# MAINTENANCE AND REPAIRS OF TWO WHEELERS

*Maintenance and Repairs of Two Wheelers*

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# INTRODUCTION

Two-wheeler play a major role in the road transport across the world and it is very important to maintain the two-wheeler for getting its usage at the maximum. A motorcycle is a two or three wheeled motor vehicle. Motorcycle design varies greatly to suit a range of different purposes: long distance travel, commuting, cruising, sport including racing, and off-road riding. Motorcycling is riding a motorcycle and related social activity such as joining a motorcycle club and attending motorcycle rallies. It is often seen that people are seeking newer vehicles that would give them ultimate comfortable ride and would serve the purposes needed. It is quite a common sight that a significant number of two wheeler owners neglect proper maintenance of their vehicles resulting in their longevity getting affected. Small engine mechanics inspect, service, and repair motorized power equipment. Mechanics often specialize in one type of equipment, such as motorcycles, motorboats, or outdoor power equipment. Small engine mechanics typically enter the occupation with a high school diploma and learn their trade through on-the-job training. As motorized power equipment becomes more sophisticated, employers increasingly prefer to hire mechanics that have completed postsecondary education programs.

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Motorcycles are mainly a luxury good in the developed world, where they are used mostly for recreation, as a lifestyle accessory or a symbol of personal identity. In developing countries, motorcycles are overwhelmingly utilitarian due to lower prices and greater fuel economy.

## What are Two-wheelers?

Two-wheelers are the most favorite medium of transport that is preferred by 70 % of the road transport users. So, it is very important to maintain the two-wheeler to get the maximum usage of it. If the maintenance is perfect, then there will no chance for the service cast during the later stage.

Two wheelers are classified in to three types:

1. Scooters
2. Mopeds
3. Motorcycles

## Scooters

A motor scooter is a vehicle that operates on two wheels. Its quintessential characteristics are its step-through frame, which allows its rider to straddle the seat in the manner of a bicycle, and a flat floorboard for the feet. The motor scooter is engine-powered, with the drive system and engine usually attached to either the rear axle or fixed under the seat of the vehicle. Also usually under the seat or existing as an attachment to the frame is some sort of storage space.

This makes the motor scooter the transportation method of choice in the urban areas of developed or developing countries due to the low cost of maintenance and steering ease. When compared to the motorcycle, a motor scooter is quieter, carries fewer legal restrictions, and requires relatively less skill to ride.

The first motor scooters were manufactured in the early 1900s, and were later developed for military use in the US by Cushman with the intention of aiding World War II paratroopers in navigating the rugged terrain unencumbered. The compact and light nature of these innovative ground vehicles was later adapted in post-WWII Italy by the manufacturer Piaggo as the Vespa, which quickly became popular in an area where the population needed an inexpensive form of transportation in the bustling city. For thirty five years, the Vespa dominated the motor scooter market as the classic prototype, until the 1980s when Asian markets began releasing similar scooter models. They are now popular in Asia as well as parts of Latin America, specifically Puerto Rico.

Like with most motor vehicles, the motor scooter is subject to the strict emissions standards in the United States. Both the department of transportation (DOT) and the environmental protection agency (EPA) have issued restrictions on the emissions allowance. In an effort to better accommodate, these guidelines, motor scooter manufacturers have turned to fueling their vehicles with liquid petroleum gas (LPG) instead of gasoline or diesel.

Besides these more advanced features, modern motor scooters on the higher end of the price range boast technological, comfort, and aesthetic additions.

*For example*, frames have become stronger and sleeker, as manufacturers have favored cast aluminum frames over other materials, as well as more efficient engines and braking systems. To increase the passenger's comfort, complementary features including windshields and heated hand grips have been found on newer scooter models. In addition, the vehicle already provides the palate for expression of individual taste, as evidenced by shops that specialize in custom designs for the motor scooter.

Besides the trend in more customizable structures on the scooter, another emerging trend in progress is the move to larger engines. Originally ranging from 30-250 cc on a single cylinder engine, manufacturers have developed maxi-scooters with the intention of catering to the demand for bigger, more powerful models. Maxi-scooters exhibit engines ranging from 250-850 cc and operate on fully automatic transmissions.

# Mopeds

A moped is a type of bike powered by a motor, similar to a motorcycle, but with much less power. Considered to be a super-economy vehicle, mopeds are an option for those wanting an alternative to traditional everyday transportation. Although many styles of mopeds feature pedals as bicycles do, the engine that is equipped on mopeds is one feature that differentiates two. Regulations and license requirements for mopeds may vary in different locations, but are generally not as restrictive as those for operating a motorcycle.

Sometimes referred to as a motorbike, a moped will not reach speeds as high as motorcycles do. Typically, a moped will top out at around 35-45 miles per hour. Engine size of a moped is never greater than 49 or 50 cc, and anything higher will be considered a motorcycle.

It is not unusual for a moped to have three wheels. Most models, however, feature the two-wheel design. Utilizing what is known as a two-stroke engine, mopeds are generally fueled by gasoline and engine oil together. Some mopeds feature four-stroke engines, and these are generally less fuel efficient. Another aspect that sets the moped apart from a motorcycle is the lack of a manual gear shift.

Electric mopeds do not use gasoline for fuel, as these models are powered by a rechargeable battery pack. A 500-watt motor is the standard found in these models. Electric mopeds are typically not as powerful as the gasoline-powered models, however, and will not typically reach the speeds of the fuel-powered vehicles. An advantage to the electric-powered moped is that generally it does not need to be registered like a fuel-burning model.

Most mopeds, whether electric or gasoline powered, will have many of the standard features as motorcycles, such as brake lights and head lights. These vehicles will also feature a standard speedometer, often with a digital LCD display. These vehicles also come equipped with side view mirrors. Hydraulic disc brakes are another typical feature.

Electric and gasoline-powered mopeds generally may be purchased either online or from a dealer. Some models require minimal assembly as well. The electric moped variety may feature a step-through design, although many of the gasoline-powered models do not have that feature. Most models of mopeds have large enough seating to accommodate a second passenger.

A moped is a compact motorcycle designed to provide economical and relatively safe transport with minimal licensing requirements.

Mopeds were once all equipped with bicycle-like pedals, but moped has been increasingly applied by governments to vehicles without pedals, based on their restricted engine displacement, speed, and/or power output. Mopeds occasionally resemble powered bicycles, but most are now step-through designs and step-over designs similar to a regular motorcycle. Although mopeds usually have two wheels, in some jurisdictions low-powered three or four-wheeled vehicles are also classified as mopeds.

## Motorcycles

There are three basic categories of street motorcycles:

- Full dress or touring bikes,
- Cruisers and
- Sport bikes.

Though some bike designs tend to bridge the gaps between these categories, most motorcycles fall easily into one of the three groups.

Full dress motorcycles are so-named because of their extra equipment to make long rides or touring more convenient. They have hard-shell trunks on either side of the back fender, full fairings, windshields and a dashboard. They also typically come with in-dash audio equipment, often

including GPS. The passenger seat on a touring bike has a high rounded back with armrests. These heavy bikes have advanced suspension and rubber motor mounts that smooth out the road and make long hauls a pleasure. The Road King by Harley Davidson and Honda's Gold Wing are two examples of full dress motorcycles.

Though touring bikes are beautiful, the motorcycles most closely associated with the legendary biker image are cruisers, which include customized choppers. A chopper has a "chopped" frame with the front fork extended and raked beyond the standard stock cruiser. Ridden into infamy by Dennis Hopper and Peter Fonda in 1969's Easy Rider, chopper motorcycles are designed primarily for hedonistic pleasure rather than long-distance traveling. The posture assumed on these motorcycles, with their laid back seats and forward foot controls, lends itself to kicking back and taking your time, with plenty of attitude riding out ahead. Choppers are hot once again, even enjoying the success of a television show, Orange Country Choppers, featuring new custom motorcycles built every week from the frame up.

If cruising is not your style but racing is you will be interested in sport bikes, also called café racers. These bikes have a sitting posture that puts the rider's feet beneath him or her, rather than out front. The rider leans forward over the gas tank with head and shoulders to grasp small, straight handlebars designed for quick, exacting turns. This posture is perfect for taking curves at high speeds, leaning the bike and maintaining

tight control. Sports bikes are perfect for playing in the mountains, flying down lonesome, winding country roads, or even zipping around town. However, they are not designed for comfort on long, steady treks, where the front-leaning posture puts strain on the lower back. Sports bikes come in a wide range of models and prices. The Honda Interceptor and Ducati Super sport are two examples of sports bikes.

Off road motorcycles include dirt bikes designed with tall frames and high tailpipes that would not bottom out. These motorcycles have knobby tires and lack street gear or license plates. Instead they are issued yearly green stickers by the Department of Motor Vehicles, allowing owners to ride in off-road parks. They have either two stroke or four stroke engines and are illegal to ride in the street.

A hybrid dirt bike, known as an enduro, has a headlight and license plate and is street legal. Stock tires are called combination tires and look like "dull" knobby tires. Unfortunately, these tires do not have much traction in the street or in the dirt. Enduros are not as popular as dirt bikes or street motorcycles, but can be useful for those who live in rural areas or farmland surrounded by dirt roads.

# TWO-WHEELER MAINTENANCE

It is often seen that people are seeking newer vehicles that would give them ultimate comfortable ride and would serve the purposes needed. It is quite a common sight that a significant number of two wheeler owners neglect proper maintenance of their vehicles resulting in their longevity getting affected. No wonder almost all the two wheeler companies in India have come up with their automobile service centers throughout the country. These service centers play a vital role in the effective servicing of your favorite two wheelers.

With proper maintenance of your vehicle you can certainly reduce the servicing cost that you might have to incur at a later stage. Following through some of the simple to follow maintenance tips, one can ensure better and optimal and fuel-efficient performance of the two wheelers.

It has been seen that with the relevant maintenance tips for the two wheelers you can significantly retain their level of performance. To keep your vehicles in a very good shape it is quite necessary that you regularly keep changing the oil. It is also important that you keep notice of the condition of the tires, working of the batteries and also the functioning of the electrical system of the automobile. A healthy electrical system and a well charged battery ensures quick start of your vehicle, without any trouble.

There are a number of measures that you can take to ascertain the longevity of your automobile. While driving your vehicle if some strange sound occurs then that would require immediate attention. Problems could be with the wheels, fan belt, engine and various other internal parts of the vehicle.

Some of the popular maintenance tips associated with the care of two wheelers are as follows:

- In case of a front brake, one should ensure if the free play and brake fluid levels are fine.
- Rear Brake Pedal should be regularly checked and ensured that it is free of any trouble.
- In aces of allow tire pressure, it should be inflated as per the specifications while in case of more, that should be deflated. Free movement of tire should also be ensured and in case of any trouble on that accouter, the service center or mechanics should be consulted.
- Odor of fuel will indicate a fuel leakage problem and that should be consulted with the service center immediately.
- A starting trouble will indicate insufficient fuel and then fuel should be filled in.
- If horn, lights and fuel gauge are troubling, the two wheelers should be taken to the concerned service center and should be serviced accordingly.

- In addition to, proper upkeep and periodical servicing while following the guidelines diligently will ensure that the two wheeler remains in a great condition and comes up with optimal performance.

## Remove Rust from Motorcycles

The first step is to prevent rust from forming. Regular cleaning and maintenance should help keep rust at bay. Keeping aside the preachy bit with regard to preventive care, what DIY options do you have if your bike has already developed rust patches?

- To begin with, wash the affected areas with a motorcycle shampoo and water to remove surface dirt. Wipe the areas dry using a soft rag.
- Scrape the rust off from the more difficult areas using an abrasive material such as steel wool. Once most of the rust has been removed, switch to a less abrasive material such as sandpaper or Scotch Brite. Take care not to rub too vigorously as it may scratch the chrome or, if you are not careful enough, erode the body paint. Use a polishing cloth to remove rust from hard to reach spots.

## How to Protect Your Motorcycle's Paint

The bike is exposed to a lot of element when you ride it through extreme climatic conditions. So what you have on the bike is grime, muck, dust and then some. Make sure the bike is kept clean at all times. If kept dirty for a long time, the said elements can easily scratch the paint and also wear down on the paints shine. A good wash after that long hard ride will definitely do your bike a world of good.

While a wash will clear the dirt off, what you will need is a good polishing job to get the bike to its shining best. A good layer of wax or polish is the best way to protect your paint from the elements. A good polish will make sure that the dust just falls off rather than clinging onto the paint and thereby make cleaning the bike a much easier process. While that takes care of the paint, you also need to look into those matt plastic parts. A good dashboard polish (that one uses for car dashboards) will make sure your matt plastic parts stay in good shape. A good polish session is a must to keep that paint gleaming.

## The do-it-Yourself Bike Cleaning/Polishing Guide

The first step always begins with a nice clean wash. Just hose the bike down with water and scrub it using any of the car shampoos available in

the market. The shampoo helps in removing the dust and grime without applying too much effort without harming the paint. Use a piece of foam or a soft cloth to scrub the bike. Make sure you do not douse the electrical in too much water and damage them.


The second step once done with the washing, the next procedure is to rid the bike of all the excess water. Use a dry soft cloth to wipe the bike clean. It is extremely important to clean or blow dry areas where water tends to accumulate like the fuel lid, battery terminals, the spark plug area etc. Not removing the accumulated water also leads to rusting of nuts and bolts which can prove to be a major headache in the future.

## Motorcycle Tire Tread Check

Tire tread check needs to be done regularly as it indicates the health and grip levels on the tire plus the tire's ability to dispense water and increase grip levels when riding on wet roads. To check the condition of the tire tread, there are tread measuring meters readily available in the market while there is also an easier and home-method method to do the same check:

- Use the 1 rupee coin to check the health of the tire tread
- Place the coin vertically between the treads and hold it firmly so that it is straight

- If the embossed text 'rupee' on the coin is fully visible, it is time to change the tire
- Some tires also come with tread wear markers that tell you when the tire needs replacement

## Checking Two-wheeler Tire and Tube Condition

Tires and tubes are the only contact a vehicle has with tarmac. While they need to be replaced as and when needed, inspecting their condition regularly is imperative. First up, the tread depth needs to be checked. This can be done using a rupee coin or a tread gauge. Check the tire thoroughly by inspecting the tread depth after every inch. An irregular tread wear indicates that either your tires are not aligned with each other or have been running for a long time on low air pressure. This poses a huge threat especially during monsoons as the tires would be unable to drain water through them for optimum grip. The only option left is to replace the tire.

While this is an ageing factor which can be judged only by inspecting tread depth, there are other signs that should be checked. Bubbles, cracks or dents in two-wheeler tires may cause them to burst while riding making it hard to control the vehicle, especially at high speeds. They usually appear on the sidewall of the tire, usually due to ageing but sometimes due to punctures as well. Cracks form because of age only and you must replace the tires immediately as soon as you spot them on the sidewall.

While these cases tell you when to replace a tire, it is imperative you get them inspected from a dealership or a competent mechanic regularly. Also, fit a manufacturer-recommended tire as a wider tire would misalign your front and rear tires causing your bike to pull to one side. A lean tire, on the other hand, will not provide you enough traction.

## Motorcycle Spark Plug Care

Carry out a spark plug check from time to time to ensure that the engine is running fine and also to know prior about when to the spark plugs if necessary. Cleaning the spark plug of impurities like dirt and grime as well as cleaning the oil residual if any will go a long way in keeping the spark healthy and fine.

## *Tips:*

1. Carefully remove the spark plug cap.
2. Take a clean cloth and tidy up the area around the plug in order to correctly examine the spark plug condition.

3. Use a spark plug spanner to remove the spark plug and then check the condition of spark plugs. Oil deposits or black crust around the plug tip means the engine is burning at less than perfect condition.

4. To clean the plug, dip it in petrol or kerosene and then give it a clean wipe with a dry and dirt-free cloth.

5. Refer to the manual for the correct recommended gap to be maintained between the electrodes. Usually, the electrode gap is 0.8mm to 1.2mm.

4. After cleaning and thorough check, fit the spark plug back into its position carefully with the help of the spark plug spanner. Remember not to tighten it too much as it can damage the threading and further increase your hassle.

**Motorcycle Chain Maintenance**

The final drive chain is one of the most critical parts on a motorcycle and it endures a lot of stress and to make it worse, it is left out in the open

to face dust, grime, muck and whatever the road throws at it. So even though it is one tough nut to crack, the chain has a certain life span and it needs tender love and care at regular intervals to keep it healthy and to improve its life span. A well-maintained chain also guarantees a healthy set of sprockets which again require regular replacement depending upon the kind of use they undergo.

A badly maintained chain will rapidly eat through a set of sprockets requiring you to change the entire chain sprocket set frequently. There are some simple and efficient methods to keep the chain working fine as well as to make sure that it lasts longer and that it does not wear out the sprockets in lesser period of time than usual. Just stick to the following steps and try to squeeze a few minutes once every week to attend to the chain and it will go a long way in keeping your lovely ride working fine.

1. Park the motorcycle in a clean place and put it on a main-stand. In case of no main-stand on the motorcycle use a paddock stand. Make sure that the rear wheel can rotate freely.
2. Do not switch on the Motorcycle. Keep the engine switched off at all times. Just slot the gear in neutral so that the rear wheel is free to rotate.

4. Slowly turn the wheel and give the chain a clean wash with a chain cleaner (there are plenty of them available in the market) or you can also use kerosene or diesel for the purpose.
5. In order to remove small dust and dirt particles attached to the chain, use a hard paintbrush as you rotate the wheel. Do not use fingers to reach tight spots it could result in severe injury.

6. Once the cleaning is done, let the chain dry off the excess cleaning liquid. Then start applying the chain lubricant. Do not over-spray the lubricant. Little but regular is how it works for chain maintenance.


## Non-Sealed Chains

The simplest type of chain is a standard, non-sealed chain. This chain will require the most maintenance because it does not have any way of keeping itself lubricated like an O-ring chain does. If your bike has one of these chains, you will need to keep a closer eye on it for wear and attend to it more often.

So why would anyone want a non-sealed chain? There are a few advantages to having a these chains depending on the type of riding you will be doing. Many racers prefer this type of chain because they tend to have less friction than their sealed counterparts. Also, many older bikes are not compatible with O-ring chains. While you may want to try to switch your chain over to the less demanding of the types, your engine may be better off staying with its original non-sealed chain.

## O-Ring Chains

An O-ring chain is a whole lot less needy. This chain has little O-rings between the link plates and rollers of the chain that are used to keep grease and lube inside of your chain while keeping dirt out. While these chains require less upkeep and tend to not need to be replaced as often, they do require some care. Over time, O-rings will lose lubrication and eventually will dry out, crack or even fall off. The best way to slow this process down is with regular lubrication with an O-ring safe lubricant.

There are a few variations in the O-ring family. *For example,* an X-ring chain is designed to reduce the extra friction over an O-ring chain by the shape of its cross section. X-rings have less contact area between the X-ring and the link plates and rollers, and because of this reduction in friction, X-rings also have a tendency to last longer than O-rings.

## Cleaning Your Chain

No matter the type of chain you have, it will still need to be maintained. Gunk and grease can have a tendency to build up around the chain along with dirt and will increase the wear.

Before lubing up your chain, check it for any build up that may need to be cleaned off. If you find that you chain needs to be bathed, put your bike up on a stand so that the rear wheel is off the ground. Rotate the rear wheel to inspect your chain. If you notice that your chain is at the maximum adjustment, is worn down, or has any excessive rust or kinks, it may be time for a new one altogether.

If your chain is still in good condition but just needs to be freshened up, you should use a mild soap and a brush to scrub off any dirt or excess grease build up. While you can use a wire brush on a non-sealed chain, be sure to use a much softer brush on a chain with rings.

## Lubing Your Chain

When lubing your chain, you will want to get the lube inside the pins and rollers and a little precision is necessary. With your motorcycle still mounted on its stand and the rear wheel elevated, apply lube to the lower chain while spinning the rear wheel forward, allowing the chain to climb on the sprocket.

Once you have managed to cover the entire length of the chain, wipe off any access lube so that it does not build up or attract dirt and let it sit for a few minutes. Give the rear wheel a spin every so often to help the lube work its way into the chain.

You will find that a properly cleaned and lubed chain can have a huge impact on how smoothly your bike can transfer its power from the engine to your rear wheel. Be sure to add chain maintenance to your list. The

standard for checking your chain is every 300 miles, but check your owner's manual for your specific bike.

## Replacing Your Chain and Sprockets

Just like everything else on your bike, even the best of chains will get worn down eventually. Chains will get stretched out, rust and age. When they do, it is better to catch it early and replace your chain before it lets you know that it is time by failing on you during a ride.

You can tell when you should change your chain fairly easily. You may be able to tell when your chain needs replacing if your model has a "replace chain" marking and the rear-axle adjusters have reached it. If you do not trust your eyes to catch the signs of a worn out chain, check your owner's manual to find out at what mileage your chain should be changed.

## Removing the Old Chain

In order to get your bike ready for a new chain, put it in neutral and rotate the rear wheel to find the master link. Once you have found it, loosen the rear axle of your motorcycle and slide the rear wheel as far forward as you can in order to get the chain to be as loose as possible.

If your master link is the clip style, use a screwdriver in order to break it loose. If you have a hefty chain breaker or your chain is a fairly small chain, you can also use a chain breaker to remove one of the pins.

However, because chains are getting stronger and stronger, you may find that your chain will out power the chain breaker, and the pin you are trying to punch out might just break the head of your chain breaker instead.

That is why the safest way to do this is by "prepping" the pin you plan to punch out. With a hand held grinder or rotary tool, grind off the heads off one of the pins until its flush with the link, then punch it out. You will find that it comes out much easier, because you do not have to bend the flanges of the pin head with your chain breaker.

Once you have the master link disconnected or have the chain separated, carefully pull the chain until it is completely free.

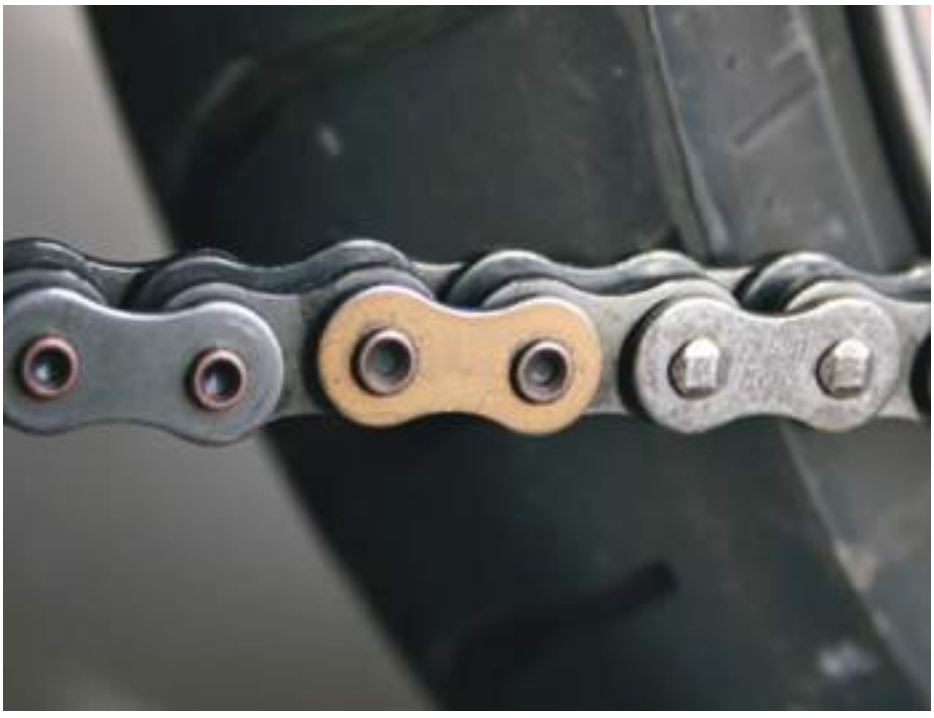
## Installing a New Chain

One of the easiest ways to get the right size chain is to simply count the number of links in your old chain and buy the same size chain. If you are between sizes, buy a chain that is a few links longer just to be safe. It is always better to have to knock a few links off with a chain tool,

which is an easy process, rather than go through the hassle of exchanging it for the right size.

When fitting your chain onto your bike, make sure you move your chain adjusters to the forward-most position. The chain will stretch quite a bit as it breaks in, and this will allow you to move the adjusters backward to compensate as that happens. Wrap the chain around the sprockets and do a test fit, and remove any links necessary to get the tightest fit you can.

Next, secure both ends of the chain together with the master link. If you are installing an O-ring or X-ring chain, be sure to slide the seal over the pins of the master link before attaching the master link plate and clip. While clip style master links are easier to install, rivet style links are stronger, more secure, and look more professional.



In order to install one, before trying to connect it to the chain, you should coat the link with the (very goopy) lubricant that came with it. Be sure to coat the O-rings as well, then slide them onto both of the master link's pins. Then coat the remaining pair of O-rings and the master link's side plate. All you are trying to do here is mimic the pattern of O-rings on the rest of the chain - when looking at it, it will be pretty self-explanatory.

Once everything is all nice and lubed up, insert the master link into the chain by sliding the pins into the chain from the back. With a wrench, slowly tighten the chain tool until the side plate is evenly mounted onto the master link, with the open ends sticking out just enough to flare them. Then take the plate off the chain tool, and insert the rivet flare pin into it. Carefully align the rivet setter over each rivet and tighten it slowly until you flare the rivet just enough.

Once the pin is in a mushroom shape, repeat on the other pin. Keep a close eye on the pins as you do this, in order to not over tighten them; this can damage the flare on the rivet and cause the chain to kink as well. Once you get them flared just the right amount, you have got a perfectly secured rivet master link that will hold even while you ramp up your RPM's.

After the master link is ready to go, tighten your chain adjusters to where you have the right amount of chain slack. This is important so check your owner's manual, but generally having an inch or so of up and down flex in the chain is about right. It is better to have it a little too loose than too tight, because your chain needs to move up and down, flexing with the suspension of the bike. If your chain is too tight and you start working the suspension on a ride, you can risk snapping the chain.

# BIKE ELECTRICAL SYSTEM CARE AND MAINTENANCE TIPS

Although most motorcycles have an electrical system that is shielded from the elements, there are still some preventative measures you can take to ensure that your bike has the juice it needs. Staying away from high-pressure

washes is the first step. The second is to periodically inspect your bike's wiring harnesses for cracks or tears.

Electrical wires are the nerves of the bikes electrical system. Ensure that the main cables do not have a cut or signs of abrasion on them. Replace the worn out wires rather than repairing them, since repairing the wire means the job is only half done. Try to tape the loose wires together in a bunch so that the strength of the wires is increased. Be sure to pay close attention to any wiring that is located near a heat source or are exposed to the elements.

Another tip for maintaining your bike's electrical system is to purchase a trickle charger for your battery.

A trickle charger will slowly charge your battery to the proper level. This slow charge extends your battery life. Also, during the winter it is a good idea to leave your motorcycle battery on your trickle charger so that the batter is continually charging. This is great for those sunny winter days when you just need to go out for a ride. If your battery is charged and your fuel system is stabilized, your bike should start right up and you will be ready to ride.

## Bike Battery Maintenance

Check the water level every other week. Use the minimum and maximum markers inside the cells as guides. The electrolyte cells of regular motorcycle batteries should be topped up with distilled water and not tap water. Distilled water has no impurities so batteries are not stressed and therefore last longer.


### *Clean the Terminals*

The terminals should be cleaned to prevent corrosion which can cause problems starting the bike. Cleaning regularly prevents the buildup of dirt and sediments. The terminals can be cleaned with the help of a brush.

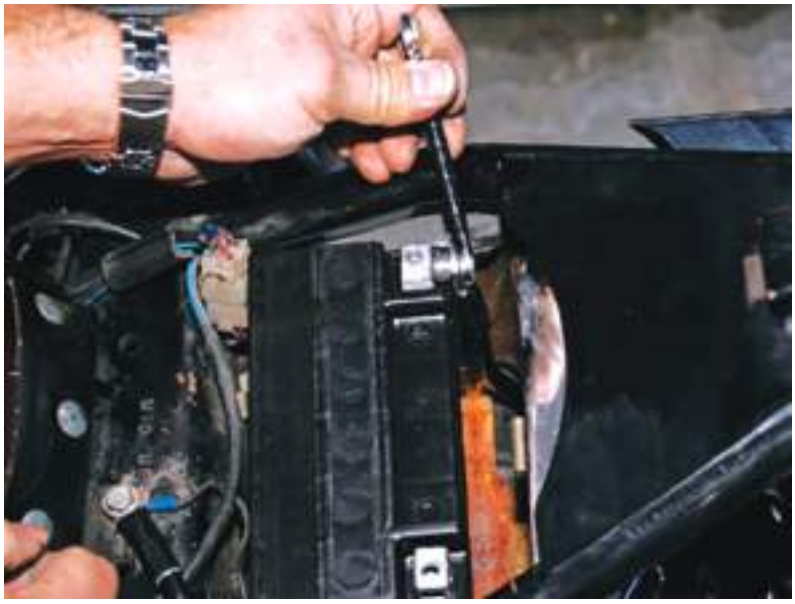
## Loose Connections

The terminals should be cleaned with a brush to prevent corrosion and accumulation of dirt and sediments.

Faulty fuses are a common reason for breakdown. Replace old fuse even if it is in working condition. Keep a spare fuse in your tool kit.

## *Inspect your Battery for Leaks*

Check battery for leaks. Water can get inside the casing and cause the metal connectors to rust. Leakages should be rectified immediately.



# TWO WHEELERS GARAGE EQUIPMENT

Choosing right kind of garage equipment and tools is the most important aspect of any garage. If someone owns an auto service station or garage, he must have all the essential tools and equipment's which can make a garage more functional. There are various must to have garage tools and equipment which are required in an automobile garage or service station such as vehicle lifts, toolbox with essential service station equipment's, air compressors, grease pump, fluid evacuator and brake bleeder and the likes. All these and a lot more equipment's can be bought from garage equipment manufacturers, and service station equipment suppliers.

# Tool Trolley

A tool trolley is a cart-like device that helps categorize, carry, and safeguard various tools. Tool trolleys are particularly useful for professional craftsmen, such as builders, carpenters, and machinists, who have a large amount of equipment to organize and tote around. Tool trolleys can also be used by hobbyists. For example, someone who enjoys woodworking may use a trolley to help store and arrange his or her tools. A tool trolley may also be referred to as a tool cart.

In essence, a tool trolley is a larger version of a tool case, tool chest, or tool box. Tool cases, chests, and boxes usually have a box shape with a base and a hinged cover. Generally, they also have a handle on top as well as latches that attach the cover to the base. Typically, they can be carried by hand from one location to another.

Tool trolleys, on the other hand, are generally larger in size. On average, they are about the size of a small desk. They are usually waist-high and have wheels on the bottom that allow them to be rolled from one area

to another. Historically, tool trolleys were made from wood. In modern times, however, a tool trolley is typically made from either metal or plastic.

Many tool trolleys function as portable tool shelving and work stations, allowing craftsmen to easily access a large variety of different tools. Most trolleys have a series of drawers designed to provide owners with an easy method for sorting tools. A tool trolley may also contain a cabinet or two that allows for storage of larger items, such as buckets, paint cans, or power-operated carpentry equipment. A few tool trolleys are even power-operated.

Some craftsmen use tool belts or aprons in conjunction with, or as an alternative to, a tool trolley or tool box. These devices can be tied around the waist and allow for easy portability, although they can only hold a limited amount of tools. A bucket organizer is another tool storage device. They generally have a dozen or more pockets in which tools can be placed for easy access and viewing.

Tool sets can be a substitute for a tool trolley. They are lightweight and normally come in plastic cases. The tools usually snap into a particular area of the case, making them easy to organize. Generally, they hold only a few tools. As a result, professional craftsmen usually also need a tool trolley or tool box when working on a large project.

# Hydraulic Lift

Hydraulic lift tables are small, powerful elevator platforms used in construction, electrical and power service, automotive and garage service, manufacturing, painting, inventory management, telecommunications, wire and cable industries, and any other industry in which getting work pieces. These tools operate on the principles of hydraulics, whereby a system of pumps and motors is used to convert hydrostatic power, or intense pressure in a fluid, into mechanical motion, or work. The fluid most commonly used in hydraulic systems is petroleum with various additives. Because fluids are highly resistant to pressurization, they can contain a tremendous amount of energy without losing very much volume.

Two of the most important applications of hydraulic lift tables are to improve worker safety and to increase the maximum weight of any given product component. Because these devices contain fluids at high pressure, their components must be very strong and resistant to damage. Even a tiny leak can release a stream of high-pressured fluid that can puncture human skin. Hydraulic lift tables are equipped with pressure relief valves, should the pressure inside exceed safe levels.

As a mechanical means of transferring power, the hydraulic lift is hard to beat. A lot of mechanical power can be contained in small cylinders filled with pressurized fluid. These cylinders are usually made of steel, stainless steel, or aluminum; although titanium is used in some high-performance variants. Hydraulic lift tables often include features for mounting on trucks or other vehicles. Modern devices include microprocessors with load sensors that tune pumps to operate at maximum efficiency levels.

## Tire Changer

A tire changer is a machine used to remove tires and mount tires onto wheels. Hydraulically-operated, a tire changer uses compressed air and hydraulic fluid to compress a tire, breaking it free of its seal to the wheel. Once the tire's bead has been broken, a tire tool is used to spin between the tire and the wheel, literally peeling the tire off of the wheel. With the old tire removed, it is time to place a new tire on the wheel and use the tire tool to squeeze the tire over the wheel's outer lip and into position on the wheel. The tire is then inflated, sealing it to the wheel's bead, and the air pressure is monitored by watching an air pressure gauge affixed to the tire changer.

Prior to the invention of the tire changer, tires were changed by hand. This was accomplished by breaking the tire's bead loose through the process of pounding it with a hammer, eventually driving the bead down and out of place on the wheel. With the bead broken, two flat iron bars were inserted between the tire and the wheel and the tire was then slowly worked up and over the wheel's lip. This was a very labor-intensive job and could take hours to change a single tire.

The earliest version of the tire changer was a model that was completely powered by hand. The basic design was very similar to the tire changer that came after; however, all of the machine's actions were accomplished by a person pulling and pushing the attachments by hand. Instead of having electric motors and compressed air to operate the machine, a mechanic simply slid the attachment into position and then used his strength and determination to operate the tire changer.

Many times, the mechanic using the earlier machines would resort back to using a hammer out of frustration over not being strong enough to push the tire changer attachment by hand. This technique led to the nickname for a tire-changing worker to be called a tire buster and the act of changing a tire to be known as busting a tire. The inclusion of the

electric hydraulic system accompanied by the use of compressed air to operate a tire changer made the job much less physical.

The modern tire shop has several tire-changing machines tailored for special duties. Machines for steel and aluminum wheels, motorcycle tires and even huge semi-tire changing machines are common. The effectiveness of the modern machines makes changing tires a minimal-effort job.

## Hydraulic Jack

A hydraulic jack is a jack that uses a liquid to push against a piston. This is based on Pascal's Principle. The principle states that pressure in a closed container is the same at all points. If there are two cylinders connected, applying force to the smaller cylinder will result in the same amount of pressure in the larger cylinder. However, since the larger cylinder has more area, the resulting force will be greater. In other words, an increase in area leads to an increase in force. The greater the difference in size between the two cylinders, the greater the increase in the force will be. A hydraulic jack operates based on this two cylinder system.

Hydraulic jacks have six main parts. These are the reservoir, pump, check valve, main cylinder, piston, and release valve. The reservoir holds hydraulic fluid. A pump will draw the fluid up and then create pressure on the down stroke as it pushes the fluid through the check valve. This valve allows the fluid to leave the reservoir and enter the main cylinder. In the main cylinder, the piston is forced up as the cylinder is filled with the fluid. When it is time to release the pressure and allow the piston to return to its starting position, the release valve is opened. This allows the fluid to return to the reservoir.

One of the most common uses of a hydraulic jack is the hydraulic car jack. These are much easier to use than traditional screw jacks. When using a hydraulic jack to change a car's tire, be sure that the car is in park. If the car has a standard transmission, be sure that it is first gear or reverse. Locate the jacking point. This is usually about a foot behind or in front of the wheel that you want to change. Place plywood on the ground to form a stable surface. Put the jack on the plywood. Do not place the jack directly on asphalt or it will sink into the ground. Release the locking mechanism on the jack handle. Pump the lever to jack up the car. Keep raising the car until it is about two inches off of the ground. Insert the jack stand under the car. Change your tire. Remove the jack stand and lower the car using the hydraulic jack.

## Wheel Balancer

Balance wheels are simple devices that help to control the speed of movement that occurs within a piece of machinery. Wheels of this type are found in everyday appliances like clocks and watches, as well as in large machines that are used in the manufacturing of different types of products. The concept of the balance wheel has been around for centuries, and has remained mostly unchanged since the middle ages.

While there is some difference of opinion as to when the balance wheel was first invented, there is general agreement that mechanized timepieces developed during the 14th century included the use of these wheels. Over the centuries, timepieces of all types, ranging from pocket watches to the large clocks found in the town squares of many municipalities, included the use of a balance wheel. It is only since the 1970's and the invention of newer digital timepieces that the balance wheel has begun to disappear from some forms of clockwork.

Over the years, different types of metals were used in the construction of balance wheels. Today, the wheels used in some wrist watch designs are composed of a compound known as glucydur, which is composed of copper, iron, and beryllium. Lightweight in design, a balance wheel made with this compound is still very strong, and likely to hold up well over many years of use.

The basic function of the balance wheel can be illustrated by considering the workings in a standard windup clock. The wheel is weighted in a manner that helps to control the movement of the controls, effectively keeping the movement of the second, minute, and hour hands accurate. Usually, the wheel is moved by some type of spring, sometimes referred to as the hairspring or spiral spring. With the aid of the spring, the balance wheel moves from left to right, stopping at the middle point as part of the timing process, while other designs call for steady left and right movement that is not unlike the movement of a pendulum on a grandfather clock.

While many modern machines no longer include a balance wheel, there still exists some equipment that was first put into service in the middle years of the twentieth century that rely on the wheel for such functions as timing the progress of raw materials through the process. In some cases, the wheel is necessary to make sure that the materials are not subjected to extreme temperatures for more than a specific period of time. Machinery of this type is not used as widely today, and is normally replaced as plants switch to new machinery that is capable of producing more finished units in less time.

## Scissor Lift

Industrial lifts have traditionally been in use in manufacturing and production settings to raise and lower people, work pieces and materials. Customers perusing the aisles of a large retail store in the late evening hours have no doubt seen one, if not realized what it was. In basic terms, the scissor lift is platform with wheels that acts like a forklift.

The scissor lift is unique in that it does not use a straight support to raise workers into the air. Rather, the platform raises when the linked, folding supports underneath it draw together, stretching it upward. It can be powered by hydraulics or an electric motor, but it is a bumpy ride to the top. The lift's design keeps it from traveling with a constant velocity, instead traveling faster in the middle of its journey and slower with more extension.

The first scissor lifts were built in the 1970s; although improvements in materials and safety have been made since then, the underlying basic design is often still used. The concept was ideal for the many retail establishments that were beginning to expand their inventory. As a relative to the forklift, the scissor lift boasted portability along with effectiveness. In addition, they were the only industrial platforms that could be retracted and fit into the corner of the office.

Modern scissor lifts maintain a presence in nearly all aspects of manufacturing and production, from construction to assembly to vehicle repair and beyond. Newer models can travel over the smooth surface of the warehouse floor or the uneven terrain of a construction site. The

casual shopper may never know the next step the scissor lift takes, but then again, she may just be using it to get that stubborn cat out of her front tree.

The ignition coil consists of a former on which other parts are assembled or wound. The primary winding is done on the former. The secondary winding is done over the primary winding. An insulating paper is used between the winding layers. The ends of the windings are soldered together to take a lead for grounding. The lead from the primary is for the input and the lead from the secondary is the high voltage side. The whole of the former along with the windings are housed inside a cover. The cover has an eccentric protrusion through which the secondary lead is taken out. The lead from the secondary is in contact with a brass pin in the eccentric protrusion of the cover. The brass pin can easily seat on top of the spark plug. The brass pin is surrounded by a bake lite piece to minimize the flow of heat from the engine to the ignition coil. The other end of the unit is covered by the cap.

# HOW TO GET MOTORCYCLE REPAIR TRAINING

If you are interested in pursuing a career in motorcycle repair, then training is a necessity. Formal training can be found in many ways. You can follow a specific route in your endeavor to become trained in motorcycle repair. This will ensure that you learn everything related to the field. Consider the following steps if you want to get motorcycle repair training.

1. **Understand what the Requirements are for Repairing Motorcycles:** Before getting the training, you need to make sure that you know what you are getting into. Motorcycle mechanics need to know how to repair, maintain, adjust and test all the components of a motorcycle. They should be knowledgeable in the complete mechanics of a motorcycle and be able to recognize and fix mechanical problems.

2. **Begin your Motorbike Repair Training with a High School Diploma:** Even though this is not a requirement, a high school diploma is a helpful foundation to build upon. Any mechanical training will be easier to comprehend once you have completed classes in basic English, math and science.

3. **Research Motorcycle Repair Training Programs and Workshops in your Area:** Not only do colleges offer mechanical training for motorcycle repair, but some dealerships do also. Look in trade magazines for information or search online. Ideally you should opt for training that covers different model bikes, unless you prefer to specialize in 1 particular model.

4. **Get Certified in Motorcycle Mechanics:** This may be a requirement in the area that you want to eventually work in. Find out what the exact requirements are, and complete the certification as soon as you can after completion of your training.


5. **Opt for an Internship at a Dealership:** Experience is a great way to train. When you work in the actual environment you hope to eventually have a career in, you will gain valuable knowledge. Internships provide you with real life, day to day, situations that you probably would not experience in a classroom. You could set yourself up with an internship while you are taking classes. This way you can practice what you learn in the classroom, out in the field.

6. **Consider Getting a Job in a Dealership as an Assistant Mechanic:** You can start off doing odd jobs or running around for the head mechanic. Once you have your foot in the door, you can work your way up as you prove your competence as a mechanic. If you become a valued employee, you can ask your employer if there are any motorcycle repair courses in place that you can attend. Your employer may be willing to pay for you to get further training in the field.
7. **Stay Abreast of the Latest in the Field of Motorcycle Repair:** This may mean continued training so that you are familiar with recent trends as technology changes. By doing this, you are improving your chances for advancement in your company. Additionally, you will increase your value within your company, making you less likely to be laid off or replaced.

# SMALL ENGINE MECHANICS

Small engine mechanics inspect, service, and repair motorized power equipment. Mechanics often specialize in one type of equipment, such as motorcycles, motorboats, or outdoor power equipment.

Small engine mechanics regularly work on power equipment ranging from snowmobiles to chainsaws. When equipment breaks down, mechanics use many strategies to diagnose the source and the extent of the problem. Small engine mechanics determine mechanical, electrical, and fuel problems and make necessary repairs.

Mechanics' tasks vary in complexity and difficulty. Many jobs, such as maintenance inspections and repairs, involve minor adjustments or the replacement of a single part. Others, including piston calibration and spark plug replacement, may require taking an engine apart completely. Some highly skilled mechanics use computerized equipment for tasks, such as customizing and tuning racing motorcycles and motorboats.

Mechanics use a variety of hand tools, including screwdrivers, wrenches, and pliers, for many common tasks. Some mechanics also may regularly use compression gauges, ammeters, and voltmeters to test engine performance. For more complicated procedures, they commonly use pneumatic power tools or diagnostic equipment. A pneumatic tool such as an impact wrench is an air tool powered by compressed air.

Although employers usually provide the more expensive tools and testing equipment, mechanics are often expected to buy their own hand tools. Some mechanics have thousands of dollars invested in their tool collections.

## Duties

Small engine mechanics typically do the following:

- Discuss equipment issues, maintenance plans, and work performed with customers
- Perform routine engine maintenance, such as lubricating parts and replacing spark plugs
- Test and inspect engines for malfunctioning parts
- Repair or replace worn, defective, or broken parts
- Reassemble and reinstall components and engines following repairs
- Keep records of inspections, test results, work performed, and parts used

## How to Become a Small Engine Mechanic

Small engine mechanics typically enter the occupation with a high school diploma and learn their trade through on-the-job training. As motorized power equipment becomes more sophisticated, employers increasingly prefer to hire mechanics that have completed postsecondary education programs.

## Education

Small engine mechanics typically begin work with a high school diploma and learn on the job. Generally, employers look for candidates who have completed courses in small engine repair, automobile mechanics, and science. Some employers may hire applicants with less education if they have adequate reading, writing, and math skills.

Some motorcycle and marine equipment mechanics complete postsecondary education programs in small engine repair. Employers may prefer to hire these workers because they usually require significantly less on-the-job training. Because of the limited number of postsecondary programs, however, employers often have difficulty finding qualified workers.

## Important Qualities

*Customer-service Skills:* Mechanics must discuss equipment problems and repairs with their customers. They should be courteous, good listeners, and

ready to answer customers' questions. In addition, self-employed workers frequently depend on repeat clients for business.

*Detail Oriented:* Mechanical and electronic malfunctions often are due to misalignments or other easy-to-miss errors. Mechanics must account for those types of problems when inspecting or repairing engines and components.

*Dexterity:* Many tasks, such as disassembling engine parts, connecting or attaching components, and using hand tools, require a steady hand and good hand–eye coordination.

*Mechanical Skills:* Mechanics must be familiar with engine components and systems and know how they interact with each other. They must frequently disassemble major parts for repairs and be able to reassemble them properly.

*Troubleshooting Skills:* Mechanics, especially marine equipment and motorcycle specialists, must be able to identify problems in increasingly complicated mechanical and electronic systems using diagnostic equipment. They must be familiar with electronic control systems and the appropriate tools needed to fix and maintain them.

## Training

Trainees work closely with experienced mechanics while learning basic tasks, such as replacing spark plugs or disassembling engine components. As they gain experience, trainees move on to more difficult tasks, such as advanced computerized diagnosis and engine overhauls. Achieving competency may take anywhere from several months to 3 years, depending on a mechanic's specialization and ability.

Because of the increased complexity of boat and motorcycle engines, motorcycle and marine equipment mechanics often need more on-the-job training than outdoor power equipment mechanics.

Employers frequently send mechanics to training courses run by motorcycle, motorboat, and outdoor power equipment manufacturers and dealers. Courses may last up to 2 weeks, teaching mechanics the most up-to-date technology and techniques. Often, these courses are a prerequisite for warranty and manufacturer-specific work.

## *Pay*

The median annual wage for small engine mechanics was $32,640 in May 2012. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 % earned less than $20,490, and the top 10 % earned more than $51,040.

Most small engine mechanics work full time during regular business hours. However, seasonal work hours often fluctuate.

Most mechanics are busiest during the spring and summer, when demand for work on equipment from lawnmowers to boats is the highest. During the peak seasons, some mechanics work considerable overtime hours. In contrast, some mechanics are not busy during the winter, when demand for small engine work is low. As a result, during these months they work only part time.

Many employers schedule major repair work such as an engine rebuild to be performed during the off-season, to try to keep work consistent.

Mechanics employed in large shops often receive benefits, such as health insurance, sick leave, and paid vacation time. Conversely, those in small repair shops usually receive few benefits. Some employers pay for work-related training and help mechanics purchase new tools.

# RESOURCES

- http://www.zigwheels.com/guide/two-wheeler-maintenance-guide
- http://www.zigwheels.com/guide/two-wheeler-maintenance-guide/how-to-repair-tubeless-and-tube-tyre-punctures/14664/
- http://www.bikebandit.com/community/guides/how-to-maintain-and-change-your-motorcycle-chain-and-sprockets
- http://www.wisegeek.com/what-is-a-motor-scooter.htm
- http://www.motorcyclemaintenancetips.com/motorcyclechaincleaningtips.php