T-CLOCS

T-CLOCS, refers to Tires and Wheels, Controls, Lights and Electrics, Oil and Other Fluids, Chassis and Chain, and Stands.

Even the most careful and conscientious rider can't ride safely if his or her machine is one bump away from falling apart. Proper care and maintenance of your motorcycle requires frequent attention. Attending to every aspect of your motorcycle's well-being and making sure that all its components and systems are maintained in proper working order will go a long way toward allowing you to ride confidently. The reliability of modern-day machines has made getting stranded on the roadside an increasingly rare event, but any motorcycle can develop problems. Usually, you can discover a potential problem developing and have plenty of time to fix it before it leads to a crisis on the highway.

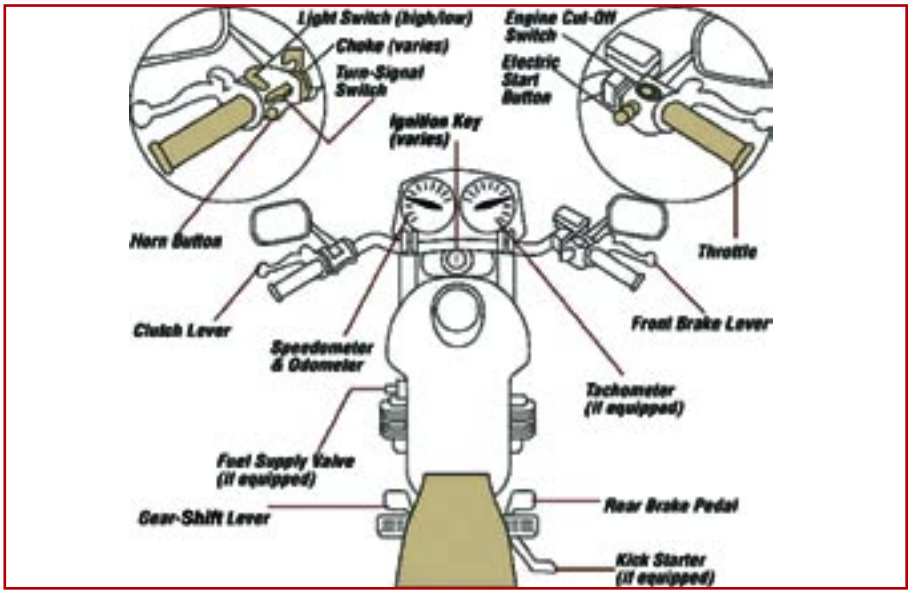
Lots of bikers come to really love their motorcycles in a way that few four-wheeled drivers ever experience. They lavish them with care and attention. Even if your feelings about your bike don't run that deep, regular maintenance and preventive care are crucial. To help you through a quick and easy pre-ride inspection of critical components and systems, the Motorcycle Safety Foundation recommends using the acronym T-CLOCS, which refers to Tires and Wheels, Controls, Lights and Electrics, Oil and Other Fluids, Chassis and Chain, and Stands.

Proper tire pressure will promote better handling and long tire life. Photo courtesy of the Motorcycle Safety Foundation.

Tires and Wheels

T stands for tires and wheels, perhaps the most important components of a motorcycle with regard to safe riding. The small contact patches provided by the front and rear tires are the motorcycle's only source of traction. Even the slightest compromise of quality or condition of your tires can be enough to overwhelm this contact patch and bring a good ride to a bad end.

Check the air pressure in your tires regularly, and adjust it according to the manufacturer's recommendations. Maintaining proper air pressure is important for tire life and tire performance. Incorrect pressure can lead



Controls includes all levers, cables, hoses and the throttle. It's important to maintain these systems to ensure your bike does what you want it to do.

to uneven tire wear. Low pressure can cause excessive heat buildup or instability – especially at high speeds or when carrying heavy loads – and can affect available traction. If, under normal loads and operation, a tire needs air added every time you ride, you should assume there is a small puncture, slow leak, or other problem that can cause a failure. Take care of this ASAP.

Regularly inspect the tire tread depth to ensure that adequate tread remains. Most modern tires have small wear bars molded into the tread grooves. When these wear bars are exposed, the tread is worn out and the tire should be replaced. Although it may look like enough tread remains, it won't be enough to maintain traction in wet conditions, and worn tires are thinner and easier to puncture.

Flat tires happen to everyone. There's no sure way to predict when you might run over a nail, but you may be able to spot other signs of impending tire failure or blowout. Before each ride, take a moment and glance over the tires' tread for any evidence of wear, cuts, embedded objects, bulges, or weathering.

While inspecting the tires, put the motorcycle on its center stand or otherwise raise the wheels securely using a shop stand or jack so that they can spin freely. Check the wheels as well. Most modern motorcycles are equipped with cast-spoke wheels. Make sure that these wheels are free of cracks or dents, especially at points where the spokes join the rim and along the bead (outer edge) portion of the rim. If your bike uses spoked wheels, periodically check to make sure the spokes remain tight. Regardless of the type of wheel, make sure the rim is straight and round.

While the wheels are up and off the ground, check the wheel bearings for wear by grasping the tire at the top and bottom, then pushing and pulling on it. There should be no free play or audible noise from the hub or axle. Inspect the bearing seals for cracks or discoloration.

Inspect the brakes as well. Make sure that the calipers are mounted securely to the forks in the front and the swingarm in the rear. Spin the wheels to confirm that the rotors pass freely through the calipers without dragging, which might indicate a worn or stuck piston, a warped rotor, or other problems with the braking system. Check the brake pads or brake shoes for wear.

Controls

C stands for controls: the levers, the throttle, and all the cables and hoses associated with the motorcycle controls. You use these to communicate with your motorcycle, and it is important to maintain these systems in order to ensure that your bike responds quickly and correctly to your inputs.

Start your inspection with the levers. Make sure they are tight in the mounts but still pivot freely, and make sure the levers are not cracked or bent. A bent lever might restrict the available travel of that lever, possibly preventing complete engagement of the clutch or brakes. Also inspect the cable ends, looking for signs of fraying. Look carefully at cable routing and make sure there are no kinks. Control cables usually fray before breaking completely, and catching a frayed cable ahead of time can keep you from being stranded on the side of the road. A rough or gritty feel at the lever can be a warning sign that the cable it is attached to is beginning to fray. Also look at the cable ends, which occasionally come off unexpectedly. If you are touring long distances, it might be a good idea to carry spare cables in case one breaks. Spare cables are cheap compared to the expense of being stranded.

Pay special attention to the throttle cable routing, to make sure that it doesn't pull when the handlebars are turned. The throttle should rotate freely on the handlebars and snap closed when it is released. Most modern motorcycles are equipped with two throttle cables – a second cable pulls the throttle closed, and both of these cables need to be working. If you notice

the throttle sticking open, try to close it manually. If closing the throttle manually works, you will need to service that second cable so that the throttle automatically snaps closed when the grip is released. It the throttle should stick while you're riding, you'll have to use the clutch and brakes to control your speed as you safely maneuver out of traffic to where you can stop and shut down the engine using the engine cut-off switch.

Most disc brakes are hydraulically actuated and use hoses instead of cables. Make sure to inspect these regularly for cracks, cuts, leaks, bulges, chafing, or other deterioration. When you are checking out the brake levers and hoses, it's also a good time to check the function of the brake light switches. Make sure the brake light illuminates when the front brake lever is squeezed in, or the rear brake pedal is pressed down.

Lights and Electrics

L is for lights and electrics. Electrical components are relatively sensitive to vibration and weather, which makes it important to inspect these systems regularly. Electrical failures can be particularly difficult to diagnose or deal with along the side of the road, so this maintenance is essential.

Your headlight should work properly and be aimed correctly on both-low and high-beam settings. The same applies to your brake and taillight. Make sure the brake light illuminates with both the front brake lever and rear brake pedal. Regularly check the function of your other electrical switches, including turn signals, horn, and engine cut-off switch, to make sure that these are working the way they should. Inspect all electrical wiring for cracks, fraying, mounting, and chafing of the insulation. Look out for disconnected or broken wires and repair them when necessary.

Your bike will not run without electrical current, so keep the battery fully charged and properly serviced. If you don't ride very often, or if you

Your headlight should work properly and be aimed correctly on both-high and low-beam settings.

The oil in most street bikes lubricates the engine as well as the transmission, so it's doubly important to make sure the oil level is correct. On newer bikes, this is easily done through the sight glass, pictured above. The sight glass typically features low and high marks. Photo courtesy of the Motorcycle Safety Foundation.

Keep the chain at the proper tension and alignment (refer to your owner's manual) and lubricate it often. Photo courtesy of the Motorcycle Safety Foundation.

store your motorcycle during a deployment, you may want to invest in a trickle charger to keep the battery in fully charged condition.

Many new motorcycles are equipped with sealed, maintenance-free batteries. If yours is not, and still uses a serviceable battery, make sure to check it frequently and keep the electrolyte level topped off. Regardless of the battery type, keep the terminals clean and tight and make sure the battery leads and grounds also remain clean and tight.

Oils and Other Fluids

O refers to oil and other fluids. Always keep the engine oil filled to the proper level and change it at regular intervals, according to the manufacturer's recommendations as detailed in your motorcycle owner's manual. Changing the engine oil is probably the most important service that you can perform on your motorcycle for engine longevity. After a few thousand miles of use, the molecules in motor oil break down and the oil loses its ability to properly lubricate the engine parts. This is important because in a motorcycle engine, the engine oil also lubricates the transmission and clutch. The added stress of lashing gears and the additional heat caused by the clutch puts additional strain on the oil molecules, making regular oil changes that much more critical.

Engine failure occurs in times of especially high stress – over-revving, overloading, or when vital lubricants run too low or are too old and worn out to do the job. Fortunately, engine failure almost never occurs unannounced. Usually, there are symptoms, such as poor starting, sluggish throttle response, and unusual noises. In addition to engine oil levels, also check all engine surfaces and gaskets to catch any oil leaks. Don't forget to check the levels of brake fluid and any other hydraulic fluids as well.

If your motorcycle is liquid cooled, inspect the coolant level at the reservoir or recovery tank. Be sure to check the radiator and hoses for cracks or other signs of leaks or potential failures. Don't neglect your fuel system. Replace your fuel filter regularly before it becomes clogged with dirt. If your bike has a fuel valve (petcock), it should turn from on to reserve to off/prime smoothly. A leaky petcock will allow fuel to flow into the carburetors and possibly overfill or flood them. If the O-rings inside the petcock are particularly degraded, some bikes may even leak if it is left in the off position.

Chassis and Chain

The second C in T-CLOCS refers to chassis and chain. Inspect the frame to look for cracks or other signs of trouble. Raise the front wheel off the ground and move the handlebar from side to side, checking to make sure that the forks move freely and easily, without any evidence of side play or any knocking noises. Raise the rear wheel and inspect for signs of play in the swingarm by pushing and pulling on the rear wheel. Once both ends are back on the ground, check the suspension for smooth movement. Pay special attention to fork and shock seals to make sure that no hydraulic fluid is leaking out.

The vast majority of motorcycles use chain drive, and motorcycle

Before you launch, your preflight should include your PPE, your machine, and your plan.

Make sure the side and center stands retract fully out of the way when riding.

drive chains require frequent attention in order to provide long life and optimum service. Keep the chain at proper tension and alignment, and refer to your owner's manual for instructions on how to adjust this system properly and how often to perform the inspection. Depending on riding conditions, you may need to lubricate the drive chain often, as well. Lubricating the chain is best done at the end of a ride while the chain is still hot. The heat will help the lube penetrate the links better. When applying the lube, direct the stream between the plates and rollers, not down the center or against the sideplates.

A badly worn chain is much more likely to break or derail than one that is properly maintained, and a broken chain can do serious damage to the engine cases or swingarm, not to mention potentially locking the rear wheel and possibly causing a crash. Proper chain maintenance is vital. You'll want to inspect the sprockets for wear, as well. Look for hooked or broken teeth, and make sure that the rear sprocket remains securely attached to the rear hub.

Replace your chain when you can pull it away from the rear sprocket and expose more than half a tooth; if it is rusted, pitted or cracked; if it has numerous kinked "tight spots"; or if the rear axle adjusters have reached their farthest limits. If you are unsure of your chain's condition, see your dealer's service technicians for advice.

Motorcycles that use belt or shaft final drives are usually lower-maintenance than chain-drive units, but these are by no means maintenance-free. Just as you would with a chain, regularly inspect the belt to look for cracking, fraying, missing teeth, or other evidence of impending doom. On shaft-drive bikes, watch for leaks at all seals or contact points, and make sure the fluid levels remain at factory specifications.

Stands

S is for stands, including the side stand and the center stand. (Not all motorcycles are equipped with center stands.) Make sure the side and center stands both retract fully out of the way when riding. Hanging stands can easily catch the pavement when leaning into a corner and cause you to wipe out. To prevent this situation, many modern motorcycles are equipped with an engine cut-off that prevents the engine from running if the stand is down while the transmission is in gear. ■

Military Sport Bike Course Coming Soon!

Because you asked for it, the Navy and Marine Corps delivered. A new motorcycle course designed specifically for sport bike riders is coming your way. Courses will begin June 1, 2008 for those of you stationed in fleet concentration areas such as Norfolk, Jacksonville, Fla., Cherry Point, N.C., San Diego, Washington state and various locations in Europe and Japan. The course focuses on the handling and maneuvering characteristics specific to lightweight, high performance machines and will soon spread across the globe. Check your local safety office for details or contact the Naval Safety Center at 757-444-3520 Ext. 7180 or 7135.