to corrosion, and over enough time can cause complete failure of vital components.

Ethanol-blended gas is denoted in the US by E10 and E15 (indicating 10% and 15% ethanol by volume). As you can imagine we do not want E10 in our stored fuel systems, and we really do not want E15 in there either. It is good practice to use a fuel conditioner that deals with ethanol and lubricates and protects fuel system components. Products like Stabil, BioborEB Ethanol Buster, Yamalube Fuel Conditioner & Stabilizer, and ValvTect Ethanol Gasoline Treatment. Formulas made specifically for motorcycle or marine applications are preferred.

Fortunately, you have some options you can add a proven fuel stabilizer and conditioner that counters the harmful effects of ethanol or find stations that sell pure gasoline. the crowdsourced site pure-gas.org tracks where you can buy pure gasoline. Pure gasoline is still available in most of the USA and Canada, you just have to find it, often marinas and airports sell it. More premium fuels are not ethanol blends, but this is not a rule.

Parked up to 2 Weeks

When you know for sure that you won't be able to be riding for at least 2 weeks or slightly more than it pays to take these few steps. The primary areas to watch out for are the tires, fuel, battery, and physical security.

For a short storage period follow these steps;

Clean the motorcycle, this is a good practice prior to any length of storage. Use quality cleaners and wax to protect the paint. Avoid going el cheapo route by using common dish soap. You can also use an all-in-one cleaner and wax, they work surprisingly well. After cleaning start and run until the water is evaporated, never put away wet. I also use a rubber conditioner on an ongoing basis, products like Armorall, or Meguiar's Mirror Glaze are great (never use conditioners directly on the contact surfaces of your tires).

Get both wheels off the ground, if you have a center stand this will be OK. If not you can use paddock stands (weight & design permitting), or invest in a portable hydraulic lift, these are incredibly handy for all kinds of work anyways.

Be aware of the surface you are parking on. Consider that a heavy touring machine on a center stand is concentrating a lot of weight on just 2 smaller contact areas (versus 2 wheels and a side stand).

When parking on grass or dirt give some thought to the possibility of heavy rain or runoff. The bike's contact points could sink into the softened or eroded earth, risking a tip over. Asphalt can be an issue, if the temperature goes high enough to soften it, you could have a tip over risk. Solid material placed under the contact points is the best approach – a relatively thin piece of steel plate, strong enough to take the load and not deform will do.

Battery – it can stay in the motorcycle, connecting a smart trickle charger is always a good idea. Check the acid levels, if you top up levels use only distilled water AND charge to full capacity. A battery that does not seem to hold a charge is on it's way out. A fully charged and healthy battery should read (while disconnected) between 12.6V to 14V.

If you are having battery issues do not overlook the charging system. Your alternator, rectifier, wiring or other electrical components may be the root cause. Recurring battery issues need a full inspection of the complete charging system.

Cover well – invest in a bike cover that is made for your bikes profile. It also needs to be breathable so it doesn't trap moisture. I recommend one that has a fastening system that goes under the motorcycle, this will keep the cover on in windy environments. I have had my cover work itself off in the wind when I returned it was literally waving like a flag from one of the rearview mirrors! Cinching the cover down also prevents it from scuffing the paint over time.

Top up with fresh fuel – for a short period ethanol-free fuel is not required. If you know where to buy straight gas then fill up your tank, but it's not critical for this short period. You may wish to use pure gas all the time, but it is more expensive since the government subsidizes ethanol. Otherwise, it never hurts to put in a small amount of fuel stabilizer conditioner, like Stabil, etc. to avoid issues with fuel in a carburetor separating or depositing gum, turn off the fuel lines and run until dry. Alternatively, if equipped, you can drain each carb float bowl (check your service manual for specifics). Fuel injected motorcycles do not have this issue – although close fuel petcocks if equipped.

Security – if you are coming and going but otherwise still at home the regular parking arrangements will do. If you go away and the motorcycle will be left unattended and no one is near to check up on it, I would consider moving to another location. At minimum move it from where it is regularly parked, this may deter a thief who drives by and doesn't see it so it's "not there".

Another great option, if available is to temporally park it in a friends or relatives garage space.

Over Winter, 3 Months Plus

The storage situation changes considerably when you are putting your ride away for multiple months.

First thing – use a checklist or a log what was done. There are more steps involved, and after 3 months or more you may not remember exactly what you did, or what product was used. The checklist works in reverse when you prep the bike coming out of storage. Also doing the steps in order helps too, no sense in cleaning then doing a fluid change for example.

Weather breaks? – now is also the time to consider if there is or may be a possibility of a break I the weather during storage. Will you be tempted to pull it out and ride? If the weather has regular cycles in your area, you may want to do a partial storage, then put it back for the longer haul. When you are ready (forced) to put the bike back into storage the weather will likely have turned colder, so you may not be able to do all the things you would have normally unless of course there is a heated garage available.

Regular maintenance & oil change – now is the time to get ahead of anything that is coming up on the service maintenance scheduled. Change the oil and filter prior to storage, no additives are required, make sure it is topped up to the maximum required.

Fluids – this includes all coolant, brake fluid, hydraulic systems. Refer to your service manual maintenance schedule. If you can't remember when or if you changed it, go buy the color – fluids that ate murky, milky or off-color should be changed. If you have a high mileage machine and can't remember when you changed them last, be on the safe side and do a drain and refill.

Clean the motorcycle, a good thorough cleaning is required. Make sure all dirt & debris is removed, as it might hold moisture. Once cleaned, run until any water is evaporated, treat rubber and plastic with a

quality conditioned, and wax all painted AND chrome surfaces. Oil and lubricate the chain and points as indicated in the service manual.

Make sure you clean out all pockets and saddlebags too. Remove everything, period. That way you will not be leaving anything inviting for rodents, and you will not be tempted to have to go out in the cold and check for something you can't find during the winter months.

Gasoline – the ethanol blended into modern gasoline can be problematic in several ways. It will absorb moisture, and if enough is absorbed a phase separation will occur. The end result is milky ethanol-water mix at the bottom of the gas tank, you may even have a layer of water at the very bottom also. Ethanol is also higher reactive, making it a strong solvent that can attack metal and rubber surfaces.

Pure gasoline – to prevent the problem with ethanol you can find a source of pure gasoline. Run at least one tank of pure gas through the motorcycle, then completely refill on your last tank prior to storage. Adding some stabilizer conditioner at this point is a good idea also.

On carbureted equipment, turn off the fuel petcock(s) while running until the engine stops. Give the throttle a few twists to pump out any remaining gas, try to start (with petcocks closed), rock the bike back and forth and try to restart. If possible drain the carburetor float bowls also. There should be almost no fuel in the fuel system at this point and the little that remains will have fuel stabilizer additive mixed with it.

If you can't find pure gas use a then drain the tank, follow the same procedure (above) to remove the most fuel possible from the carbs. This is not necessary for fuel injected designs. Turn the engine until it stalls from lack of fuel (petcocks on reserve settings).

Draining the tank – an easier way to drain the tank over using a messy siphon setup is to add an inline fuel filter. When you want to drain the gas, temporarily hook up a longer section of gas line tubing to the bottom end of the filter. Open the petcock (to reserve setting) and fill a suitable gas can.

Lift both wheels – using either the center stand or a lift (hydraulic or paddock dolly's), get both wheels off the ground. If the bike still rests on one wheel put a flat piece of wood under the tire that touches. Check your owner's manual, but the usual recommendation is to reduce air pressure in the tires by 20%.

Battery – take the battery out of the motorcycle and store it in a warm to cool place. If you put it in the basement do not sit it indirectly on a cement floor. Invest in a computer-controlled trickle charger, such as a Battery Tender. You will easily pay for it by not having to replace a battery that has had its lifespan cut in half by neglect. Putting away a discharged battery will drastically shorten its lifespan, the damage caused can be permanent – fully charge it on day one of storage.

Make sure battery acid levels are topped up – add only distilled water AND charge to full capacity immediately after. A fully charged and healthy battery should read (while disconnected) between 12.6V to 14V. Never store a semi-discharged battery for any length of time, this can permanently harm it or even destroy it.

Environment – a heated storage area is great as long as it stays heated. If the area, like a garage, is heated, then cools when a large door is open you may be inducing condensation build up. It is far better to have a constant temperature, even if it's ice cold.

Rodents – to protect against mice, chipmunks, and any small critters from using your machine as a home – plug the exhaust pipe ends with steel wool, rodents will not chew through this. In my situation, I fit pieces of 2×2 wood into the battery box to prevent rodents from building nests. If compartments or saddlebags

can be closed tightly then do so. If not, leave the cover open or off to make the interior less inventing (and you have completely emptied it out as recommended).

Mothball & peppermint myth – just a quick fact, these do not deter mice, if there is food and or warmth they will head right in. I have also found they do not find pink insulation to be a problem either.

Covers – get a cover that fits well, preferably that can be tired down for extra security in the wind. All overs should be breathable and not hold in moisture. Some people use a plain bedsheet for indoor storage applications, it is soft nonabrasive and will allow moisture to dry out naturally. Do not let it touch the ground.

Heated storage – a heated area is great, if it remains at a fairly constant temperature, and doesn't have external cold air randomly introduced. For example, a heated garage or building that has a large door to the cold outside and it gets opened frequently is less than ideal. The cold air will react with the warmer metal on the motorcycle and moisture will condense. This may be a typical heated or just significantly warmer than outside garage.

Rental storage – often offered by dealers or you can rent a small heated or unheated unit meant for household items. Security is pretty good, as well as weather protection. You may have to plan out your preparations at home then drive to the storage. Consider that once you deflate the tires you will need a method to inflate them come spring.

Insurance – there is no gain and a lot risk in canceling your insurance for the winter, companies are aware of this "trick" and will ding you a hefty reinstatement fee in the spring that will make up for any perceived savings. Even riskier is that you when you effectively reapply as a new rider, you may not be eligible for the same coverage or discounts. This break in coverage will also reset your continuous years of accident-free status, which often means loss of a safe rider (aka 5 Star) discount.

Long-Term Storage

Long-term means multi-season and can run onto multiple years. The same steps apply here that you would do for the seasonal (aka winter) storage routine; however, we will need to go further. Ethanol laden gas is an obvious no-go, but we also need to consider all fluids and mechanical components that will be pushing against each other. Another factor that will play into our preparation is if the motorcycle will or can be accessed, by the owner or friend, or will it likely just sit without any visits.

Checklist and a log both are highly recommended – you will need to date when you stored it and when certain activities occur. As with any multi-step procedure, it is best done in order, the checklist will keep you organized and not missing anything. Also, having the checklist and log, with dates and some notes as to exactly what was done will be a valuable guide when you retrieve the motorbike from deep storage.

Regular maintenance & oil change – for certain catch-up and complete all scheduled maintenance items. At a minimum you need to change the oil and filter prior to storage, no oil additives are required, make sure it is topped up to the maximum levels.

Fluids – replace all other fluids, fork oil, brake fluid, hydraulic clutches, etc. regardless of where they sit on the maintenance schedule unless they have been replaced within the current riding season.

Clean the motorcycle, a thorough cleaning is the first step. Use a power washer or go to a carwash on the undersides and remove all grease and grime. Run the motorcycle and get it up to operating temperature,

make sure it is absolutely dry. A few hours in the sun will help also – open the seat, compartments, and saddlebags to allow air flow. Immediately lubricate the chain and any controls that require lubrication.

Give the paint **and** chrome a coat of wax and buff it well. Then apply a second coat and lightly buff.

Coolant – if applicable, drain all coolant from the system (block and radiator). Engine coolant will turn acidic after a few years. Unless you intend on changing the engine coolant and running the engine every few years, it is better to completely drain it. There is a potential downside of drying out gaskets, but there is no other option other than a refill every 2nd year and run the engine.

Drain & purge all gasoline – while ethanol blended gasoline will cause issues in a relatively short time, pure gasoline will also break down, evaporate and cause varnish deposits. Therefore, remove all fuel from the tank and fuel system.

For an extra layer of protection add fuel stabilizer-conditioner to the last tank of fuel and run it thoroughly through your bike's fuel system. Use a run a maximum storage marine grade product such as Stabil, BioborEB Ethanol Buster, Yamalube Fuel Conditioner & Stabilizer, or ValvTect. These products are designed to stabilize fuel for up to 1 to 2 years depending on brand, but we are not looking for stabilization, rather the lubrication and surface protection qualities they will provide.

Move the motorcycle close to where you will be storing it, after the next step you will have to push it. Start the machine normally, turn the fuel petcocks off, and run until the engine stops. Give the throttle a few twists, try to restart, repeat this until there is no indication of starting.

Drain the tank by attaching a hose to the petcock into a suitable gas can and fuel petcock turning to reserve. Rock the bike to get as much fuel out as possible. You may consider removing the tank mounts to be able to angel the tank to complete draining through the petcock.

Engine lubrication – "fogging", is where an oil mist is injected into a running engine, however, this is problematic since it leaves gasoline in the fuel system. Application of fogging oil is more suited to a 2-cycle engine since these bottom ends do not get lubricated with motor oil like 4-cycles do. A better method is to pull the spark plugs and put in a few ounces of automatic transmission fluid (ATF), put rags over the holes, turn the engine over several times, then put plugs back in. The purpose is to prevent cylinder wall corrosion and rings seizing. ATF is suitable since it will not oxidize and leave deposits behind. When possible return to the motorcycle and rotate the back tire in a higher gear to move the pistons and valve gear to different resting positions. A very small amount of ATF can be added each you rotate the engine.

Lift both wheels – using either the center stand or a lift (hydraulic or paddock dolly's), both wheels ideally should be off the ground. If one wheel still rests on the floor, put a piece of flat wood under the tire. To go step further you can wedge wood or suitable item under the frame/swingarm so both wheels are physically off the ground. This will remove any static pressure on bearings and bushing for the long term.

Reduce tire pressure, by the usual recommendation by 20%. Depending on the age of tires when stored and how long it will be, a new set may be required when removed from storage. Tire manufactures set a 5-year limit on the safe useful age of tires, from date of manufacture. Read more on my post here.

Battery – remove the battery, for sure. As for long-term storage, batteries by design are in a constant state of deterioration, so they cannot be stored forever. Technical studies show a typical lifespan of 4 to 7 years. Manufacturers base this lifespan estimates and performance on a baseline temperature of 77F (25C), higher temperatures significantly reduce this time. For example, a battery at baseline temperature rated to last 5 years will have its expected lifespan cut in half at a constant 95F (35C).

So, you need to evaluate the current age of the battery, and how long you expect to store it. If it is at the end or near enough to its end of life already there may be no point in trying to store it, even on the best computer monitored trickle charger. If it does last multiple years and retains a charge when taken out, its effective remaining life is still measured from the date when acid was added to it.

Another strategy is to purchase a dry battery and add acid when you take the motorcycle out of storage. This may be wise if your motorcycle has a non-standard size, to ensure you will have the correct battery in the future. The downside is that it will have to be the less user-friendly open cell design, versus a cleaner low maintenance closed cell design.

If you store the battery follow the guidelines of finding a warm to cool place, and not placing it directly on a cement floor. You will need a monitoring trickle charger (Battery Tender). The charger needs to be plugged into a reliable power source.

Physical space – the storage needs to be secure, and dry, with minimal temperature swings to avoid condensation problems. Make sure any overhead beams or items that may be stored above could not potentially fall down. Clear the area of objects that could likewise fall on the motorcycle, such as items stored leaning against a nearby wall (ladders, wood, metal tubing). Place the bike I a position where you can access the rear tire, to allow you to rotate it and move the pistons & valve gear occasionally (6 months to yearly).

Security – lock the machine up as you would normally and consider putting locking chains through nearby large pieces of equipment or securing it to the building (metal beams). Since it's not moving anytime soon you can be more creative locking it up. I like to take my Cobra link lock and put it through both sections of the frame and loop it through the hydraulic jack.

Summing it Up

Storage prep depends on storage length, there are very different strategies to follow. When in doubt "upgrade" to the next level, everything you do in preparations is reversible and preventative anyways.

And a quick note on some "tips" that are not recommended, since they can actually cause damage…

- Never store a bike with the battery in if the weather could turn, you may get a frozen battery
- Never add diesel fuel to coat the fuel system – really bad advice I've seen given out elsewhere
- Do not over inflate tires
- Do not start and run for 5 minutes periodically, to "circulate the oil". This generates a lot of moisture due to the functioning of the internal combustion process. If started running for at least 30 minutes to 1 hour. This will require reversing many of the preparation steps done before putting in storage.