



South Carolina

Motorcycle & Moped

Operator's Manual



www.scdmvonline.com

**Developed by
The American Association of Motor
Vehicle Administrators**



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This manual is a supplement to the state's driver manual which covers rules of the road, signs, signals, roadway markings and safe driving practices.

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DISCLAIMER

The state motor vehicle laws that are mentioned in this book are not reproduced in their entirety and the wording is not identical. Due to possible legislative changes in federal and state law and SCDMV policy and procedure, the information in this manual may not always be current. The SCDMV will make every effort to incorporate any changes as soon as possible.

For more information, please visit our website at:

www.scdmvonline.com

SECTION 1

Motorcycle Rider Licensing

This Section Covers

- How to Obtain Your Motorcycle License or Permit
- Types of Motorcycle and Moped Licenses
- Types of Motorcycles
- Mopeds
- Required Motorcycle License Tests
- Motorcycle Rider Training
- Road Test Certificate
- Street-Legal Motorcycle
- Alcohol and the Law
- Drugs and the Law
- South Carolina's Laws
- Specific Rules of the Road for Motorcycles



Operating a motorcycle can be safe and fun when you act as a responsible rider. It also requires special skills and a heightened sense of awareness about other road users, traffic, and environmental conditions and a personal strategy to manage potential problems.

Studying this manual will not only help you pass your licensing tests, but it will also help prepare you to become a responsible and safe motorcyclist.

Take your time learning how to operate your motorcycle and get plenty of riding experience. Find

an experienced and responsible motorcyclist to mentor your learning. This mentoring and riding experience will prepare you for handling today's traffic environment and reduce the potential for a crash.

All riders are also encouraged to attend an entry-level rider education course which provides knowledge and hands-on-training before receiving a motorcycle operator's license.

How to Obtain Your Motorcycle License or Permit

You may obtain a Motorcycle License or permit if you meet these requirements:

- Are at least 15 years of age.
- Have any licensed individual listed in SC Code Section 56-1-100(A)(1-7) give consent if under age 18.
- Are able to submit proof of name, age and address (legal presence if applicable).
- Your privilege to drive in this state or any other state is not suspended, revoked, disqualified, denied or cancelled.
- Pass a knowledge test to get a motorcycle permit.
- Pass a vision test, if applicable.
- Pass a skills test to upgrade from a permit to a license.
- The SCDMV will accept a Motorcycle Safety Foundation skills test certificate if you were tested by an SCDMV approved and contracted third party tester within 30 days of application.
- If you already have a valid driver's license in a different class you may attempt to pass the knowledge test and skills test in the same day if you don't want to get a permit first.

Types of Motorcycle and Moped Licenses

- **Motorcycle (Class M) Beginner's Permit** - A Permit is issued for the purpose of learning how to operate a motorcycle or motor-driven cycle on public roads or highways. A Permit allows you to operate a motorcycle unaccompanied during daylight hours. While operating a motorcycle during nighttime hours, you must be accompanied by a motorcycle-licensed driver twenty-one years of age or older who has had at least one year of driving experience. The accompanying driver be within a safe viewing distance of the permittee when the permittee is operating a motorcycle or a moped. A Permit is not a Motorcycle License. To obtain a Beginner's Permit you must be at least 15 years of age and pass the knowledge test and vision test, if applicable. The permit is valid for a 12 month period.

A motorcycle permit cannot be renewed without making a bona fide attempt to pass the motorcycle skills test. If you attempt and fail the motorcycle skills test three or more times at an SCDMV branch, you must successfully complete an SCDMV-authorized motorcycle safety course and retake the test as part of the course. You may not test again at any of the SCDMV branch offices.

If you are under the age of 18, you must also have a Consent for Minor form (SCDMV Form 447-CM) signed by any licensed individual listed in SC Code Section 56-1-100(A)(1-7). If you are 15 or 16 years of age, you must also pass a driver' education course before you apply for your motorcycle license.

- **Motorcycle (Class M) License** - A Class M Driver's License is issued to an individual who can demonstrate ability to operate a motorcycle. It is required for anyone who wants to operate a motorcycle, or motorcycle with detachable side car on public roadways. With this license you may also operate a moped or three-wheel motorcycle.
- **Moped (Class G) License** - Documents required to obtain a moped license (Class G) are the same as those needed for passenger vehicles (Class D), recreational vehicles and trailers (Class E and F), and motorcycle (Class M). An applicant for a moped operator's license must successfully pass an eye examination and the motorcycle knowledge test of the applicant's ability to read and understand highway traffic signs and knowledge of traffic laws. To prepare for this test, an applicant should read and understand this manual as well as the sign portion of the South Carolina Driver's Manual which can be accessed online free of charge at www.scdmvonline.com or it can be purchased in a branch office.

A valid moped license, or a higher classification of a license, must be in your possession when operating a moped.

Types of Motorcycles

When looking at different types of motorcycles, you will see the term "cc" along with a number: 250 cc, 500 cc, 750 cc. "Cc" is the abbreviation for cubic centimeter, the volume of a three-dimensional substance or the volume of fuel mixed with air that powers motorcycles. A motorcycle with a higher cc engine may weigh more and therefore have more

power and be able to move more weight at faster speeds.

- **Two-Wheel Motorcycles** - If you're 15 or older, a Class M motorcycle license allows you to operate any type of motorcycle. This includes:
 - Two-wheel motorcycle
 - Motorcycle with a side car
 - Three-wheel motorcycle
- **Two-Wheel Motorcycles with Side Cars** - If you only want to operate a motorcycle with a side car permanently attached, you will need a special S3 restriction with your Class M motorcycle license. With the S3 restriction, you **must** have a side-car attached to a two-wheel motorcycle. You cannot operate a two-wheel motorcycle with this restriction. The SCDMV's Master Examiner will administer the test. Contact an SCDMV branch office to schedule your test with the Master Examiner.
- **Three-Wheel Motorcycles** - In the state of South Carolina, you are not required to have a motorcycle license to operate a three-wheel motorcycle (or an automotive three-wheel vehicle). A **three**-wheel motorcycle may be operated with any class license except for a class G moped license.

Mopeds

A moped is a cycle with pedals or without pedals and with a motor of not more than fifty cubic centimeters; or designed to have an input exceeding 750 watts and no more than 1500 watts.

If an internal combustion engine is used, the power drive system must function directly or automatically

without clutching or shifting after the engine is engaged.

A moped operated on any public roadway must be registered and licensed with the Department of Motor Vehicles.

Moped Equipment

1. Operable pedals if the moped is equipped with pedals.
2. At least one rearview mirror.
3. Operable headlights and running lights. **Lights must be on whenever moped is in operation.**
4. Brake lights are operable when either brake is used.
5. Driver and passenger must ride upon permanent regular seats and not carry more persons than the moped is designed to carry.

The Moped Operator

To operate a moped on the public highways and streets, you must be at least fifteen years of age, and you must have a valid driver's license, motorcycle license, beginner's permit or a valid moped operator's license.

A person is eligible for a moped operator's license without regard to his eligibility for or the status of any other driver's license or permit. He or she must pass the motorcycle knowledge test to be eligible for a moped operator's license.

Anyone younger than sixteen years of age with a moped operator's license may operate a moped:

1. Alone during daylight hours only; and

2. During nighttime hours when accompanied by a licensed driver twenty-one years of age or older who has had at least one year of driving experience. The accompanying driver must be a passenger or within a safe viewing distance of the operator when the operator is operating a moped.

The operator of a moped must have the operating lights turned on at all times while the moped is in operation on the public highways.

The Department may suspend, revoke, or cancel a moped operator's license only for violations committed while operating a moped. A moped operator's license may be suspended, revoked or cancelled in the same manner and upon the same grounds for which any other motor vehicle operator's license or permit may be suspended, revoked or cancelled.

Moped Safety

You must have headlights and running lights on whenever moped is in operation.

Mopeds do not have to undergo an annual inspection, but you should check them before every trip to make sure they are in good operating condition.

The law does require that moped operators under 21 years of age wear protective helmets, goggles or face shield. It would be an intelligent decision on your part to also wear protective clothing.

Required Motorcycle License Tests

Safe riding requires knowledge and skill. Licensing tests are the best measurement of the skills necessary to operate safely in traffic. Assessing your own skills is not enough. People often overestimate their own abilities. It's even harder for friends and relatives to be totally honest about your skills. Licensing exams are designed to be scored more objectively.

To earn your license, you must pass a knowledge test and an on-cycle skill test. A vision test may also be applicable.

Knowledge Test - you will need to pass the Knowledge test. Knowledge test questions are based on information, practices and ideas from this manual. They require that you know and understand road rules and safe riding practices. See Section 11 for sample knowledge test questions.

On-cycle Skill Test - you will need to pass an on-cycle skill test, which consists of a series of exercises designed to demonstrate your basic skills in operating a motorcycle. The test will be conducted in a controlled, off-street area. *Note: This requirement can be met if you successfully complete a rider education course and receive a Motorcycle Safety Foundation skills test certificate indicating that you were tested by an SCDMV approved and contracted third party tester within 30 days of application.*

Basic vehicle control and crash-avoidance skills are included to determine your ability to handle normal and hazardous traffic situations.

You may be tested for your ability to:

- Know your motorcycle and your riding limits.

- Accelerate, brake and turn safely.
- See, be seen and communicate with others.
- Adjust speed and position to the traffic situation.
- Stop, turn and swerve quickly.
- Make critical decisions and carry them out.
- Select safe speeds to perform maneuvers.
- Choose the correct path and stay within boundaries.
- Complete normal and quick stops.
- Complete normal and quick turns or swerves.

To receive a motorcycle license with full privileges, maneuvers must be performed as designed for single-track, two-wheeled motorcycles. On-cycle skill tests are not designed for sidecars or three-wheeled vehicles. Those vehicles maneuver differently than a two-wheeled motorcycle. A sidecar restriction will be added to a license if the skills test is taken with a detachable side car attached to a two-wheel motorcycle.

Once you have passed all of the required tests and met all other licensing requirements you may be issued a motorcycle license.

Motorcycle Rider Training

Professional training for riders prepares you for real-world traffic situations.

Several organizations offer beginning, intermediate or experienced rider training courses. Motorcycle rider training is optional in South Carolina unless you have failed the motorcycle skills test three or more times.

Road Test Certificate

The South Carolina Department of Motor Vehicles (SCDMV) contracts with public and private entities to provide motorcycle tests after you take an approved motorcycle rider training course. The SCDMV will only accept the Motorcycle Safety Foundation skills test as a substitute for SCDMV's skills test as long as it is administered by an authorized third party tester who has entered into a written contract with SCDMV. Visit our website for a list of authorized companies at www.scdmvonline.com.

Street-Legal Motorcycle

At minimum, your street-legal motorcycle should have:

- At least one but not more than two, white headlights
- At least one red taillight
- At least one red brake light
- One white license plate light
- Amber turn signal lights if the motorcycle was built after 1973
- A red reflector on the rear
- At least one rearview mirror
- One horn
- Fenders on all wheels
- At least one brake operated by hand or foot
- An exhaust system in good working order and in constant operation, which prevents the vehicle from discharging any visible emissions and keeps exhaust noise levels at or below standards set by the Department of Environmental Quality.
- All lighting must be Department of Transportation (DOT) compliant

Alcohol and the Law

Blood alcohol concentration (BAC) is the percentage of alcohol in relation to the amount of blood in your body. If you are operating a motor vehicle with a BAC of 0.05 percent or higher you are in violation of the law. However, impairment begins with the first drink. **Even under 0.08 you can be impaired and convicted for riding impaired.** If you are arrested for drinking and riding, the penalties are severe. Your driver's license and riding privileges may be suspended and you may be or subject to criminal penalties. In SC, if you are 21 or older and have a BAC reading of 0.15 percent or higher (0.02 percent or higher for persons under 21), you can also have your driver's license automatically suspended. South Carolina's zero tolerance laws make it illegal for anyone under the age of 21 to purchase, possess or consume alcoholic beverages.

An Alcohol Concentration test measures how much alcohol is in your system and is usually determined by a breath, blood or urine test. You are required to take a BAC test if asked by a police officer due to the implied consent laws in your state. Implied consent laws are based on the principle that when you get your driver's license you have implicitly consented to a lawfully requested test to determine the alcohol content of the blood, breath, urine or other bodily substance if suspected of impaired riding. You can lose your driving privileges for 6 months if you refuse to take a BAC test.

While implied consent laws vary by state, the law applies to the state in which you were arrested, not the state where you got your license. That is, if you have a license in a state without an implied consent law, and you are arrested in a state that does have an

implied consent law, you are subject to that state's implied consent laws.

If you are found guilty of an alcohol violation and it is your first conviction, you may be fined up to \$400 (\$992 with assessments and surcharges. You could be sentenced from 48 hours to 30 days in jail and your license could be suspended six months. For second and subsequent convictions, the penalties are more severe.

Drugs and the Law

Driving under the influence of drugs is illegal and it's not only illegal substances that impair riding; some over-the-counter and prescription medications can impair your riding. Several states have *per se* drug laws covering specific drugs, whereby having the presence of that drug in your system while riding is a criminal offense.

South Carolina's Laws

When operating a motorcycle you are granted all the rights and are subject to all of the duties applicable to the drivers of motor vehicles, except as to special regulations or other provisions of law which by their nature would not apply. *Reference the South Carolina Driver's Manual.*

Specific Rules of the Road for Motorcycles

The following SC laws apply to motorcyclists and should be well known to every motorcycle operator.

Under 21 Laws

- **Protective Helmet**

SC requires motorcycle operators and passengers under 21 years of age to wear approved motorcycle protective helmets at all times while they are riding a motorcycle. The

helmet must be equipped with either a neck or chin strap and be reflectorized on both sides.

- **Eye Protection**

SC requires operators under 21 years of age to wear goggles or a face shield.

Operational Laws

- Do not operate a motorcycle unless it is equipped with a **rear view mirror** that will afford you ample vision to the rear at all times.
- When operating a motorcycle on public streets or highways you must have the **headlights** of the motorcycle turned on and the light burning.
- Only ride a motorcycle while **sitting astride** (straddle) the seat, facing forward, with one leg on each side of the motorcycle.
- Do not operate a motorcycle while carrying any package, bundle or other articles which prevent you from keeping **both hands on the handlebars**.
- Do not **attach** yourself or the motorcycle to any other vehicle on a roadway.

Passenger Carrying Laws

- Do not carry any person in a position that will **interfere with your view or the operation and control** of the motorcycle.
- Do not carry any other person on a motorcycle unless the motorcycle is **designed to carry more than one person** behind or to the side of the operator.
- Any motorcycle carrying a passenger other than in a sidecar or enclosed cab must be equipped with **footrests** for its passenger.

- A passenger must sit astride (straddle) the seat and be able to **reach the footrests with both feet** (this does not apply to a passenger riding in a motorcycle sidecar).

Lane Usage Laws

- Motorcycles are not to be operated more than **two abreast in a single lane**.
- All motorcycles are **entitled to full use of a lane** and no motor vehicle is to be driven in such a manner as to deprive any motorcycle of the full use of a lane. *This does not apply to motorcycles operated two abreast in a single lane.*
- Do not overtake and pass in the same lane occupied by the vehicle being overtaken. *This does not apply to police officers in the performance of their official duties.*
- Do not operate a motorcycle between lanes of traffic, or between adjacent lines or rows of vehicles. *This does not apply to police officers in the performance of their official duties.*

Two Minute Law

While operating a motorcycle and approaching an intersection, that is controlled by a traffic-control device, you may proceed through the intersection on a steady red light only if:

- You come to a full and complete **stop at the intersection for one hundred twenty seconds** (two minutes); and
- You exercise due care as provided by law, otherwise treat the traffic control device as a stop sign, and **determine it is safe to proceed**.

Test Your Knowledge

Select the alternative (A, B or C) that best answers the question.

1. With a Class M License/Permit you may:

- A. Operate any motor vehicle, regardless of size or weight.
- B. Operate vehicles with a gross vehicle weight rating of more than 26,001 pounds.
- C. Operate a motorcycle on public roadways.

2. If you are under 0.08 BAC:

- A. You can be impaired and convicted for riding impaired.
- B. You **cannot** be arrested for drinking and driving.
- C. Your riding privileges **cannot** be suspended.

1. C –Types of Motorcycle Licenses

2. A –Alcohol and the Law

SECTION 2

Being in Shape to Ride

This Section Covers

- Alcohol, Other Drugs and Riding
- Health
- Emotions

Riding a motorcycle demands your full attention. Responsible riders pay attention to the riding environment, identify potential hazards, look for escape routes and make good decisions.



Alcohol, Other Drugs and Riding

Alcohol is a major contributor to motorcycle crashes, particularly fatal crashes. Studies show that nearly 40% of all riders killed in motorcycle crashes had been drinking. Riding “under the influence” of alcohol or other drugs poses physical and legal hazards for every rider.

By becoming knowledgeable about the effects of alcohol and other drugs you will see that riding and alcohol don’t mix.

Riding under the influence of alcohol or other drugs poses physical and legal hazards for every rider.



Effects of Alcohol and other Impairing Drugs

Alcohol and other drugs impair your:

- **Judgment** – Alcohol and other impairing drugs affect those areas of your brain that control judgment. You may not be able to make good decisions about the traffic conditions or how you can protect yourself.
- **Vision** – Alcohol and certain types of drugs can blur your vision, slow your ability to focus and cause double vision.
- **Reaction Time** – Alcohol and other impairing drugs slows your ability to process information and impacts your ability to react quickly to a situation.

How Alcohol Works

Unlike other beverages, alcohol is absorbed directly through the walls of the stomach and the small intestine, goes into the bloodstream, and travels throughout the body and to the brain. Alcohol is absorbed quickly and can be measured within 30 to 70 minutes after a person has had a drink.

A typical alcoholic drink equals about half an ounce of alcohol. This is the approximate amount of alcohol found in:

- one shot of distilled spirits, or
- one 5-ounce glass of wine, or
- one 12-ounce beer.



What Affects My Blood

Alcohol Concentration (BAC)?

BAC refers to the amount of alcohol contained in a person's blood. In all states, an adult with a BAC of

0.08% or above is considered intoxicated. However, impairment begins with the first drink. Even under .08 you can be impaired and convicted for riding impaired. How fast a person's BAC rises varies with a number of factors:

- The number of drinks. The more you drink, the higher the BAC.
- How fast you drink. When alcohol is consumed quickly, you will reach a higher BAC than when it is consumed over a longer period of time.
- Your gender. Women generally have less water and more body fat per pound of body weight than men. Alcohol does not go into fat cells as easily as other cells, so more alcohol remains in the blood of women.
- Your weight. The more you weigh, the more water is present in your body. This water dilutes the alcohol and lowers the BAC.
- Food in your stomach. Absorption will be slowed if you've had something to eat.

Don't Drink or Don't Ride

The safest and most responsible choice is to not drink and ride. Because once you start, your judgment is affected and your ability to say "no" gets weaker.

If you plan on drinking, leave your motorcycle at home and find other transportation so you won't be tempted to ride impaired. Or, call ahead to where you plan on drinking and ask if there is a secure place for you to store your motorcycle overnight so you can find an



alternative way home – such as a taxi or designated driver.

There are no shortcuts to removing the alcohol from your body fast. None of the “remedies” you may have heard about – cold showers, hot coffee, or physical exercise will make you remove the alcohol faster. The only proven remedy to removing the alcohol is time. Remember – your body can process about one drink an hour.

Other Impairing Drugs and Riding

All drugs may affect your ability to ride safely. This is true of many prescription, over-the-counter, and illegal drugs. If you are not sure if it is safe to take a drug and ride, ask your doctor or pharmacist about any side effects.

Never drink alcohol while you are taking other drugs. These drugs could multiply the effects of alcohol or have additional effects of their own. These effects not only reduce your ability to operate your motorcycle, but could cause serious health problems, even death.

Health

There are many health conditions that can affect your riding, even little problems. Check with your doctor if a health condition could interfere with you operating a motorcycle.

Emotions

Emotions can interfere with your ability to think, can create mental distractions, increase risk-taking, create a lack of attention, and can interrupt the ability to process information. You may not be able to give all your attention to operating a motorcycle if you are overly worried, excited, afraid, angry or depressed.



Test Your Knowledge

1. If you have only one drink before riding:

- A. You **cannot** be arrested for drinking and riding.
- B. Your riding skills will **not** be affected.
- C. It can affect your ability to operate a motorcycle.

2. What percent BAC is considered intoxicated:

- A. 0.02%
- B. 0.04%
- C. 0.08%

- 1. C –What Affects My Blood Alcohol Concentration?,
- 2. C –What Affects My Blood Alcohol Concentration?

SECTION 3

Before You Ride

This Section Covers

- Selecting and Wearing Protective Gear
- Know Your Motorcycle
- Motorcycle Controls



A responsible rider makes a point to:

1. Wear protective riding gear.
2. Be familiar with the motorcycle.
3. Inspect the motorcycle.
4. Be free of impairments (alcohol and drug free).

Selecting and Wearing Protective Gear

Anytime you ride a motorcycle you should wear:

- A helmet compliant with the U.S. Department of Transportation (DOT).
- Face and eye protection.
- Motorcycle protective riding gear (gloves, long pants, jacket, sturdy footwear).

Helmet Use

Crash data shows that head injuries account for a majority of serious and fatal injuries to motorcyclists. Research also shows that riders wearing helmets have fewer and less severe head injuries in a crash.

Here are some facts to consider:

- Helmets make your riding experience more enjoyable.
- Helmets protect you from the elements (wind, bugs, debris, etc.).
- A DOT compliant helmet does not restrict vision or mask important sounds.
- Crashes are unpredictable and may happen at any time, even on short rides or within minutes of starting the ride.
- Regardless of speed, a helmet will reduce the severity of head injuries.

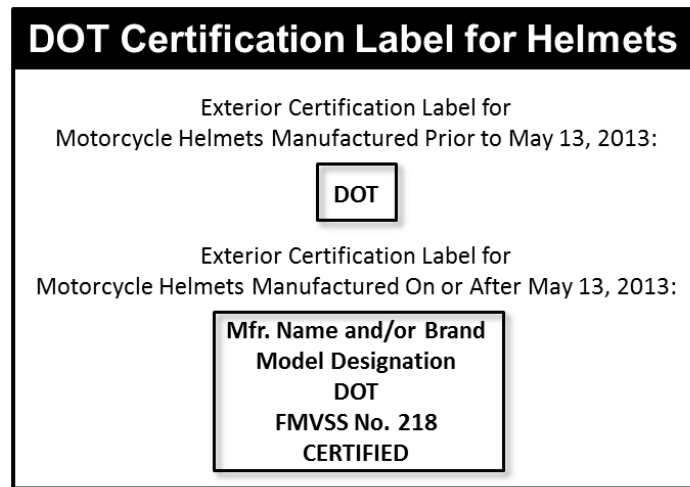
Helmet Selection

Protection should be the first consideration when buying your motorcycle helmet. There are three primary types of helmets: full face, three-quarter, and half. A full face helmet gives the most head protection since it covers all of the head and face. This design has a flip-up face shield that protects the eyes. A three-quarter helmet affords riders good head protection and is constructed with the same basic components, but doesn't offer the face and chin protection of full-face helmets. If you wear a three-quarter helmet, you should use an approved snap-on face shield or goggles. Half helmets provide the least amount of protection.



Whichever style you choose, make sure that the helmet:

- Is DOT compliant. You can tell if a helmet is DOT compliant if it has a label attached to the helmet that states the manufacturer's name and/or brand, model, and says DOT, FMVSS No. 218, CERTIFIED.



- Has no obvious defects such as cracks, loose padding or frayed straps.
- Fastens securely.

Helmet Fit

A helmet should fit comfortably, but snugly. A helmet that is too loose can lift in the wind or come off your head in a fall. One that is too tight can create sores or cause headaches. When choosing a helmet, try on several brands and sizes to get an idea of fit and comfort.

Here are a few tips for the best fit:

- Cheek pads should touch your cheeks without pressing uncomfortably.
- There should be no gaps between your temples and brow pads.
- If the helmet has a neck roll, it should not push the helmet away from the back of your neck.
- On full face helmets, press on the chin piece. The helmet or face shield should not touch your nose or chin.

Whatever helmet you decide on, keep it securely fastened on your head when you ride. Otherwise, if you are involved in a crash, it's likely to come off your head before it gets a chance to protect you.

Face and Eye Protection

Without face protection, an object could hit you in the eye, face, or mouth. A full face helmet provides the maximum face and eye protection while riding and in the event of a crash. A plastic shatter-resistant face shield can help protect your eyes and face from wind, dust, dirt, rain, insects, and pebbles thrown up from cars ahead. These distractions can be painful and can take your full attention from the road. Whatever happens, keep your eyes on the road and your hands on the handlebars.

Face shields come in a variety of designs to fit most any helmet. Make sure that the face shield you choose is designed for your helmet and does not interfere with eyeglasses or sunglasses.

To be effective, eye or face shield protection must:

- Be free of scratches
- Be resistant to penetration

- Give a clear view to either side
- Fasten securely, so it does not blow off
- Permit air to pass through, to reduce fogging
- Permit enough room for eyeglasses or sunglasses, if needed

Windshields will not protect your eyes from the wind and debris; neither will eyeglasses or sunglasses. A windshield is not a substitute for a face shield. Glasses will not keep your eyes from watering, and they might blow off when you turn your head while riding. Goggles protect your eyes, though they won't protect the rest of your face like a face shield does. Goggles can also reduce peripheral vision. Tinted eye protection or shields should not be worn at night or any other time when little light is available.

Hearing Protection

Long-term exposure to wind noise can cause irreversible hearing damage. Properly worn hearing protection can reduce wind noise and make your ride more enjoyable, while still allowing you to hear important sounds like car horns and sirens. You can choose from a variety of styles, from disposable foam plugs to reusable custom-molded devices.

Protective Riding Gear

Riding gear designed for motorcycle riders provides protection in the event of a crash, as well as from heat, cold, rain, debris, and hot or moving parts of the motorcycle. Sturdy synthetic or leather materials provide the best protection. Wearing brightly colored clothing with reflective material will make you more visible to other roadway users.

Sturdy synthetic or leather materials provide the best protection.

- **Jackets and pants** should cover arms and legs completely and be made of durable material. Jeans do not provide adequate protection. Wear a jacket even in warm weather to prevent dehydration. Many motorcycle riding jackets are designed to protect without getting you overheated, even on summer days.
- **Protective footwear** provides protection for the feet, ankles, and lower parts of the legs. They should be high and sturdy enough to cover your ankles and give them support. Leather boots are best. Soles should be made of hard, durable slip resistant material. Sandals, sneakers, and similar footwear should not be used since they provide little protection and may interfere with controls. Keep heels short so they do not catch on rough surfaces. Tuck laces in so they won't catch on your motorcycle.
- **Gloves** allow a better grip and help protect your hands. Your gloves should be full-fingered and made of leather or similar durable material.
- **Rain suits** designed for motorcycle riding resist tearing apart or ballooning up at high speeds. You will be much more comfortable and alert than a rider who is wet and cold. One or two piece styles are available. A rain suit with reflective strips or high visibility orange or yellow colors are good choices.

Whatever the weather conditions, always wear protective gear that will keep you comfortable, enabling you to concentrate on your riding.

Know Your Motorcycle

You should get to know your motorcycle. Learning how things work and what parts need the most

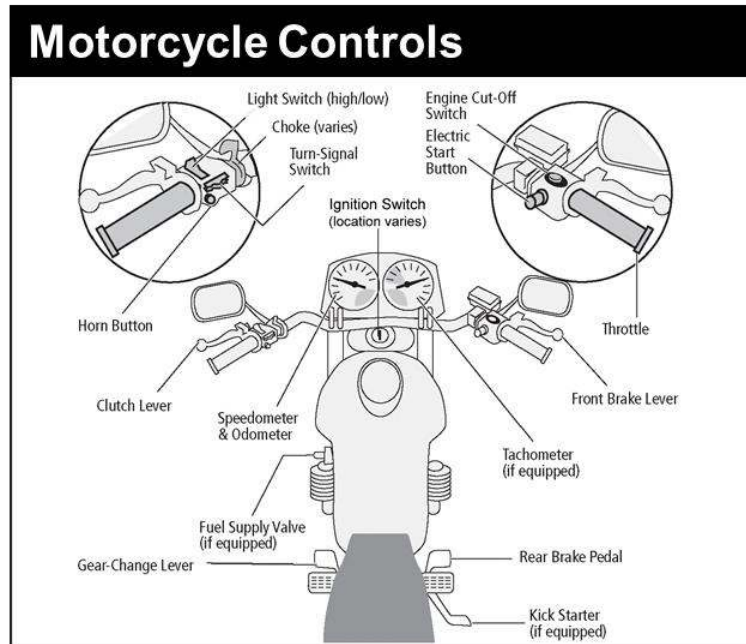
attention could reduce your chances of being in a crash and extend the life of your motorcycle. To make sure that your motorcycle will not let you down:

- Read the owner's manual first and get to know it.
- Be familiar with the motorcycle controls.
- Conduct a pre-ride check of the motorcycle before every ride.
- Keep it serviced and maintained.

Make sure your motorcycle fits you. Your feet should reach the ground while you are seated on the motorcycle.

Motorcycle Controls

It is important to read your motorcycle owner's manual to learn where your motorcycle controls are and how to operate them. You should be able to operate them while riding without having to look for them.



Test Your Knowledge

1. What should be the first consideration when buying your motorcycle helmet:

- A. Appearance
- B. Protection
- C. Price

2. A plastic shatter-resistant face shield:

- A. Is not necessary if you have a windshield.
- B. Only protects your eyes.
- C. Helps protect your whole face.

- 1. B –Helmet Selection*
- 2. C –Face and Eye Protection*

SECTION 4

Vehicle Control Skills

This Section Covers

- Getting Started
- Riding in a Straight Line
- Shifting Gears
- Stopping
- Turning

The following section offers basic riding information on getting started, shifting gears, stopping, straight-line riding and turning. These basic skills are important to learn before moving onto more complex skills.



Getting Started

Mounting the Motorcycle

To mount the motorcycle, stand on the left side of the motorcycle. Grasp both handgrips, squeeze the front brake to keep the motorcycle from rolling, and swing your right leg over the seat. Sit and straighten the bike; raise the side stand with your foot.

Starting the Engine

1. Turn the fuel valve and ignition switch ON.
2. Shift to neutral. Do not rely on the indicator light. Rock the motorcycle back and forth. If the motorcycle rolls freely it's in neutral.
3. Turn the engine cut-off switch to ON.

4. Turn the choke ON for cold starts. Many motorcycles require squeezing the clutch before the starter will operate. This is also a good precaution against accidentally starting the bike in gear and reduces the load on the starter motor.
5. Press the starter button. Avoid using the throttle; the motorcycle should start without it. Many motorcycles have a safety mechanism that cuts power to the motor if the bike is placed in gear with the side stand down; so if you haven't brought the side stand up, do it now. If the motor doesn't start in the first 5 to 8 seconds, stop and repeat the steps above.

Stopping the Engine, Dismounting and Securing the Motorcycle

1. Turn the engine cut-off switch to OFF. Turn the ignition OFF. Turn the fuel valve OFF if your motorcycle has one. Make sure all lights are off.
2. To dismount, put the side stand down. Lean the motorcycle onto the side stand, while grasping both handgrips squeeze the front brake and swing your right leg over. Turn the handlebar fully toward the side stand for stability.
3. After dismounting remove the ignition key and engage fork lock or other security device.

Riding in a Straight Line

Riding Posture

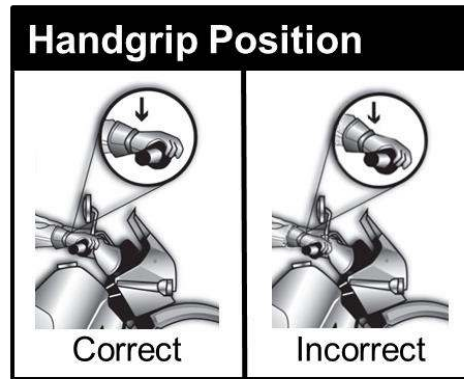
To properly control a motorcycle:

- **Posture** – Keep your back straight and head and eyes up. Sit so you can



use your arms to steer the motorcycle rather than to hold yourself up.

- **Hands** – Hold the handgrips firmly. Start with your right wrist flat. This will help you to control the throttle.



- **Knees** – Keep your knees close to the gas tank when the motorcycle is moving.
- **Feet** – Keep your feet on the footrests when the motorcycle is moving and avoid pointing your toes down. Keep your feet near the controls so you can easily and quickly use them.

Friction Zone

Since most motorcycles have a manual transmission, you will need to use the “friction zone” to start the motorcycle moving and to prevent stalling. The friction zone is the point on the clutch where the engine’s power begins to transmit to the rear wheel. As you reach the friction zone, roll on the throttle and the motorcycle will start moving forward. Do not fully release the clutch lever until your motorcycle is moving and stable.

Friction zone – the point on the clutch where the engine’s power begins to transmit to the rear wheel.

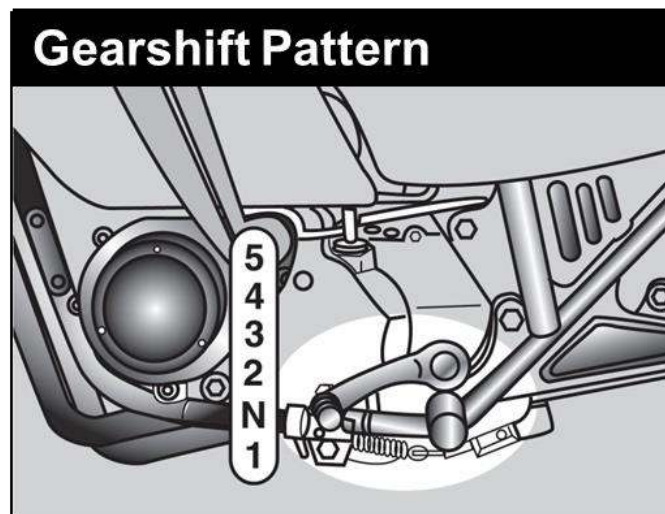
Friction Zone



Shifting Gears

There is more to shifting gears than simply getting the motorcycle to pick up speed smoothly. Learning to use the gears when downshifting, turning, or starting on hills is important for safe motorcycle operation.

- **To upshift to a higher gear:**
 - Roll off, or close, the throttle as you squeeze in the clutch lever.
 - Lift the shift lever. Use firm pressure. Release the shift lever after each shift is completed.
 - Ease the clutch out as you roll on the throttle.
- **To downshift to a lower gear:**
 - Roll off or close the throttle as you squeeze in the clutch lever.
 - Press down firmly (but don't stomp) on the shift lever.
 - Ease out the clutch to avoid skidding the rear tire.



Starting on an Incline

Here are some important tips to remember when starting on a hill:

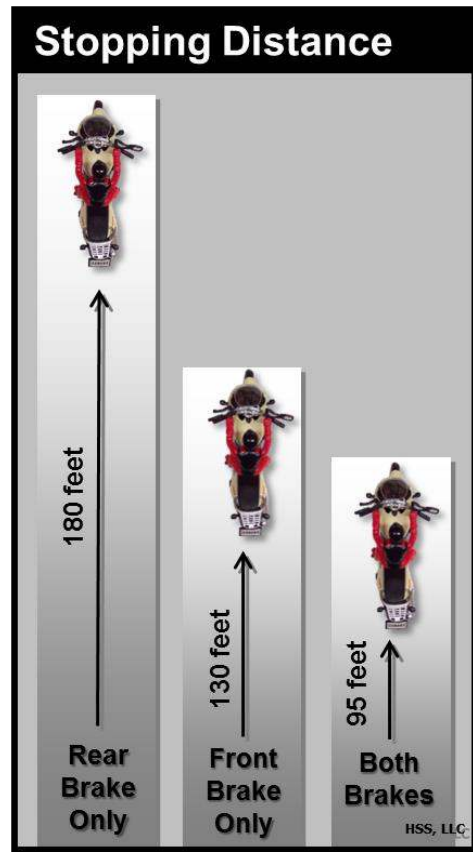
- Use the front brake to hold the motorcycle while you start the engine and shift into first gear.
- Change to the foot brake to hold the motorcycle while you operate the throttle with your right hand.
- Open the throttle a little bit for more power.
- Release the clutch gradually.
- Release the foot brake when the engine begins to slow down. This means the clutch is beginning to transmit power.
- Continue to release the clutch gradually. If you release it too quickly, the front wheel may come off the ground, the engine may stop, or both.
- Continue to open the throttle gradually, as needed.

It is more difficult to start the motorcycle moving on an upgrade than on flat ground. There is always the danger of rolling backwards into a vehicle behind you.

Stopping

Your motorcycle has brakes on the front and rear wheels. Always use both brakes, every time you slow or stop. When used correctly, the front brake can provide **70% or more** of your total stopping power, therefore, use of the front brake is required for effective speed reduction. Using both front and rear brakes shortens stopping distance.

To stop your motorcycle, squeeze the front brake lever and press down on the rear brake pedal gradually until stopped. Grabbing at the front brake or jamming down on the rear can cause the brakes to lock, resulting in control problems.



Normal Stopping in a Curve

If you need to stop while leaned over in a curve, apply smooth gradual pressure to both brakes as you start reducing your lean angle. The more you reduce the lean the more traction you will have to stop. You can apply more brake pressure as your motorcycle straightens up.

Turning

New riders must be aware of the difficulty of negotiating turns and curves. Riders often try to take curves or turns too fast. Reduce speed before

entering the turn and maintain this speed. These four steps will help you learn the skills for turning:

SLOW – Reduce your speed before the turn. This can be done by rolling off the throttle as needed and, if necessary, applying both brakes.

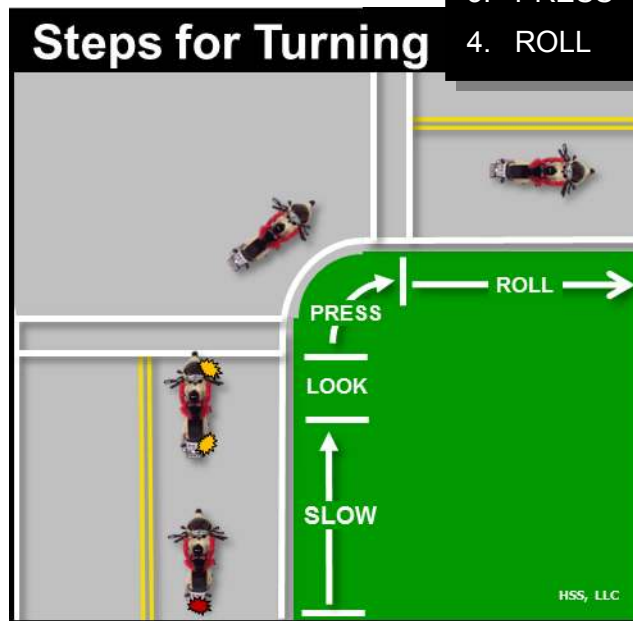
LOOK – Look through the turn to where you want to go. Turn just your head, not your shoulders, and keep your eyes level with the horizon.

PRESS – Press on the handgrip in the direction of the turn. Press left handgrip – lean left – go left. Press right handgrip – lean right – go right. The higher the speed in a turn, the greater the lean angle.

ROLL – Roll on the throttle to maintain steady speed or gradually accelerate through the turn. This will help keep the motorcycle stable.

It is recommended that riders use four steps for better control:

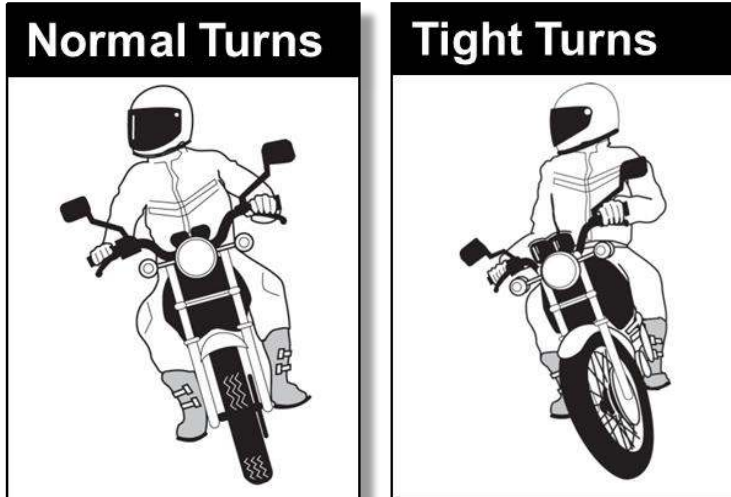
1. SLOW
2. LOOK
3. PRESS
4. ROLL



Turning Techniques

In normal turns, the rider and the motorcycle should lean together at the same angle.

In slow tight turns, counterbalance by leaning the motorcycle only and keeping your body straight.



Test Your Knowledge

1. When stopping, you should:

- A. Use both brakes.
- B. Use the front brake only.
- C. Use the rear brake only.

2. When turning, you should:

- A. Turn your head and shoulders to look through turns.
- B. Turn just your head, not your shoulders to look through turns.
- C. Keep your knees away from the gas tank.

1. A – Stopping

2. B – Turning

SECTION 5

Street Strategies

This Section Covers

- Risk Awareness/Acceptance
- Risk Management
- Intersections
- Space Management
- Escape Routes
- Increasing Conspicuity
- Speed Management



Safe riding is more of a skill of the eyes and mind than of the hands and feet. You need to develop a set of street riding strategies that allows you to gather critical information to make good decisions and avoid problems.

Risk Awareness/Acceptance

Almost all activities people engage in have some level of risk. Operating a motorcycle requires your full attention to reduce risk. Consider the following steps to manage risk and be a responsible rider:

Rider Responsibilities

Accept the responsibilities associated with operating a motorcycle:

- You must have a motorcycle license.
- You will be expected to follow the laws and rules of the road.

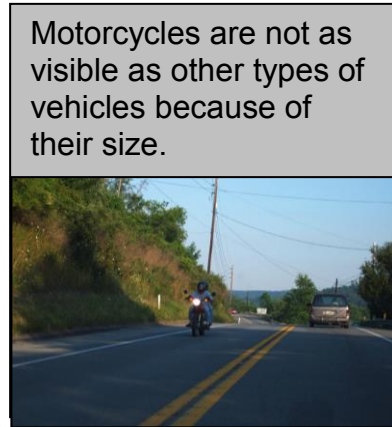
- You must share the road with other users (i.e. pedestrians, bicyclists, large vehicles, etc.)
- Ride alcohol and drug free.
- Always wear protective gear.



Risk Awareness

Riding a motorcycle involves some risks not encountered when driving other types of vehicles. Some of these risks include:

- **Vulnerability** – motorcycles provide less protection in a crash and do not have the stability of cars. This is why you should always wear protective gear.
- **Visibility** – motorcycles are not as visible as other types of vehicles because of their size. Other motorists may not be looking for motorcycles in traffic. This places you at risk.



Risk Acceptance

Once you become aware of the risks associated with motorcycling it is time to accept those risks. Choosing to accept the challenges of being a responsible motorcyclist means to think about the consequences

of your riding behavior in traffic. It also means accepting personal responsibility for the results of your decisions and actions, as well as developing good skills and judgment.

Risk Management

To manage risk you must be aware of the potential risks and then have a plan to reduce the risks.

SEESM – a simple, 3-step and powerful strategy – is to **S**earch, **E**valuate, **E**xecute. It is the strategy to help you understand what is going on in traffic and to be constantly planning and implementing a course of action. Let's examine each of these steps.

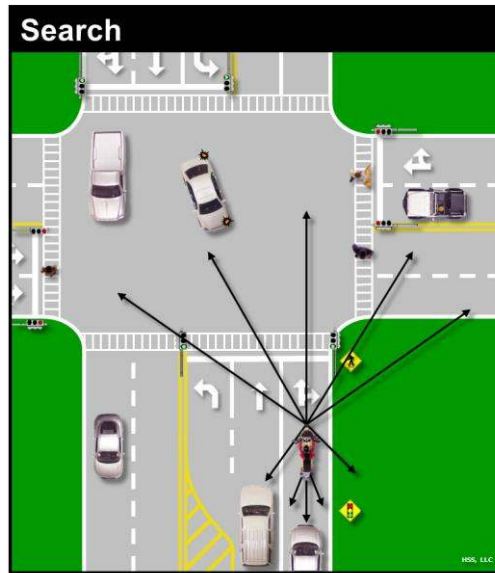
Search

Aggressively searching as far ahead as possible, to the sides and behind to identify potential hazards and escape routes, may help to avoid a crash. When searching ahead you should search for:

- **Road and surface characteristics** – potholes, bridge gratings, railroad tracks, debris, curves, slippery surfaces, etc. may influence your riding strategy.
- **Traffic control markings and devices** – look for traffic signals and signs to help you know what to expect ahead.
- **Other roadway users** – vehicles in front of you traveling in the same direction, those behind you, vehicles traveling in the opposite direction, those

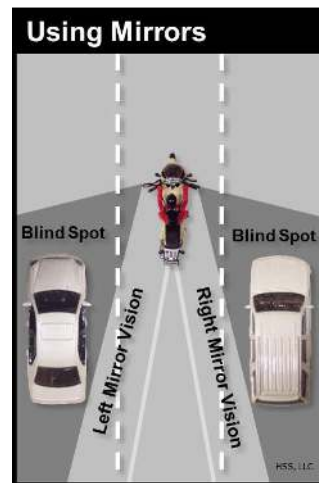


entering and leaving the roadway and turning. Pedestrians also can cross your path of travel or reduce your escape route options.



While it's most important to keep track of what's happening ahead, you can't afford to ignore situations behind. Knowing what's going on behind will help you make a safe decision about how to handle trouble ahead. To search behind:

- **Check your mirrors**
 - frequent mirror checks should be part of your normal searching routine. Make a special point of using your mirrors when you are stopped at an intersection, before you change lanes, and before you slow down.

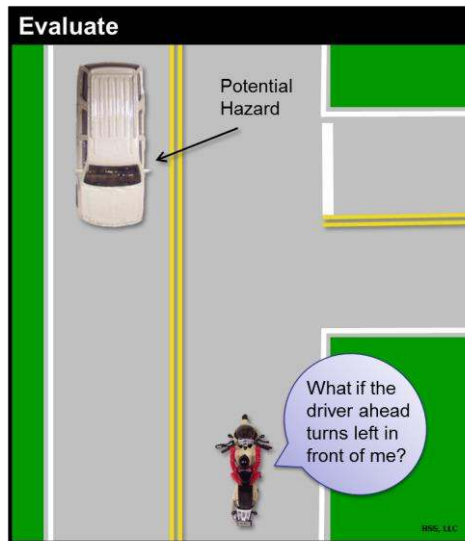


- **Use head checks** – checking your mirrors is not enough. Motorcycles have “blind spots” like cars. Before you change lanes, turn your head, and look to the side for other vehicles. Only by knowing what is happening all around you, are you fully prepared to deal with it.

Evaluate

Once you have identified the hazard(s), the next step is to quickly determine if they could affect you. Ask yourself, “what if?”

Think about how hazards can interact to create risk for you. Anticipate potential problems and have a plan to reduce or eliminate the risk. Think about your time and space requirements in order to maintain a margin of safety. You must leave yourself time to react if a dangerous situation occurs.



Execute

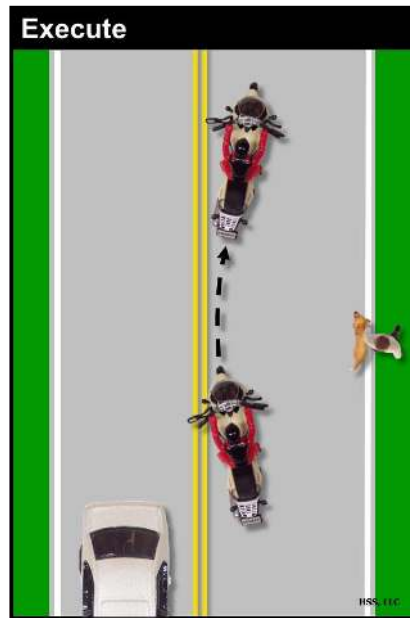
Carry out your decision. What are you going to do and how are you going to do it?

To create more space and minimize harm from any hazard:

- Adjust your position and/or direction.
- Adjust your speed by accelerating, stopping or slowing.

- Communicate your presence and intentions with lights and/or horn.

Apply the SEE strategy to give yourself time and space. It works anywhere, and can help to ensure your safety and the safety of others.

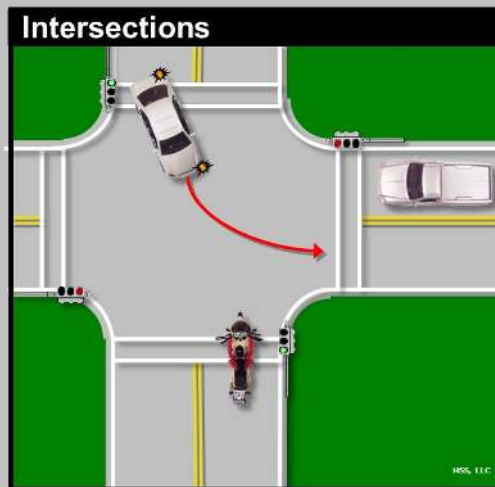


Intersections

The greatest potential for crashes is at intersections. Cars that turn left in front of you are the biggest dangers.

Your use of SEE at intersections is critical.

Forty percent of motorcycle/car crashes are caused by drivers turning left in front of motorcyclists.



Increase your chances of being seen at intersections. Ride with your headlight on in a lane position that provides the best view of oncoming traffic. Provide a space cushion around the motorcycle that permits you to take evasive action.

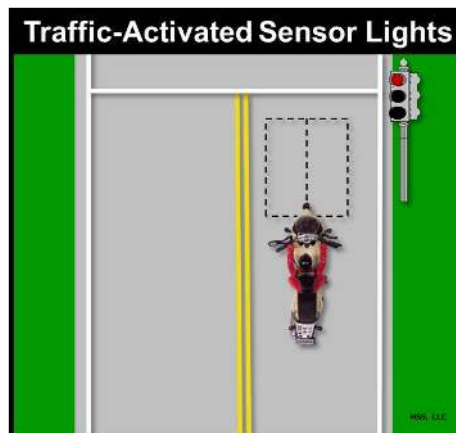
When approaching an intersection where a vehicle is preparing to cross your path:

- Slow down and select a lane position to increase your visibility to that driver.
- Cover both brakes to reduce the time you need to react.
- Cover the clutch lever to prevent stalling. As you enter the intersection, move away from the vehicle.
- Do not make radical movements, as drivers might think you are preparing to turn.
- Be prepared to take action.

Traffic-Activated Sensor Lights

Traffic-activated sensor lights can be troublesome for motorcyclists since the sensor may not detect your presence.

To ensure the best chance of being detected, stop where the sensors are located. They are usually visible in the road surface.



Two Minute Law

While operating a motorcycle and approaching an intersection, that is controlled by a traffic-control

device, you may proceed through the intersection on a steady red light only if:

- You come to a full and complete **stop at the intersection for one hundred twenty seconds** (two minutes); and
- You exercise due care as provided by law, otherwise treat the traffic control device as a stop sign, and **determine it is safe to proceed.**

Space Management

It is extremely important to maintain an adequate "cushion of space" between vehicles. Increasing the following distance between vehicles will provide you with:

- Time to react
- Space to maneuver

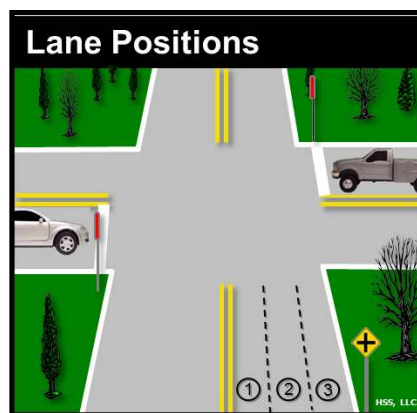
A responsible rider recognizes that space is the best protection against potential hazards.

Lane Positions

In some ways the size of the motorcycle can work to your advantage. Each traffic lane gives a motorcycle three paths of travel, as indicated in the illustration.

Your lane position should:

- Increase your ability to see and be seen.
- Avoid others' blind spots.
- Avoid surface hazards.
- Protect your lane from other drivers.



- Communicate your intentions.
- Avoid wind blast from other vehicles.
- Provide an escape route.

Use the whole width of the lane to help other roadway users see you better.

In general, there is no single best position for you to be seen and to maintain a space cushion around the motorcycle. No portion of the lane need be avoided – including the center, if weather and roadway conditions permit.

Position yourself in the portion of the lane where you are most likely to be seen and you can maintain a space cushion around you. Move from one side of the lane to another to increase your distance from other vehicles. A responsible rider changes position as traffic situations change. Ride in path 2 or 3 if vehicles or other potential hazards are on your left. Remain in path 1 or 2 if hazards are on your right. If vehicles are present on both sides of you, the center of the lane, path 2, is usually your best option.

The oily strip in the center portion that collects drippings from cars is usually no more than 2 feet wide. Unless the road is wet, the average center strip permits adequate traction to ride on safely. You can operate to the left or right of the oily strip and still be within the center portion of the traffic lane. Avoid riding on big buildups of oil and grease usually found at busy intersections or toll booths.

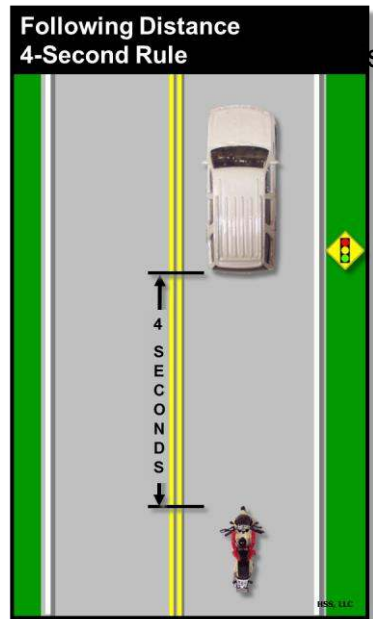
Following Another Vehicle

Motorcycles need as much distance to stop as cars. It is recommended that new motorcycle operators try to maintain **a four second following distance** behind

the vehicle ahead. This allows you space to stop, swerve, and to keep a reasonable space cushion.

A larger cushion of space needed if your motorcycle will take longer than normal to stop. For example if you are riding 40 mph or more, if the pavement is slippery, if you cannot see through the vehicle ahead, or if traffic is heavy and someone may squeeze in front of you, open up a five second or more following distance.

Keep well behind the vehicle ahead even when you are stopped. This will make it easier to get out of the way if someone behind you is not slowing down. It will also give you a cushion of space if the vehicle ahead starts to back up for some reason.



To estimate your following distance:

- Pick out an object, such as a pavement marking, sign, pole or other stationary point, on or near the road ahead.
- When the rear bumper of the vehicle ahead passes the object, count off the seconds: "one-thousand-one, one-thousand-two, one-thousand-three, one-thousand-four."
- If you reach the object before you reach "four," you are following too closely.
- Reduce speed and then count again at another stationary point to check the new following

interval. Repeat until you are following no closer than “four-seconds.”

Being Followed

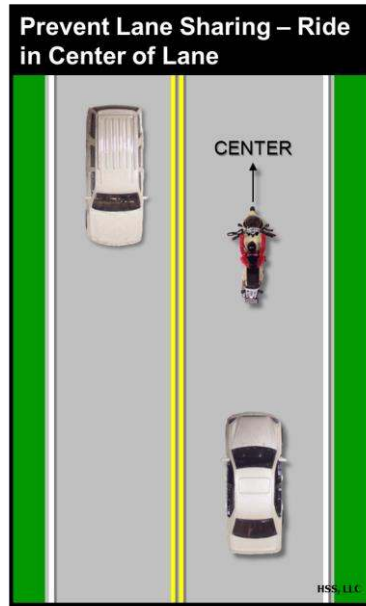
Speeding up to lose someone following too closely only ends up with someone tailgating you at a higher speed.

A better way to handle tailgaters is to get them in front of you. When someone is following too closely, change lanes and let them pass. If you can't do this, slow down and open up extra space ahead of you to allow room for both you and the tailgater to stop. This will also encourage them to pass. If they don't pass, you will have given yourself and the tailgater more time and space to react in case an emergency does develop ahead.

Lane Sharing

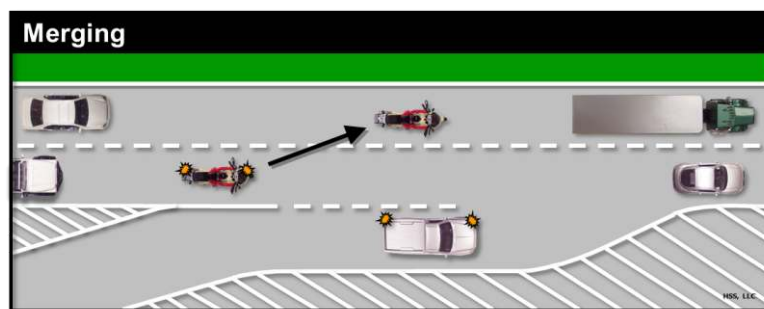
Vehicles and motorcycles need a full lane to operate safely. Do not share lanes with other vehicles. Lane sharing can leave you vulnerable to the unexpected and reduces your space cushion. You should ride in a staggered formation when following other motorcycles and position the motorcycle in the center of the travel lane, if weather and roadway conditions permit, to discourage motorists from attempting to squeeze by the motorcycle. Do not ride between rows of stopped or moving motor vehicles. This can be dangerous.





Merging Vehicles

Do not assume that drivers merging on an entrance ramp will see you. Minimize the potential for danger by giving them plenty of room. Change lanes if one is open. If there is no room for a lane change, adjust speed to open up space for the merging driver.



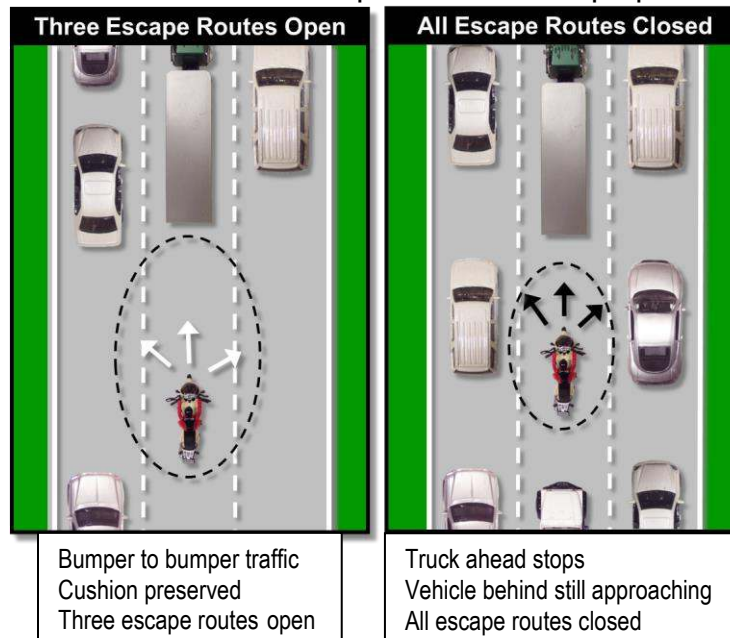
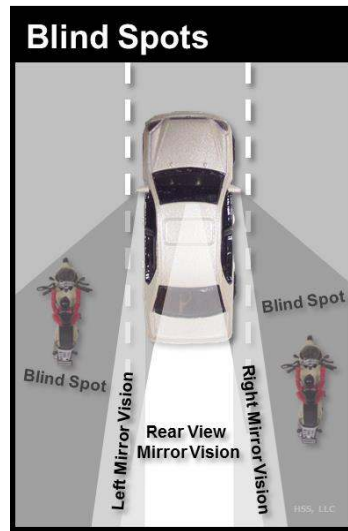
Vehicles Alongside

Avoid riding in the blind spot of a vehicle. Responsible riders recognize that vehicles traveling in the adjacent lane may unexpectedly change direction forcing the rider into a potentially dangerous situation. Vehicles in

the next lane also block your escape if you come upon a hazard in your own lane. Adjust your speed until a proper and adequate space cushion has been established between vehicles.

Escape Routes

An escape route is an alternate path of travel that you can take if a hazard develops in your path. No matter what the conditions, always use SEE and plan an escape route. In the illustration below, the first box shows a rider who has three escape routes open, should they need to take an alternate path. The second box shows a rider who has not planned an escape path.



The rider has nowhere to go if they need to take an alternate path of travel, which leaves them vulnerable to potential hazards.

Increasing Conspicuity

In crashes with motorcyclists, drivers often say that they never saw the motorcycle. From ahead or behind, a motorcycle's outline is much smaller than a car's. Also, it's hard to see something you are not looking for, and most drivers are not looking for motorcycles. More likely, they are looking *through* the narrow, two-wheeled silhouette in search of cars that may pose a problem to them.

Even if a driver does see you coming, you aren't necessarily safe.

Motorcycles may appear farther away, and seem to be traveling slower than they actually are. It is common for drivers to pull out in front of motorcyclists, thinking they have plenty of time. Too often, they are wrong. However, you can do many things to make it easier for others to recognize you and your cycle.

Being seen is your responsibility!

Bright colors and reflective materials are the best choices for keeping you visible to surrounding traffic both day and night.



Clothing

Most crashes occur in broad daylight. Wear bright colored clothing to increase your chances of being

seen. Remember, your body is half of the visible surface area of the rider-motorcycle unit.

Reflective, bright colored clothing is best. Bright orange, red, yellow or green jackets or vests are your best bets for being seen. Brightly colored helmets can also help others see you. Reflective material on a vest and on the sides of the helmet will help drivers coming from the side spot you. Reflective material can also be a big help for drivers coming toward you or from behind.

Headlight

The best way to help others see your motorcycle is to keep the headlight on – at all times (new motorcycles sold in the USA since 1978 automatically have the headlights on when running). Studies show that, during the day, a motorcycle with its light on is twice as likely to be noticed. Also use your low beams at night and in fog.

Signals

The signals on a motorcycle are the same as those on a car. They tell others what you plan to do. Use them anytime you plan to change lanes or turn. Use them even when you think no one else is around. Due to a rider's added vulnerability, signals are even more important. They make you easier to spot.



When you enter a freeway, drivers approaching from behind are more likely to see your signal blinking and make room for you.

Once you turn, make sure your signal is off or a driver may pull directly into your path, thinking you plan to turn again.

Brake Light

Your motorcycle's brake light is usually not as noticeable as the brake lights on a car – particularly when your taillight is on. (The taillight goes on with the headlight.) If the situation will permit, help others notice you by flashing your brake light before you slow down.

It is especially important to flash your brake light before:

- You slow more quickly than others might expect (for example, turning off a high-speed highway.)
- You slow where others may not expect it (for example, in the middle of a block or at an alley.)

If you are being followed closely, it's a good idea to flash your brake light before you slow. The tailgater may be watching you and not see something ahead that will make you slow down. This will hopefully discourage them from tailgating and warn them of hazards ahead they may not see.

Horn

Be ready to use your horn to get someone's attention quickly. Keep in mind that a motorcycle's horn isn't as loud as a car's, therefore, use it, but don't rely on it. Other strategies may be appropriate along with the horn.

Speed Management

Handling Dangerous Surfaces

- Slippery surfaces
- Railroad tracks
- Grooves and gratings

Slippery Surfaces

On slippery surfaces, you should use added caution. Motorcycles handle better when ridden on surfaces with good traction. Maintaining balance and cycle control are difficult on slippery surfaces.

To reduce your risk you can take certain preventative measures:

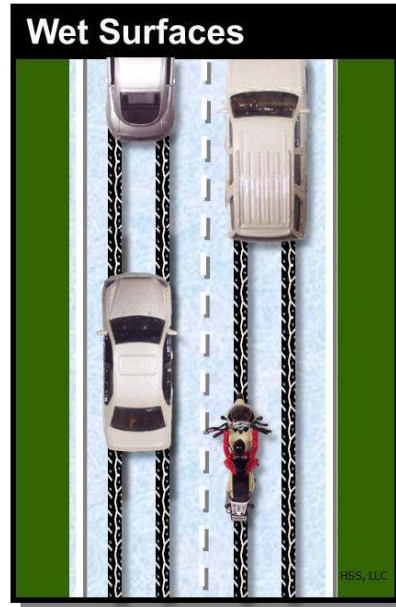
- **Reduce Speed** – Slow down before you get to a slippery surface to lessen your chances of skidding and increase your following distance. Your motorcycle needs more distance to stop. And, it is particularly important to reduce speed before entering wet curves.
- **Avoid Sudden Moves** – Any sudden changes in speed or direction can cause a skid. Be as smooth as possible when you speed up, shift gears, turn or brake.
- **Use Both Brakes** – The front brake is still effective, even on a slippery surface. Squeeze the brake lever gradually to avoid locking the front wheel. Remember, gentle pressure on the rear brake.

Surfaces that provide less traction include:

- **Wet surfaces** – particularly just after it starts to rain and before surface oil washes to the side of the road. When it starts to rain, ride in the tire tracks left by cars and avoid pooled water and highway ruts. Often, the left tire track will

be the best position, depending on traffic and other road conditions as well.

- **Ice or snow covered surfaces** – snow melts faster on some sections of a road than on others. Patches of ice can occur in low or shaded areas and on bridges and overpasses. It is recommended you avoid snow and ice covered surfaces.
- **Shiny surfaces** – metal covers, steel plates, bridge gratings, train tracks, lane markings, leaves and wood can be very treacherous when wet.
- **Dirt and gravel** – on curves and ramps leading to and from highways, dirt and gravel can collect along the sides of the road. Choose a lane position that minimizes the risk of injury.
- **Oil spots** – watch for these when you put your foot down to stop or park. You may slip and fall. Securing the proper footing will help you from losing your balance or falling.



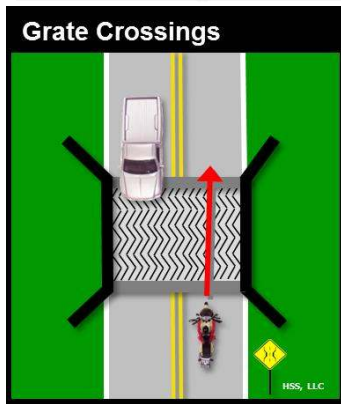
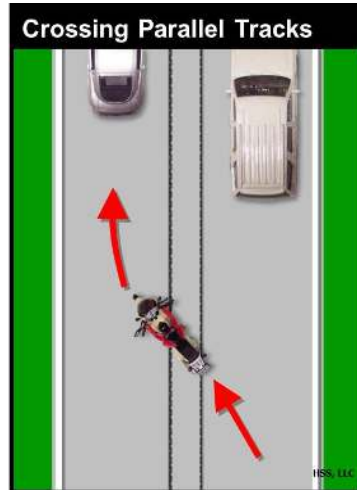
Railroad Tracks, Trolley Tracks and Pavement Seams

Usually it is safer to ride straight within your lane to cross tracks. Turning to cross tracks at a 90 degree angle or parallel path can be more dangerous – your path may carry you into another lane of traffic.

For track and road seams that run parallel to your path of travel, move far enough away from tracks, ruts, or pavement seams to cross at an angle of at least 45. Then, make a quick, sharp turn. Edging across could catch your tires and throw you off balance.

Grooves and Gratings

Riding over rain grooves or bridge gratings may cause your motorcycle to weave. Maintain a steady speed and ride straight across. Crossing at an angle forces riders to zigzag to stay in the lane.



Test Your Knowledge

- 1. The greatest potential for conflict between you and other traffic is:**
 - A. On the expressway.
 - B. At intersections.
 - C. When riding in a group.

- 2. Usually a good way to handle tailgaters is to:**
 - A. Change lanes and let them pass or slow down to allow for more space.
 - B. Speed up to put distance between you and the tailgater.
 - C. Ignore them.

- 3. When it starts to rain it is usually best to:**
 - A. Ride in the center of the lane.
 - B. Ride on the right side of the lane.
 - C. Ride in the tire tracks left by cars.

- 4. The best way to help others see your motorcycle is to:**
 - A. Keep the headlight on.
 - B. Use eye contact.
 - C. Honk your horn.

*1. B – Intersections, 2. A – Being Followed, 3. C – Slippery Surfaces,
4. A – Increasing Conspicuity*

SECTION 6

Roadway Management

This Section Covers

- Crash Avoidance
- Cornering



On the road, situations change constantly. As a responsible rider, you know how important it is to be in full control of the motorcycle. A responsible rider knows that good road management starts with knowledge and practice of SEE.

Crash Avoidance

No matter how careful you are, there will be times when you find yourself in a difficult spot. Your chances of avoiding a crash and possible injury will depend on your ability to react quickly and properly. Two critical crash avoidance skills you will need to learn and practice are stopping quickly and swerving.

Stopping Quickly

Stopping a motorcycle quickly and safely is a skill that requires a lot of practice.

This is accomplished by applying controlled pressure to both the front and rear brakes at the same time without locking either wheel.

To do this:

- Squeeze the front brake lever and apply pressure to the rear brake pedal at the same time. Do not apply maximum pressure to the front brake lever and rear brake pedal all at once. Gradually increase pressure to the front brake lever as weight is transferred forward to the front tire.
- Keep your knees against the tank and your eyes up, looking well ahead. Good riding posture will help you stop the motorcycle in a straight line.
- If the front wheel locks up, release pressure on the front brake lever to get the tire rolling, then immediately reapply with controlled gradual pressure.
- If the rear wheel locks up, keep it locked until you have come to a complete stop. Maintain pressure on the rear brake pedal and keep your knees against the tank and your eyes up. You can still bring the motorcycle to a controlled stop in a straight line if the rear wheel locks up.

Stopping Quickly in a Curve

If you must stop quickly *while turning or riding in a curve*, the best technique is to straighten the motorcycle, square the handlebars and then stop. There may be conditions that do not allow straightening first, such as running off the road in a left-hand curve or dealing with oncoming traffic in a right-hand curve. In such situations, apply the brakes smoothly and gradually. As you slow, you can reduce your lean angle and apply more brake pressure until the motorcycle is straight and maximum brake pressure is possible. You should “straighten” the

handlebars in the last few feet of stopping; the motorcycle should then be straight up.

Anti-Lock Braking Systems (ABS)

Some motorcycles use this technology to prevent wheel lock-up. If your motorcycle is equipped with anti-lock brakes apply maximum pressure on both the front and rear brakes as quickly and firmly as you can. You may feel a pulsation in the brakes; continue to hold brake pressure until you have completely stopped.

Handling Skids

Sometimes a skid cannot be avoided. Here's what to do:

- **Front-Wheel Skids** – If the front wheel locks, release the front brake immediately and completely. Reapply the brake smoothly. Front-wheel skids result in immediate loss of steering control and balance. Failure to fully release the brake lever immediately will result in a crash.
- **Rear-Wheel Skids** – A skidding rear wheel is a dangerous condition, caused by too much rear brake pressure, which can result in a violent crash and serious injury or death. If the rear wheel is skidding, keep the rear brakes applied and the front tire pointed straight ahead, until you have come to a complete stop. Do not release the rear brake.



Proper braking. Neither wheel is locked and motorcycle is in alignment.

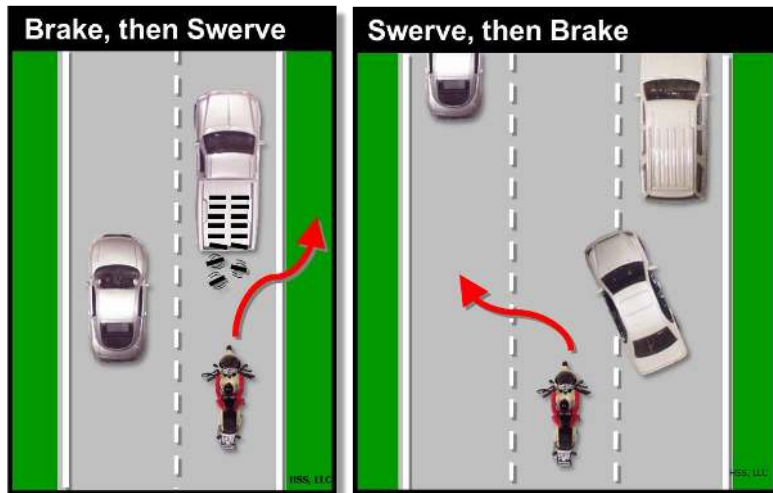
Excessive rear brake pressure locks rear wheel. Motorcycle is out of alignment and control.

Swerving

Swerving to avoid a crash may be appropriate if stopping isn't a solution. A swerve is any sudden change in direction. Be sure you have enough time and space to swerve. It can be two quick turns, or a rapid shift to the side. To swerve:

- Apply firm pressure to the handgrip located on the side you want to turn. This will cause the motorcycle to lean quickly. The sharper the turn, the more the motorcycle must lean.
- Press on the opposite handgrip once you clear the obstacle to return to your original direction of travel.
- Keep your body upright and allow the motorcycle to lean in the direction of the turn while keeping your knees against the tank and your feet solidly on the footrests.

IF BRAKING IS REQUIRED SEPARATE IT FROM SWERVING. Brake before or after – never while swerving



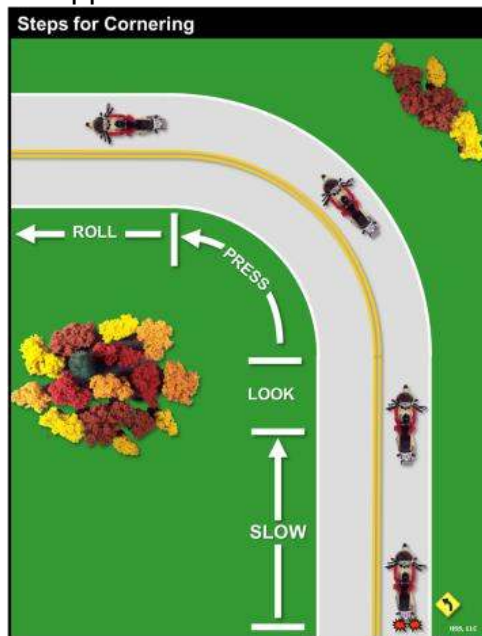
Cornering

Many crash-involved riders enter curves too fast and are unable to complete the curve. Although every curve is different, the basic cornering procedure – slow, look, press, roll – applies to all curves.

Your best path in a curve depends on traffic, road conditions and curve of the road.

If traffic is present:

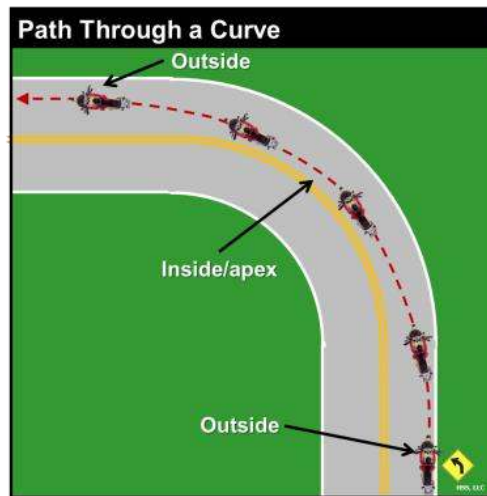
- Move to the center of your lane before entering a curve – and stay there until you exit.



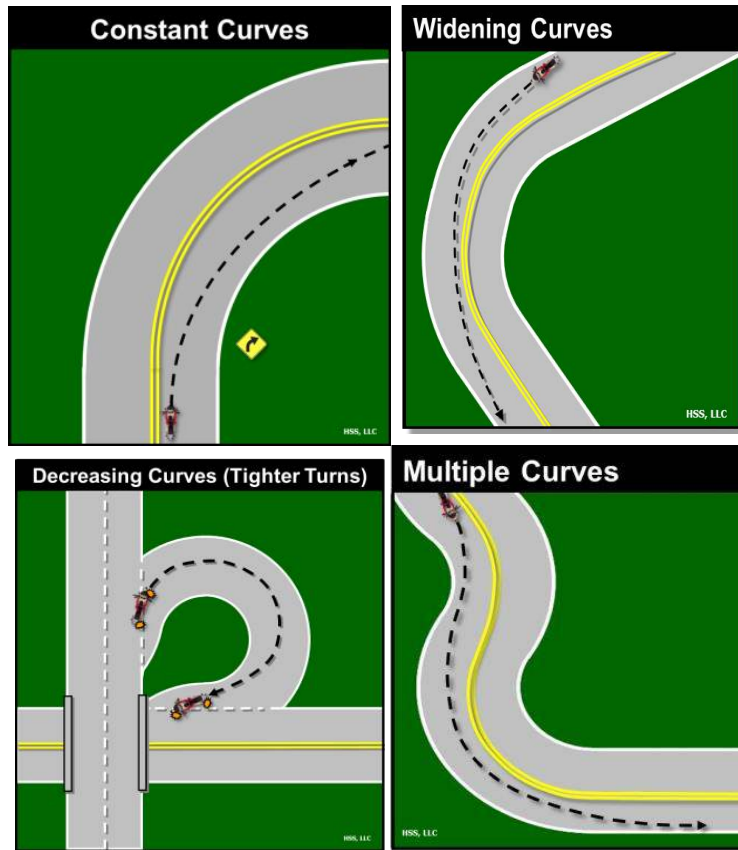
- This permits you to spot approaching traffic, adjust for traffic “crowding” the center line, and debris blocking part of your lane.

If no traffic is present:

- Start at the outside of a curve to increase your line of sight.
- As you turn, move toward the inside of the curve, and as you pass the center, move to the outside to exit. This will create a straighter line through the curve.



Be alert to whether a curve remains constant, gradually widens, gets tighter or involves multiple curves. Ride within your skill level and posted speed limits. Choose a path of travel that creates a straighter line through the curve as long as traffic permits.



Test Your Knowledge

1. The best way to stop quickly is to:
 - A. Use the front brake only.
 - B. Use the rear brake first.
 - C. Use both brakes at the same time.
2. Where should you position your motorcycle when entering a curve with traffic present:
 - A. The outside of the curve.
 - B. The inside of the curve.
 - C. The center of the curve.

1. C – Stopping Quickly
 2. C – Cornering

SECTION 7

Special Riding Situations

This Section Covers

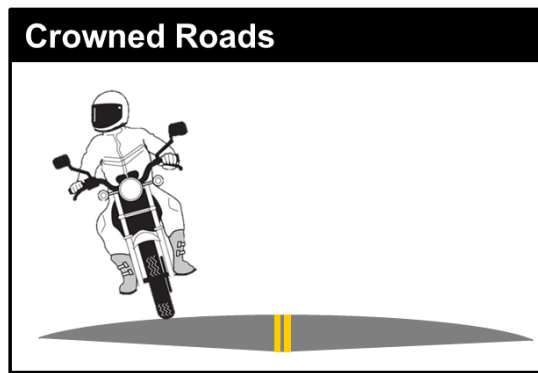
- Crowned Roads
- Work Zones
- Tire Failure
- Animals
- Wind



The following section offers some additional information on special riding situations you may encounter when riding a motorcycle.

Crowned Roads

A road surface that is higher in the middle than at the sides is a crowned road. Use caution and slow down when traveling on crowned roads because ground clearance is reduced and the lean angle available will be less than on a flat road.



Work Zones

Work zones present a hazard to all drivers but even more so for motorcycle riders. Lacking four-wheel stability, the motorcycle rider must reduce speed and be especially mindful of potential hazards.

The following are types of work zone road hazards and what to do if you encounter them:

- **Sand or gravel on pavement** – Slow down, don't make sudden turns, brake lightly in a straight line. If you encounter long stretches of sand or gravel, downshift and keep your speed steady.
- **Scored or grooved pavement** – Keep your head and eyes up. Go slow, don't fight the handlebars. Keep a steady throttle.



- **Oil or fresh tar** – Avoid if possible. Go slow and avoid sudden moves.
- **Rippled and uneven temporary pavement** – Scan the pavement and pick the smoothest line. Cross slowly and carefully. Be aware of the difference in height between lanes that have been repaved and those awaiting to be paved – crossing into the higher lane at high speeds and a narrow angle could cause you to lose control.

- **Objects in the road** – Scan well ahead. Go around object, if possible. Increase your following distance to allow maneuvering room.

Tire Failure

You will seldom hear a tire go flat. If the motorcycle starts handling differently, it may be a tire failure. This can be dangerous. You must be able to tell from the way the motorcycle reacts. If one of your tires suddenly loses air, react quickly to keep your balance. Pull off and check the tires.

If the front tire goes flat, the steering will feel “heavy.” A front-wheel flat is particularly hazardous because it affects your steering. You have to steer well to keep your balance.

If the rear tire goes flat, the back of the motorcycle may jerk or sway from side to side.

If either tire goes flat while riding:

- Hold handgrips firmly, ease off the throttle, and keep a straight course.
- If braking is required, however, gradually apply the brake of the tire that isn’t flat, if you are sure which one it is.
- When the motorcycle slows, edge to the side of the road, squeeze the clutch and stop.

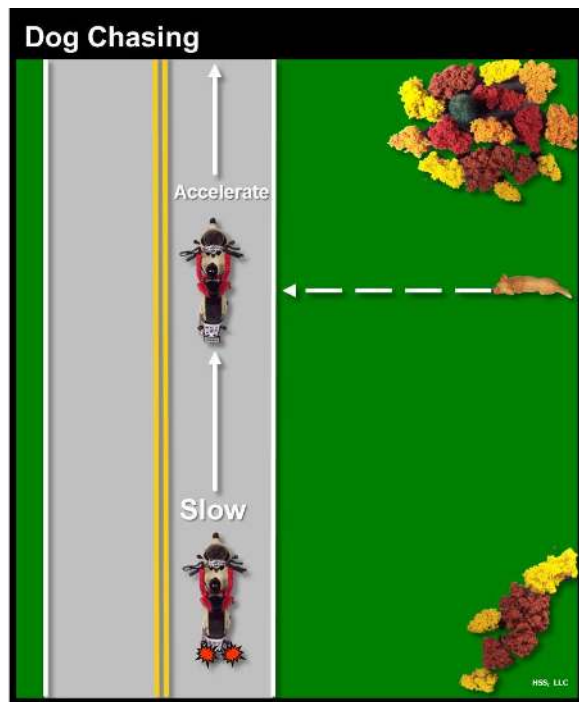
Animals

Dogs sometimes chase motorcycles. Once an approaching dog is spotted, slow down and downshift until the dog is near your motorcycle then accelerate away from the dog as it approaches. Keep control of your motorcycle, and look to where you want to go. Don’t kick at the dog because it will make controlling the motorcycle difficult.

Larger animals such as deer or elk present a different problem. These animals are unpredictable, and hitting one can be as harmful as colliding with another vehicle. Use more aggressive SEE maneuvers for additional time and space in areas where larger animals may be present. If one of these animals is encountered on or near the roadway, the only reliable action is to stop before reaching it. Then wait until the animal leaves or move past the animal at walking speed.

When being chased by a dog:

1. Slow down
2. Downshift
3. Accelerate out of dog's reach



Wind

Strong, steady winds can affect you and your motorcycle. The effects can occur anywhere and often happen in open areas or mountainous terrain.

Wind turbulence can occur when you share the road with large vehicles like trucks, buses and recreational vehicles.

To respond to wind gusts or windblasts:

- Lean into the wind by applying forward pressure on the handgrip.
- Move away from other vehicles as they approach or as you pass.
- Maximize the space cushion around you.
- Find a safe place to park until conditions improve if the wind becomes too dangerous.

Test Your Knowledge

1. When riding over scored or grooved pavement in a work zone:

- A. Look down to see changes in the road surface.
- B. Keep your head and eyes up.
- C. Stay to the left side of the lane.

2. If you are chased by a dog:

- A. Stop until the animal loses interest.
- B. Approach the animal slowly, then speed up.
- C. Swerve around the animal.

1. B – Work Zones

2. B – Animals

SECTION 8

Passengers, Cargo and Group Riding

This Section Covers

- Carrying Passengers and Cargo
- Group Riding



Only skilled, experienced riders should carry passengers or heavy loads or ride in groups. If you choose to carry passengers or heavy loads or ride in a group you will need to know some important information.

Carrying Passengers and Cargo

Before carrying a passenger or heavy loads, know how both could affect motorcycle operation. The extra weight of a passenger or cargo will affect the way your motorcycle handles, requiring extra practice, preparation and caution. For this reason, only experienced riders should attempt to carry passengers or large loads. Before taking a passenger or heavy load on the street, check the air pressure of both tires and adjust the suspension settings to compensate for the lower rear of the motorcycle. Refer to the owner's manual for more information.

Only skilled, experienced riders should carry passengers or heavy loads or ride in groups.

When carrying a passenger, your motorcycle should have:

- A seat large enough to hold both of you. The passenger should be seated behind you and should sit as far forward as possible. No passenger regardless of age should be seated in front of you.
- Footrests for the passenger to prevent them from falling off and pulling you off, too.
- Secure hand strap or solid handholds for the passenger to hold onto. The passenger can also hold on to your waist, hips, or belt.

When riding with passengers:

- Ride a little slower, especially when taking curves, corners, or bumps.
- Start slowing earlier; you may need to use more pressure on the brakes.
- Wait for larger gaps to cross, enter, or merge in traffic.
- Incorporate a larger cushion of space when stopping or slowing the cycle.

Instructing Passengers

Your passenger should wear the same protective gear as you. As a routine practice, instruct your passenger on cycling basics prior to starting their trip. Even if your passenger is a motorcycle rider, provide complete instructions before you start.

Tell your passenger to:

- Get on the motorcycle only after you have started the engine.
- Keep both feet firmly planted on the cycle's footrests, even when stopped.

- Keep legs away from the muffler(s), chains or moving parts.
- Hold firmly onto your waist, hips, or passenger handgrips.
- Stay directly behind you and look over your shoulder in the direction of the turn or curve to help you lean in the direction of the turn or curve.
- Avoid unnecessary conversation and movement when the cycle is in operation.

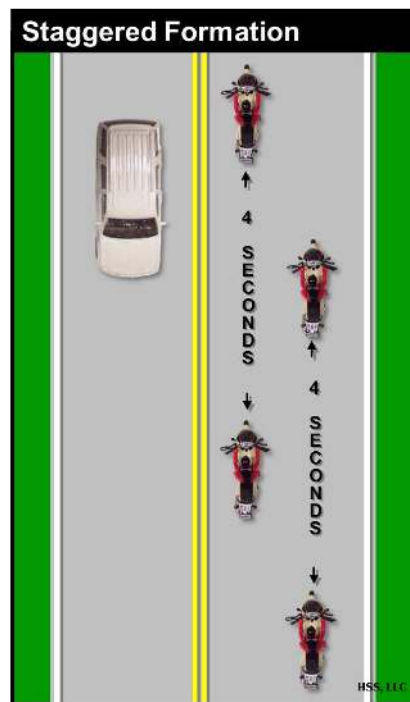
Also, tell your passenger to tighten his or her hold when you:

- Approach surface problems
- Are about to start from a stop
- Are about to turn sharply or make a sudden move

Group Riding

Riding with others is one of the many great experiences of motorcycling.

Responsible riders do so in a manner that neither endangers nor interferes with the free flow of traffic, riding with other cyclists can help to increase rider visibility and safety. Concentration and communication are essential to group riding. You should gain some riding experience before riding in a group. To



enhance safety and reduce the risk of injury when riding in groups you should:

- Plan ahead
- Keep the group small
- Keep your distance
- Ride in staggered formation – don't pair up
- Move into single-file formation when riding curves, turns, or entering or leaving a highway.

Passing in a Group

- Riders in a staggered formation should pass one at a time. If being passed while riding in a group, maintain your lane position.
- First, the lead rider should pull out and pass when it is safe. After passing, the leader should return to correct formation position to open up space for rider number two and ride at passing speed.
- After the first rider passes safely, the second rider should move from the right position to the left (lead) position and complete their pass, pulling into staggered formation behind the lead.
- The rest of the group follows this routine. Pass from the left position and return to the proper formation.



- The lead rider returns to cruising speed when the last rider has completed the pass.



Test Your Knowledge

1. Passengers should:

- Look over their shoulder in the direction of the turn or curve.
- Never hold onto the rider.
- Sit as far back as possible.

2. What formation should you form when riding in a group?

- Single-file formation.
- Side-by side formation.
- Staggered formation.

1. A – Instructing Passengers, 2. C – Group Riding

SECTION 9

Factors Affecting Rider Performance

This Section Covers

- Cold Weather
- Extreme Hot Weather
- Night Riding
- Distracted Riding
- Fatigue



Riding a motorcycle requires a great amount of mental alertness and physical skill. Sometimes changes in your environment occur, which can affect your visibility. Physical changes may occur as well, which may affect your riding performance. Responsible riders know how to adjust or compensate for factors which affect rider performance.

Cold Weather

In cold weather riding, protect yourself by wearing proper protective gear like a windproof jacket and insulated layers of clothing. It is wise to dress in layers so the layers can be removed as desired. Topping the protective gear with a windproof outer layer can prevent cold air from reaching the skin.

Cold weather significantly lengthens your reaction time. To compensate for the slower reaction time, reduce your speed and increase your following distance and space to the sides.

Hypothermia

Riding for long periods in cold weather may lower your body temperature and cause hypothermia.

Symptoms of hypothermia may include:

- Deterioration in physical coordination
- Irrational, confused behavior
- Sluggish movement
- Shivering
- Muscle tension
- Shallow, slow breathing

If chill is experienced, leave the roadway at your first opportunity and find shelter. Drink warm liquids, do some exercise to warm yourself and if your clothes are wet change out of them.

Extreme Hot Weather

In extreme hot weather wear protective gear that breathes. It is still important to wear a jacket and pants to protect you in a collision and to prevent dehydration. Drink plenty of water, stop and remove unnecessary, heavy clothing and dry your hands, if they become slippery due to perspiration.

Night Riding

Riding at night presents additional risks because a rider's ability to see and be seen by others is limited. You should adjust your riding behavior to compensate for limited visibility by:

- **Reducing Your Speed** – Ride even slower than you would during the day, particularly on roads you don't know well. This will increase your chances of avoiding a hazard.
- **Increasing Distance** – Distances are harder to judge at night than during the day. Open up a four second following distance or more. And allow more distance to pass and be passed.

- **Using the Car Ahead** – The headlights of the car ahead can give you a better view of the road than even your high beam can. Taillights bouncing up and down can alert you to bumps or rough pavement.
- **Using Your High Beam** – Get all the light you can. Use your high beam whenever you are not following or meeting a car.
- **Be Visible** – Wear reflective materials when riding at night.
- **Being Flexible About Lane Position** – Change to whatever portion of the lane is best able to help you see, be seen, and keep an adequate space cushion.

Distracted Riding

A distraction is anything that takes your attention away from riding. Rider distractions may occur anytime and anywhere. Distracted riding can cause collisions, resulting in injury, death or property damage. Taking your eyes off the road or hands off the motorcycle presents obvious riding risks. Mental activities that take your mind away from riding are just as dangerous. You must maintain your attention to the riding task. You are completely and solely responsible for operating your motorcycle in a safe manner.

Fatigue

Fatigue can affect your control of the motorcycle. To minimize the potential for fatigue:

- **Get a good night's rest** – A good night's rest is important for preventing fatigue.
- **Protect yourself from the elements** – wind, cold and rain make you tire quickly. Dress warmly. A

windshield is worth its cost if you plan to ride long distances.

- **Vary speed and position on seat regularly** –The stimulation resulting from slight changes in speed or in body position will help to overcome the effects of fatigue.
- **Take frequent rest breaks** – Stop, and get off the motorcycle every two hours or as needed.
- **Don't use artificial stimulants** – Artificial stimulants often result in extreme fatigue or depression when they start to wear off. Riders are unable to concentrate on the task at hand.

Test Your Knowledge

1. When riding at night:

- A. Use the left portion of the lane to see around other vehicles ahead.
- B. Ride close to the vehicle in front of you to see better with their headlights.
- C. Reduce your speed to increase your chance of avoiding a hazard.

2. To minimize the potential for fatigue:

- A. Turn on the radio and open the window.
- B. Take frequent rest breaks.
- C. Drink caffeine.

1. C – Night Riding

2. B – Fatigue

SECTION 10

Three-Wheel Vehicles

This Section Covers

- Common Operating Characteristics of Trikes and Motorcycles with a Sidecar
- Unique Operating Characteristics of Trikes
- Unique Operating Characteristics of a Motorcycle with a Sidecar
- Additional Resources



SC does not require a separate license or endorsement to operate a three-wheel vehicle. A **three**-wheel motorcycle may be operated with any class license except for a class G moped license. This section contains information that will help you operate a three-wheel vehicle.

An S3 restriction is placed on a class M license when the skills test is taken with a non-detachable side car attached to a 2-wheel motorcycle. Anyone who holds a class M license may operate a detachable sidecar without having an S3 restriction.

If a person wants to take a motorcycle with a side car skills test, the test must be administered at DMV's office in Blythewood. Upon successful completion of the skills test, the individual will receive a class M license with an S3 restriction.

Common Operating Characteristics of Trikes and Motorcycles with a Sidecar

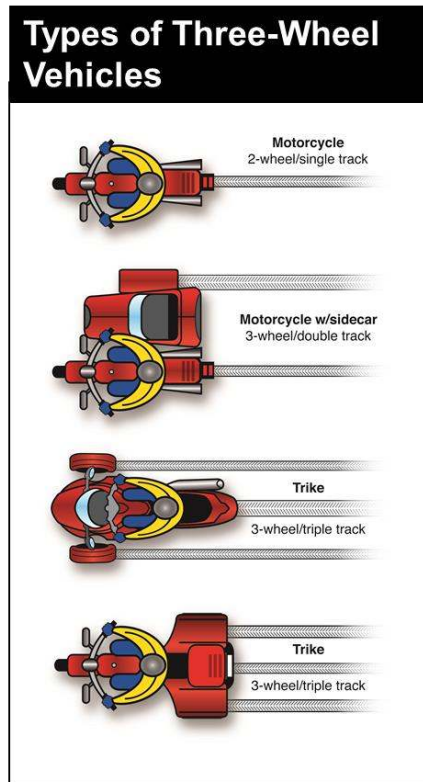
Types of Three-Wheel Vehicles

Traditional two-wheel motorcycles are considered single-track vehicles. Three-wheel vehicles could have either double or triple tracks. Double track vehicles are motorcycles with sidecars, while triple track vehicles (trikes) can have either two front wheels or two rear wheels.

Differences between Two-Wheel Motorcycles and Three-Wheel Vehicles

A three-wheel vehicle is naturally more stable than a two-wheel motorcycle. However under certain conditions it could “tip over” or lift one of the wheels off the pavement. In order to ensure its stability, you will need to pay attention to your body position, your speed, and how you load a three-wheel vehicle.

Three-wheel vehicles also steer differently. Since three-wheel vehicles cannot lean, the front wheel



must be pointed in the direction you want the vehicle to go.

Be Familiar with Your Vehicle

Make sure you are completely familiar with the three-wheel vehicle before you take it out on the street. Be sure to review the owner's manual. Remember three-wheel vehicles take up more space than two-wheel motorcycles and therefore you will need more space to maneuver.

Body Position

Your body position is important for control on a three-wheel vehicle. You should be able to reach both handgrips comfortably while leaning and shifting your weight in turns.

Turning

Approach turns and curves with caution. If you enter a turn too fast you may end up crossing into another lane of traffic, lifting a wheel, or going off the road. Oversteering could cause the vehicle to skid and you could lose control.

Hills

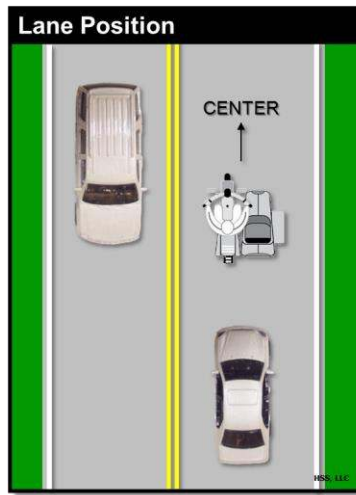
When riding uphill on a three-wheel vehicle some weight will shift to the rear, causing the front of the vehicle to become lighter. This weight shift reduces the traction on the front wheel(s) for steering and braking. You should shift some of your body weight forward to maintain steering control.

When riding downhill, gravity increases the amount of braking force required to slow or stop the vehicle. It is important, therefore, to begin slowing earlier for cornering and stopping.

Lane Position

The width of a three-wheel vehicle is similar to the width of some automobiles, therefore, unlike a two-wheel motorcycle, you are limited in lane positioning. Keep toward the center of the lane and within the lane markings.

Lane positioning when riding in groups is also an important consideration. Ride single file and always maintain a safe margin, four seconds minimum, between vehicles.



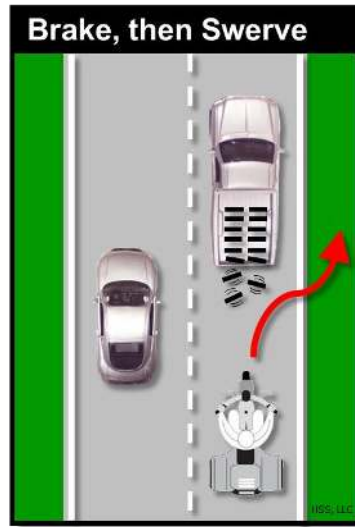
Parking at the Roadside

Position your vehicle in a parking space so you are parked parallel to the curb. Set the parking brake or leave it in gear to keep it from rolling. Parking parallel to the curb will facilitate pulling away from the curb and entering the lanes of traffic.



Swerving

A three-wheel vehicle is not as maneuverable as a two-wheel motorcycle, so it is important to look well ahead to avoid the need for any sudden turns or swerving. Swerving is seldom the best option to avoid a collision. If swerving is required, brake either before or after the swerve, never while swerving. You should not attempt swerving without proper training. If you need to avoid a collision the best option may be hard braking.



Cornering and Curves

When riding through curves, remember to stay within your lane.

Adjust your speed before entering a curve. You may need to lean or shift your weight in the direction of the turn to avoid causing any of the wheels to leave the ground and, possibly, losing control.

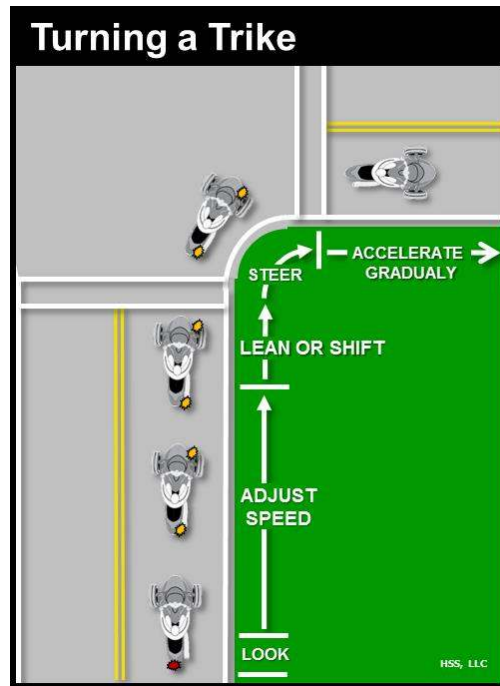
Unique Operating Characteristics of Trikes

Turning

Because the weight of a trike is distributed almost equally between the two front or two rear wheels, these vehicles handle the same in left and right turns.

When turning a trike:

- Approach a turn with your head up, and look through the turn.
- Adjust speed before the turn to allow you to safely accelerate through the turn.
- Lean or shift your weight in the direction of the turn.
- Steer the front wheel(s) toward the turn.
- Accelerate gradually as you exit the turn.



Stopping Quickly

An important handling characteristic to be aware of on a standard trike (1 wheel in front, 2 in the rear) is that

the two rear wheels have more braking power. How much varies by trike design. This is because weight does not shift to the front wheel on a trike during hard braking. Most of the weight stays on the rear wheels and makes the rear brakes more effective. The front brakes are more effective on trikes with 2 wheels in front, 1 in the rear, where weight is transferred to the front wheels during braking making the front brakes more effective.

Carrying a Passenger and Cargo

Only skilled, experienced riders should carry passengers or heavy loads. The additional weight of a passenger or cargo will change the handling characteristics of the vehicle.

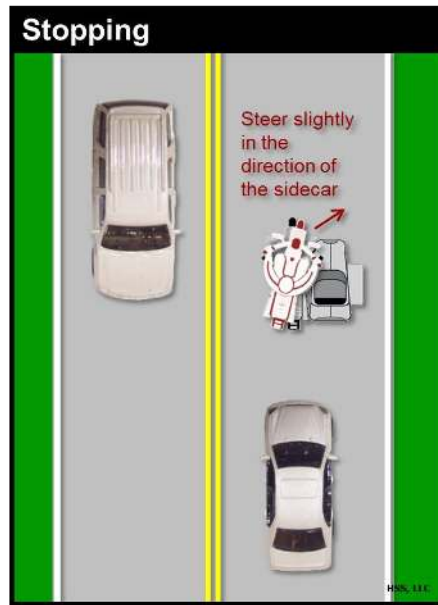
If a passenger is being carried, the passenger will sit directly behind you. When carrying cargo, center the load and keep it low in the storage areas so it is balanced side-to-side. Refer to your owner's manual for more information.

Unique Operating Characteristics of a Motorcycle with a Sidecar

Stopping

Check your sidecar for brakes. Some sidecars are equipped with brakes while others are not. Your stopping distance and handling will be affected if your sidecar is not equipped with brakes.

You may need to steer slightly in the direction of the sidecar when applying the motorcycle brakes if your sidecar is not equipped with brakes.



Accelerating

During acceleration, steer slightly in the opposite direction from the sidecar to maintain a straight line path.



Turning

When operating a sidecar-equipped motorcycle, additional consideration needs to be given to the direction of the turn and amount of weight in the sidecar. When turning a motorcycle with a sidecar:

- Evaluate the degree of turn required.
- Adjust speed before the turn to allow you to safely accelerate through the turn.
- Lean or shift your weight in the direction of the turn.
- Maintain speed as you enter the turn.
- Accelerate gradually as you exit the turn.

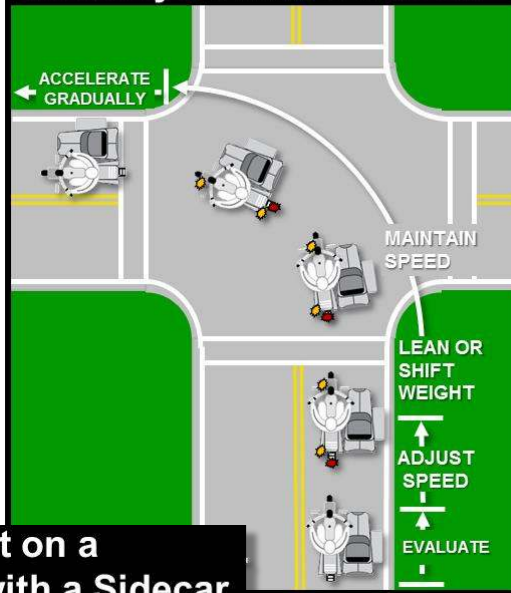
Turning Left

During a left turn, the sidecar acts as a stabilizer, so the sidecar wheel stays on the ground. However, if the turn is taken too sharply or at too great a speed, it may cause the rear wheel of the motorcycle to lift off the ground and the nose of the sidecar to contact the pavement.

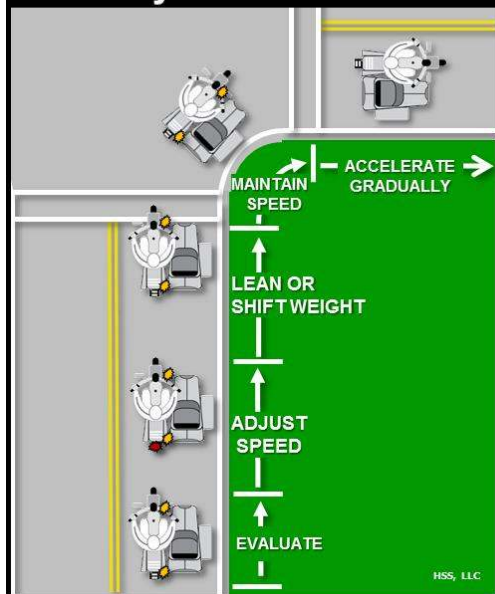
Turning Right

A right turn taken too sharp or at too great a speed may cause the sidecar wheel to lift off the ground. The lift will be greater if the sidecar is empty or lightly loaded. You can avoid this wheel lift by slowing before entering the turn and shifting more of your weight to the inside of the turn, towards the sidecar.

Turning Left on a Motorcycle with a Sidecar



Turning Right on a Motorcycle with a Sidecar



Stopping Quickly

Stopping quickly in a straight line is the primary technique for avoiding collisions in traffic. Always use the front and rear brakes simultaneously, adjusting pressure on the levers to apply maximum braking just short of skidding either wheel. If the front wheel skids, ease off some of the pressure to regain steering control. If the rear wheel skids, keep it locked until the vehicle has stopped completely. If the sidecar wheel has a brake, and that wheel starts to skid, you can safely ignore it.

Making quick stops in a curve is more difficult, especially if the road curves to the right. Hard braking in a curve to the right tends to lift the sidecar which may require additional weight shift to the right to compensate. Stopping quickly in turns to the left is less dangerous because there is a reduced danger of tipping over. And, if the wheels skid, the vehicle will slide toward the road shoulder, not into the opposing lane of traffic.

Carrying Passengers and Cargo

Only skilled, experienced riders should carry passengers or heavy loads. The additional weight of a passenger or cargo will change the handling characteristics of the vehicle.

You must give some thought to where the passengers are seated and the loads are positioned. The best place for a passenger is in the sidecar. Avoid carrying a passenger behind you while leaving the sidecar empty. This could increase your chances for a tip over. If you have two passengers, place the heavier passenger in the sidecar to improve handling. The passenger sitting behind you should sit upright at all times. It is not necessary for the passenger to lean into curves with you. When loaded, your vehicle will

need more time and distance to stop. You will need to increase your following distance.

When carrying cargo in a sidecar, it should be centered low, over the sidecar axle and secured firmly in place. If the cargo shifts, handling will be affected.

Additional Resources

Here is a list of additional resources for more information on three-wheel vehicles.

- The National Highway Traffic Safety Administration (NHTSA) website:
<http://www.nhtsa.gov/Safety/Motorcycles>
- Evergreen Safety Council's website, includes a list of nationally available three-wheel courses:
www.esc.org/step_national_schedule.php
- The Sidecar/Trike Education Program student handbook can be purchased from the Evergreen Safety Council at 800-521-0778.
- Sidecar Safety Program (SSP), Inc., Driving a Sidecar Outfit: A manual on learning to drive a motorcycle/sidecar combination. This book is available by contacting the SSP directly at:
sidecarsafety@mail.org.
- The Motorcycle Safety Foundation's (MSF) website has information on:
 - You and Your 3-wheel Motorcycle: Riding Tips:
http://msf-usa.org/downloads/3w_tips.pdf
 - MSF 3WBRC training course:
http://msfusa.org/downloads/3WBRC_Student_Handbook_2010.pdf

Test Your Knowledge

1. What are two major differences between two-wheel motorcycles and three-wheel vehicles?

A three-wheel vehicle:

- A. Is less stable, and is steered by pointing the front-wheel in the direction of the turn.
- B. Is more stable, but could tip-over and is steered by pointing the front-wheel in the direction of the turn.
- C. Is more stable, but could tip-over and is steered by pointing the front-wheel in the opposite direction of the turn.

2. When riding a three-wheel vehicle in groups, you should:

- A. Ride single file and maintain a four-second following distance.
- B. Ride in staggered formation and maintain a four-second following distance.
- C. Ride single file and maintain a one-second following distance.

3. When turning a trike, how should you approach the turn?

- A. With your head up and adjusting your speed.
- B. With your head down and accelerating.
- C. With your head down and adjusting your speed.

4. When stopping quickly and the front wheel skids, you should:

- A. Keep it locked until the vehicle has completely stopped.
- B. Ease off some of the pressure to regain steering control.
- C. Hold the handgrips firmly and ease off the throttle.

1. B –Differences between Two-Wheel Motorcycles and Three-Wheel Vehicles, 2. A –Lane Position, 3.A –, 4. B – Stopping Quickly

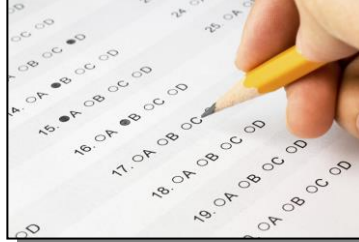
SECTION 11

Sample Knowledge Test Questions

This Section Covers

- Sample Knowledge Test Questions

There will be some questions about road signs. Information about signs can be found in the Driver's Manual which can be accessed online free of charge at www.scdmvonline.com or it can be purchased in a branch office.



Sample Knowledge Test Questions

(Answers are located at the end of this section.)

- 1. It is *MOST* important to flash your brake light when:**
 - A. You are stopped at an intersection.
 - B. You will be slowing suddenly.
 - C. There is a stop sign ahead.
 - D. Your signals are not working.
- 2. The *FRONT* brake supplies how much of the potential stopping power?**
 - A. About twenty-five percent.
 - B. About fifty-percent.
 - C. Seventy-percent or more.
 - D. All of the stopping power.
- 3. To swerve correctly:**
 - A. Shift your weight quickly.
 - B. Turn the handlebars quickly.
 - C. Press the handgrip in the direction of the turn.

D. Press the handgrip in the opposite direction of the turn.

4. If a tire goes flat while riding, and you must stop, it is usually best to:

- A. Relax on the handgrips.
- B. Shift your weight toward the good tire.
- C. Ease off the throttle.
- D. Use both brakes and stop quickly.

5. The car below is waiting to enter the intersection. It is best to:

- A. Make eye contact with the driver.
- B. Reduce speed and be ready to react.
- C. Maintain speed and position.
- D. Maintain speed and move right.



Answers to Sample Knowledge Test Questions:

- 1-B, answer in section 6, Increasing Conspicuity, Brake Light
- 2-C, answer in section 5, Stopping
- 3-C, answer in section 7, Crash Avoidance, Swerving or Turning Quickly
- 4-C, answer in section 7, Mechanical Problems, Tire Failure
- 5-B, answer in section 6, Intersections

SECTION 12

Optional Content

This Section Covers

- Motorcycle Controls
- Pre-Ride Check
- Parking at Curbs
- Passing and Being Passed
- Hand Signals
- Carrying Loads
- Motorcycle Skills Test
- Motorcycle with Sidecar Skills Test



This section contains supplementary information that may be useful when learning how to ride a motorcycle. Refer to your motorcycle owner's manual for additional information.

Motorcycle Controls

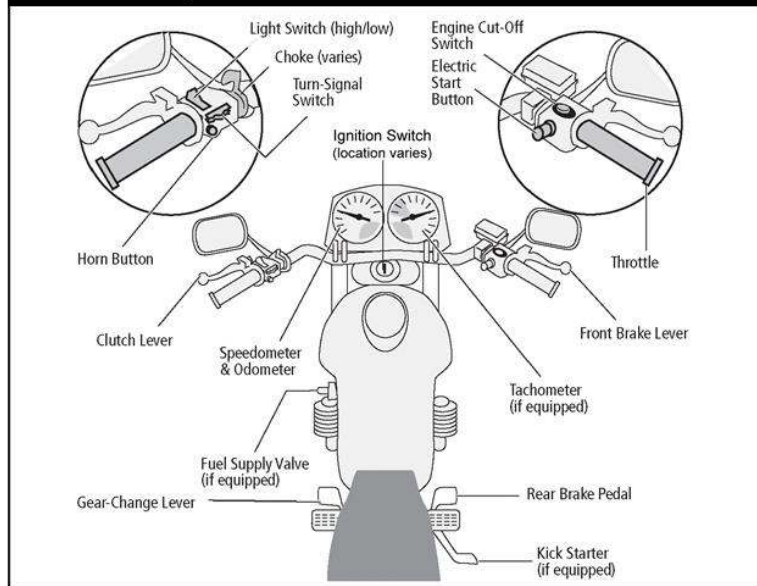
It is important to read your motorcycle owner's manual to learn where your motorcycle controls are and how to operate them. You should be able to operate them while riding without having to look for them.

Primary Controls

There are six primary controls needed to make the motorcycle move and stop. You will need both hands and both feet to operate these controls.

- **Handlebars** – The handlebars are used to initiate and control motorcycle lean, which turns the motorcycle.

Motorcycle Controls



- **Throttle** – Is the right handgrip and is operated by rolling the handgrip toward you to increase speed and away from you to decrease speed. When released, the throttle snaps back to an “idle” position. To use the throttle safely and comfortably, keep four fingers around the throttle/handgrip and the wrist in a flat position.
- **Clutch Lever** – Located in front of the left handgrip. To operate squeeze the clutch lever in toward the left handgrip, disconnecting power from the rear wheel. To reengage power, slowly release the clutch lever while gently applying throttle.
- **Gearshift Lever** – Is usually located on the left side of the motorcycle in front of the footrest and is operated by the left foot. To shift to a higher gear (upshift), squeeze the clutch lever and then lift the gearshift lever. To shift to a lower gear (downshift),

squeeze the clutch lever and then press the gearshift lever. Motorcycle transmissions shift only one gear per each lift or press. The shift lever must be released before you can shift again. A typical shift pattern is 1-N-2-3-4-5-(6). Neutral (N) is a half-shift up from first or a half-shift down from second; a full upshift or downshift will bypass neutral. An instrument light indicates when the transmission is in neutral.

- **Front Brake Lever** – Located in front of the right handgrip and controls the brakes on the front wheel. To operate, squeeze the front brake lever smoothly and progressively.
- **Rear Brake Pedal** – Located in front of the right footrest and controls braking on the rear wheel. To operate press down on the rear brake pedal with your right foot.

Other Controls and Equipment

Along with the six primary controls there are a few other controls on most motorcycles that are important to know and locate. The location and operation of some of these controls vary from model to model. Refer to your motorcycle owner's manual.

- **Engine Cut-Off Switch** – Located on the right handgrip and operated by the right thumb. It allows you to shut off the engine without removing your hands from the controls.
- **Fuel Supply Valve** – Controls fuel supply to the engine. To run, turn from OFF to ON. Also may include RESERVE and PRIME positions. It may not be present on some motorcycles.
- **Ignition Switch** – Usually located near the instrument cluster, on the gas tank or under the tank and activated with a key. Positions include ON, OFF, LOCK and PARK. The LOCK position

allows the key to be removed and engages a steering-lock mechanism. PARK activates the taillight for increased visibility if you park alongside a roadway at night.

- **Choke (if equipped)** – Frequently located near the left handgrip, the instrument cluster or the carburetor. It is important that you consult your owner's manual for more information. The choke provides an enriched fuel mixture to assist in cold engine starts. Turn to OFF position when engine is warmed.
- **Turn Signal Switch** – Usually located on the handgrip(s) and operated by the thumb. Most models do not self-cancel. Check your owner's manual.
- **High/Low Beam Headlight** – Located on the left handgrip. On most motorcycles the headlight activates when the ignition is on.
- **Horn** – Located on the left handgrip. Operate by pressing with your thumb.
- **Starter** – Located on the right handgrip. Operate by pressing with your thumb.
- **Speedometer** – Indicates motorcycle road speed. An odometer shows miles ridden, and a resettable trip meter can be used to show trip miles or miles since the last gas stop.
- **Tachometer (if equipped)** – It indicates motorcycle engine speed in revolutions per minute (RPM). Never exceed red line RPM.
- **Indicator Lights** – Located in the instrument cluster. Includes neutral, turn signals, oil pressure, high beam, side-stand down and possibly others.
- **Mirrors** – Located on the left and right sides of the motorcycle. Most mirrors are convex. Convex mirrors provide a wider view than flat mirrors but

make vehicles seem further away than they really are. Adjust them so your shoulder and upper arm are partially visible. This gives you the maximum view to the rear and the side.

- **Side and Center Stands** – Supports the motorcycle when parked. Not all models have center stands. Most stands have return springs that snap up and hold them in place. Always raise the stand before riding.

Pre-Ride Check

If something's wrong with the motorcycle, you'll want to find out about it before you get in traffic. Make a complete check of your motorcycle before every ride.

Before mounting the motorcycle make the following checks:

- **Tires/Wheels** – Keep tires in good condition.
 - **Tire pressure** – Check the tire pressure using a gauge. A tire may be underinflated without a noticeable change in appearance. Motorcycles do not handle properly if the inflation pressure is too low or too high. Check the owner's manual for the right amount.
 - **Tire Tread** – Check the tread of the tires. Worn or uneven tread can make the motorcycle hard to handle, particularly on wet pavement.
 - **Rims/Spokes** – Check for bent, loose or damaged rims and spokes.
 - **Damage to Tires** – Check for cuts or objects stuck in the tread. Also, check the sidewalls for cracks. A blowout on a motorcycle can be extremely dangerous.
- **Fluids** – Oil and fluid levels. At a minimum, check hydraulic fluids and coolants weekly. Look under the motorcycle for signs of an oil or gas leak.

Running out of gas is inconvenient. It can also be dangerous as it makes leaving the road difficult. Lack of oil can damage your engine.

- **Headlights and Taillight** – Check them both. Test your switch to make sure both high and low beams are working.
- **Turn Signals** – Turn on both right and left turn signals. Make sure all lights are working properly.
- **Brake Light** – Try both brake controls, and make sure each one turns on the brake light.
- **Controls (levers, cables, throttle)** – Check the condition, operation and routing. Check the cables for kinks or broken strands. If a cable breaks while riding, the motorcycle could become difficult to control and a crash could result.
- **Chain** – Make sure the drive chain is properly adjusted and lubricated. Check the motorcycle owner's manual for information regarding chain adjustment.

Once you have mounted the motorcycle, complete the following checks before starting out:

- **Clutch and Throttle** – Make sure they operate smoothly. The throttle should snap back when released. The clutch should feel tight and smooth.
- **Mirrors** – Clean and adjust both mirrors before riding. It is difficult and dangerous to adjust a mirror while riding. Position both mirrors far enough outward to show about half the lane behind and as much as possible of the lane to the side. When properly adjusted, a mirror may show the edge of your arm or shoulder – but it's the road behind and to the side that's most important.
- **Brakes** – Try the front and rear brake controls, one at a time. Make sure each one feels firm, not

spongy and holds the motorcycle when the brake is fully applied. Check the brake fluid levels. Roll the motorcycle a little and make sure the brakes stop the motorcycle. After starting to ride, slightly apply the brakes and make sure the motorcycle slows. It is important to check the brakes because you must be able to slow down and stop the motorcycle.

- **Horn** – Try the horn. Make sure it works.
- **Fuel Supply Valve (if equipped)** – Make sure the valve is on/open. Your motorcycle may start with fuel still in the lines, but it will stall once the lines are empty.

Parking at Curbs

If parking in a parallel parking space next to a curb, position the motorcycle at an angle with the rear wheel to the curb. (Note: Some cities have ordinances that require motorcycles to park parallel to the curb.)

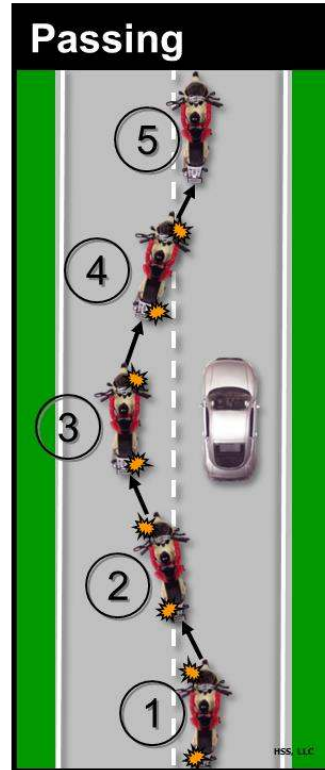


Passing and Being Passed

Passing and being passed by another vehicle is not much different than with a car. However, visibility is more critical. Be sure other drivers see you, and that you see potential hazards.

1. Passing

- **Ride in the left** portion of the lane at a safe following distance to increase your line of sight and make you more visible. Signal and check for oncoming traffic. Use your mirrors and turn your head to look for traffic behind.
- **When safe**, move into the left lane and accelerate. Select a lane position that doesn't crowd the car you are passing and provides space to avoid hazards in your lane.
- **Ride through the blind spot** as safely and quickly as possible.
- **Signal again**, and complete mirror and



head checks before returning to your original lane and then cancel signal.

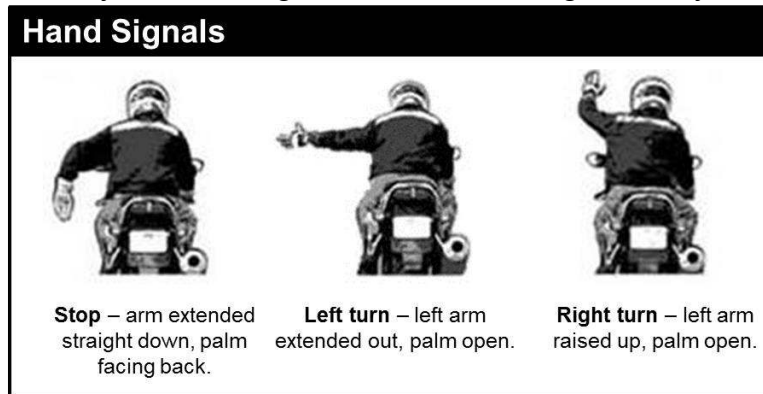
2. Being Passed

When you are being passed ride in the center portion of your lane. Riding any closer to the passing vehicle could put you in a hazardous situation.

Do not move into the portion of the lane farthest from the passing vehicle. It might invite the other driver to cut back into your lane too early.

Hand Signals

You should also be familiar with hand signals, as shown in the figure, and be able to use them if the motorcycle's turn signals are not working correctly.



Carrying Loads

Most motorcycles are not designed to carry much cargo. Small loads can be carried safely if positioned and fastened properly.

- **Keep the load low** – Secure loads low to the seat and not against rear seat frames. Fasten loads securely, or put them in saddlebags. Piling loads against a sissy bar or frame on the back of the seat

changes the motorcycle's center of gravity and disturbs its balance.

- **Keep the load forward** – Place the load over, or in front of, the rear axle. Tank bags keep loads forward, but use caution when loading hard or sharp objects. Make sure the tank bag does not interfere with handlebars or controls. Mounting loads behind the rear axle can affect how the motorcycle turns and brakes. It can also cause a wobble.
- **Distribute the load evenly** – Load saddlebags with about the same weight on each side. An uneven load can cause the motorcycle to pull to one side. Overloading may also cause the bags to catch in the wheel or chain, locking the rear wheel and prompting the cycle to skid.
- **Secure the load** – Fasten the load securely with elastic cords (bungee cords or nets). Elastic cords with more than one attachment point per side are more secure. A tight load won't catch in the wheel or chain, causing it to lock up and skid. Rope tends to stretch and knots come loose, permitting the load to shift or fall.
- **Check the load** – Stop and check the load every so often to make sure it has not worked loose or moved.

Motorcycle Skills Test

The test consists of several exercises designed to measure your ability to perform basic vehicle controls and hazard response skills. Most of the exercise involve speed of approximately 15 m.p.h. You will be scored on time and distance standards as well as path and foot violations. The test may be ended for point accumulation, falling or dropping the motorcycle, committing an unsafe act, or failure to follow

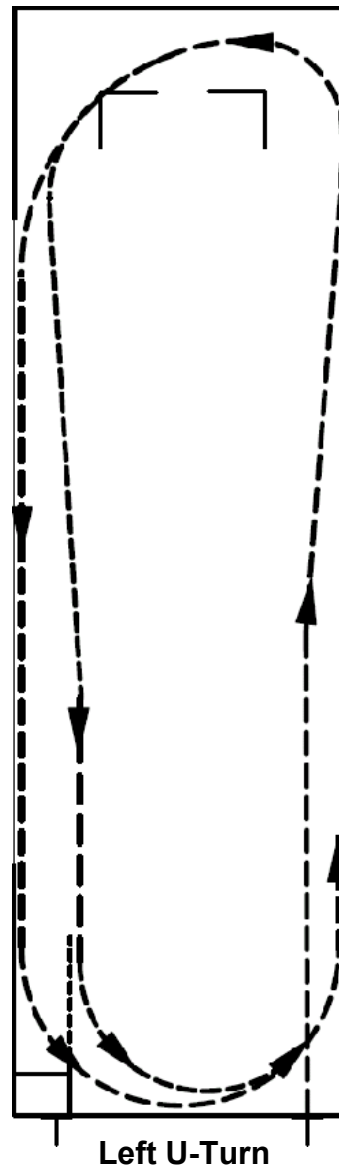
directions. The following diagrams illustrate the maneuvers you will be asked to perform:

Sharp Turns and U-Turns to the Left

You will be asked to accelerate straight ahead and make a left sharp turn staying inside the boundaries marked by the yellow “L” lines. You must not put a foot down or cross the lines.

Once you have completed the sharp turn, continue around to the far side of the course and ride back toward the start of the course. Then, you will make a left U-Turn, staying inside the boundaries marked by the yellow solid lines or (yellow dashed entry line and solid exit line).

You must not put a foot down or cross the lines. Stop in a straight line after completing the U-Turn and wait for further directions. You will lose points for putting your foot down or path violations.



Sharp Turns and U-Turns to the Right

You will be asked to accelerate straight ahead and make a right sharp turn, staying inside the boundaries marked by the yellow “L” lines. Do not put a foot down or cross the lines.

Once you have complete the sharp turn, continue around to the far side of the course and ride back toward the start of the course. Then you will make a right U-Turn, staying inside the boundaries marked by the yellow solid lines or (yellow solid entry line and dashed exit line).

Do not put a foot down or cross the lines. Stop in a straight line after completing the U-Turn and wait for further directions.

You will lose points for putting your foot down or path violations.



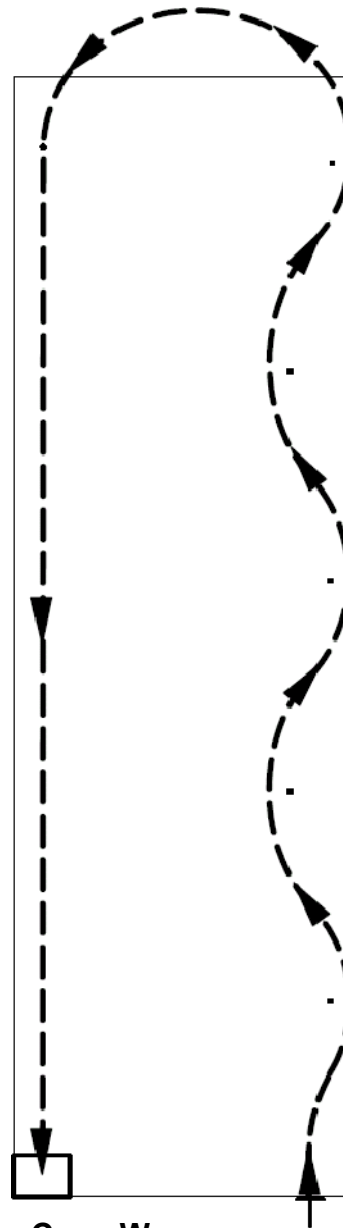
Right U-Turn

Cove Weave - Regular Stop

You will ride to the right of the first cone, to the left of the second, and so on. Weave past all five cones without touching or skipping a cone, or putting your foot down.

After rounding the last cone, continue around to the far side of the course. Ride down the perimeter toward the start of the course. Make a smooth, non-skidding stop with your front tire inside that white box.

Once stopped in the box, your front tire cannot be touching any painted lines. You will lose points for hitting or skipping a cone, putting a foot down, or stopping before, after, or with your front tire touching the box.



Cone Weave

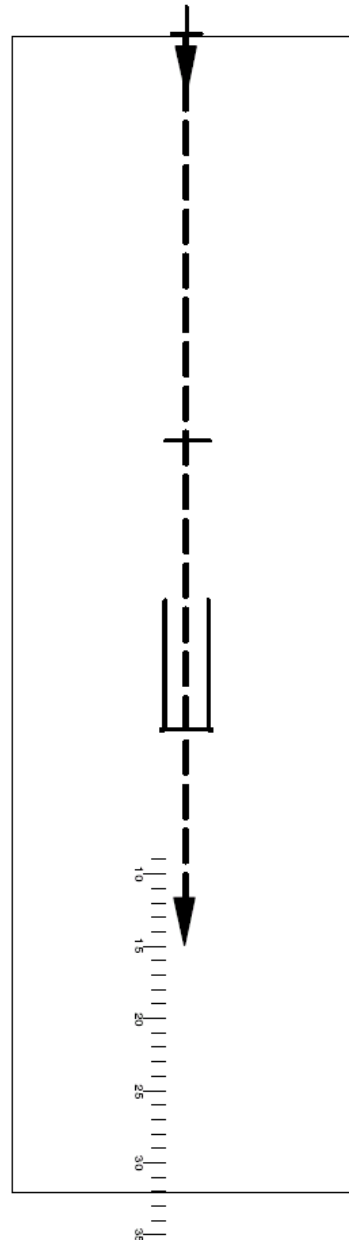
Sudden Stops

You will accelerate straight toward the braking area.

Stabilize your speed between 12-20 mph by the time you reach the first red line. Maintain a steady speed from the first red line until you reach the second red line. When your front tire passes the second red line, stop as quickly and as you safely can.

Remain stopped until instructed to move. You will not be assessed points for skidding.

You will lose points for failing to stop in a specified distance, failing to use both brakes or failing to obtain proper speed or anticipate the stop.



Sudden Stop

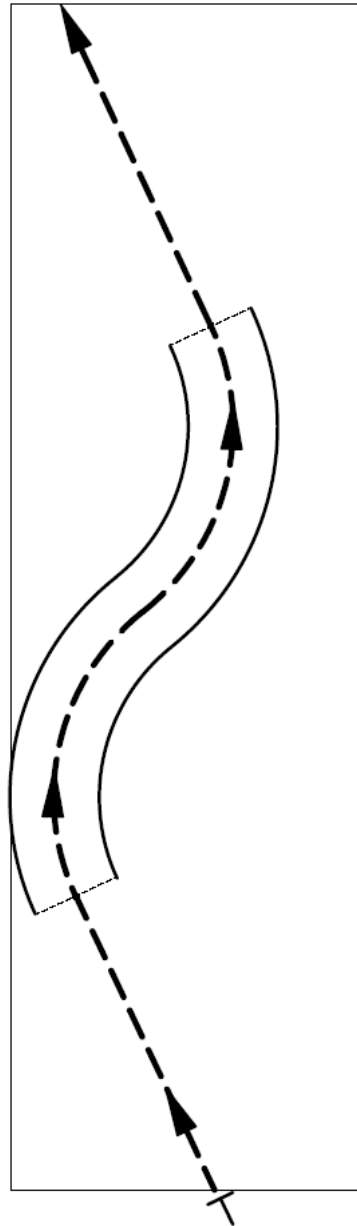
Cornering

You will ride through the multiple curves marked by the white lines at a speed between 10 to 15 mph.

You must stay within the boundaries marked by the curved white lines while slightly accelerating through the curve.

After exiting the curved lines you may slow down and then turn in either direction to return to the end of the course.

You will lose points for path violations, decelerating or failing to obtain the proper speed.



Cornering

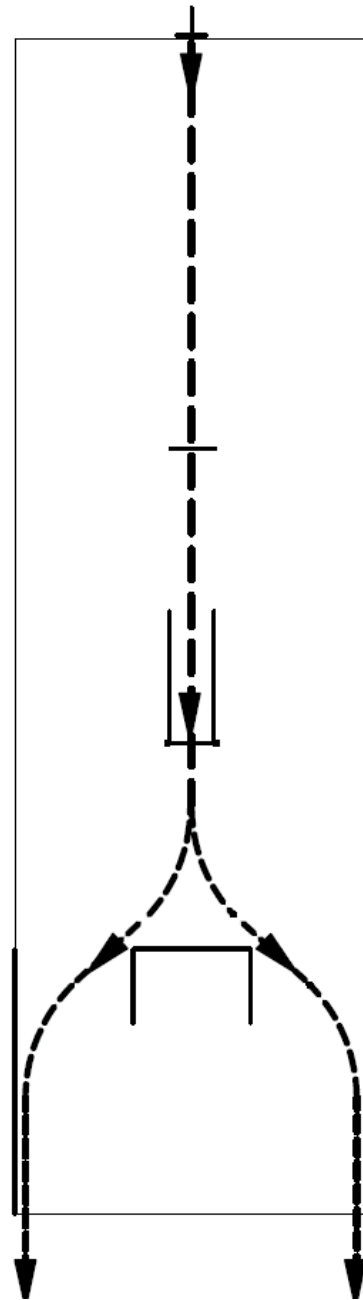
Obstacle Avoidance

You will accelerate toward the path marked by the red lines. Stabilize your speed between 12-18 mph by the time you reach the first red line.

Maintain a steady speed from the first red line until you reach the second red line. When your front tire passes the second red line, swerve to avoid the obstacle box marked by the yellow lines.

Avoid crossing the yellow obstacle box while staying inside of the yellow sideline. Once past the sideline, stop and wait for further instructions.

You will lose points for hitting obstacle box or sideline, failure to obtain proper speed or braking during the swerve.



Obstacle Avoidance

Motorcycle with Sidecar Skills Test

Safely operating a motorcycle with a sidecar depends largely on your knowledge and skills. The skills for a motorcycle with sidecar operation require a lot of practice. If you have just learned to handle a motorcycle with a sidecar and have very little riding experience, the most important part of learning to ride is still ahead. Before you go out on the street with other traffic, there are certain basic skills needed for your safety. To make sure you have the basic skills to ride, you will be given a riding test.

When you report for your test, it is recommended that you have:

- Protective clothing that covers your body (gloves, boots, long sturdy trousers, long sleeve shirt or jacket)
- An approved helmet and eye protection are required for operators under the age of 21

During the on-cycle test, you will be graded on how safely you handle your motorcycle with sidecar. For example, you may be tested on:

- Selecting safe speeds while going straight and turning
- Picking the correct path and staying there
- Making normal and quick stop
- Making normal and quick turns

The Examiner will score you on factors related to safety, such as:

- **Distance** - Did you stop in the space allowed?
- **Time** - Did you turn fast enough to handle the situation?
- **Position** - Did you keep the cycle in the proper path?

The test will end immediately if you:

- Commit an unsafe act
- Disregard or fail to understand instructions

Generally, you will be evaluated on your ability to control the cycle, speed maneuverability, left turns, right turns, quick stops, straight line riding, posture, used of clutch, brakes and overall attention that can be observed and scored.

You can stop the test anytime you desire. You should not attempt an exercise that you do not feel you can perform. If an exercise is too difficult for you, or you cannot safely follow instructions, tell the Examiner. You will be allowed to come back another day after you have taken more time to practice.

If your motorcycle with sidecar is wider than six feet, let the Examiner know before beginning the skills test. The Examiner may need to make additional modifications to the skills test pad.

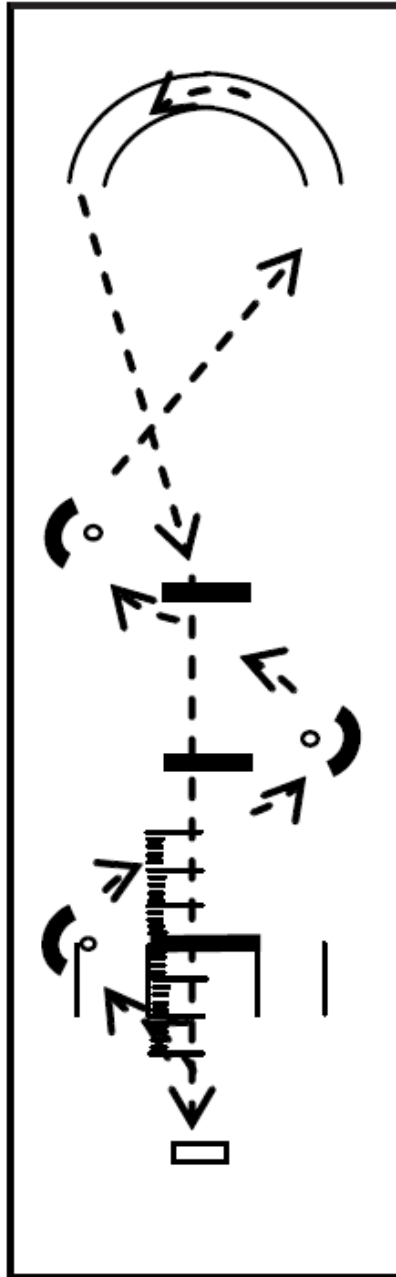
Vehicle Placement - Cone Weave and Turn

Ride to the left of the first cone, to the right of the second cone and so on. Weave past all three cones without hitting or skipping a cone. Your inside wheel must stay between the cone and curved line, not hitting or skipping any of them. After rounding the last one make a left-hand turn through the curve marked by the lines at approximately 10 MPH. You must stay between the lines of the curve.

Points will be assessed for:

- Stalling the engine
- Hitting or skipping a cone
- Riding too slowly

- Path violation, inside tire more than four feet from weave cone or any tire outside the curve boundary

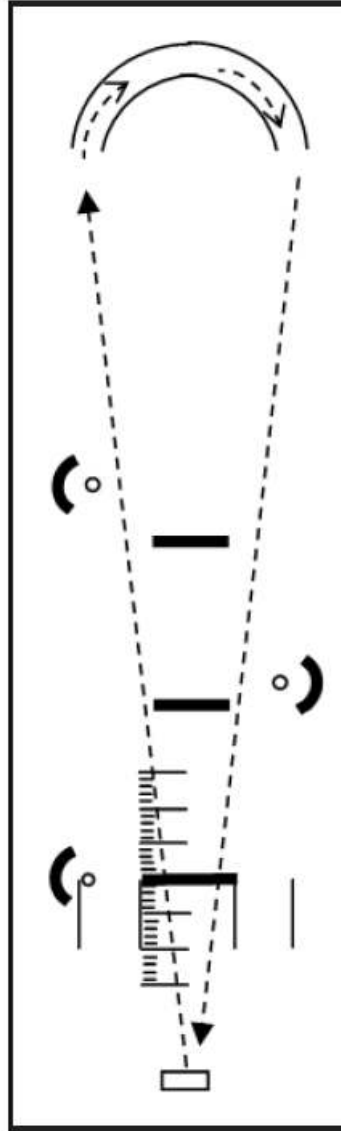


Cornering and Normal Stop

Ride toward the left of the curve quickly accelerating. Brake prior to making a right hand turn through the curve at approximately 10 MPH. You must stay between the lines and the curve. After completing the turn, ride to the end of the course and make a smooth stop without skidding the tires and with your front tire inside the box. Your front tire must not touch the painted lines. You will be timed from the time you start moving forward until you are stopped near the box.

Points will be assessed for:

- Stalling the engine
- Skidding tires
- Stopping before, after or with your front tire touching the box
- Riding too slowly

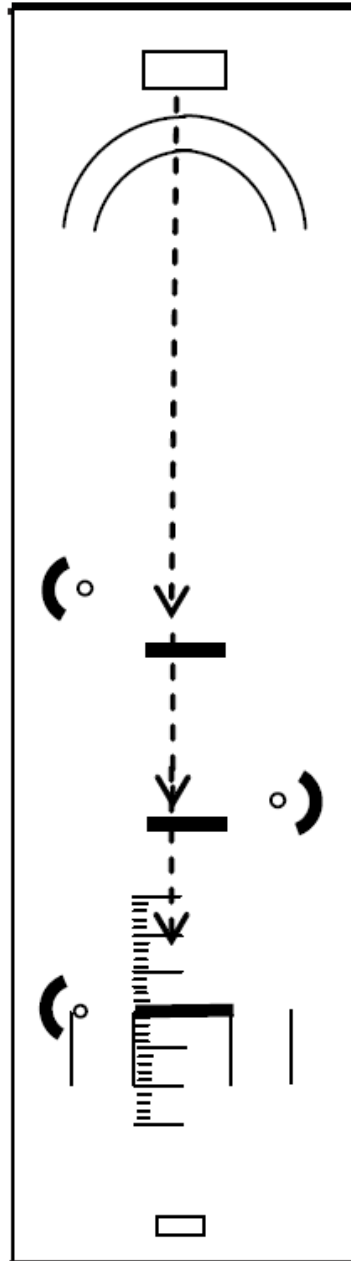


Quick Stop

Position your vehicle with your front tire on the "T" at the end of the course. On signal, accelerate straight up the path and shift into second gear. Stabilize your speed between 15 and 20 MPH by the time you reach the first line. Maintain a steady speed. When your front tire passed the second line, stop as quickly as you safely can while downshifting to the first gear. Remain stopped.

Points will be assessed for:

- Stalling the engine
- Failure to stop in specified distance
- Failure to use both brakes
- Failure to obtain proper speed



Obstacle Avoidance - Swerve

Position your vehicle with the front tire on the line or "T" at the other end of the course. On signal accelerate straight up this path. Stabilize your speed between 12 and 18 MPH by the time you reach the first line. Maintain a steady speed. After your front tire passes the second line swerve to the right. Avoid the obstacle line and stay inside the boundary line. Do not touch either line. Once you have passed the lines marking the box, stop and wait for further instructions.

Points will be assessed for:

- Stalling the engine
- Tires crossing the lines
- Improper speed

