Welcome to the Seventeenth Edition of the MSF Motorcycle Operator Manual (MOM). Operating a motorcycle safely in traffic requires special skills and knowledge. The Motorcycle Safety Foundation (MSF) has made this manual available to help novice motorcyclists reduce their risk of having a crash. The manual conveys essential safe riding information and has been designed for use in licensing programs. While designed for the novice, all motorcyclists can benefit from the information this manual contains.

The original Motorcycle Operator Manual was developed by the National Public Services Research Institute (NPSRI) under contract to the National Highway Traffic Safety Administration (NHTSA) and within the terms of a cooperative agreement between NHTSA and the MSF. The manual and related tests were used in a multi-year study of improved motorcycle operator licensing procedures, conducted by the California Department of Motor Vehicles under contract to NHTSA.

The purpose of this manual is to educate riders and to help them avoid crashes while safely operating either a standard two-wheel motorcycle or a three-wheel motorcycle.

This latest edition has undergone significant improvements, and contains new, more in-depth information, designed to:

- Guide riders in preparing to ride safely
- Develop effective street strategies
- Give riders more comprehensive understanding of safe group riding practices
- Describe in detail best practices for carrying passengers and cargo

In promoting improved licensing programs, the MSF works closely with state licensing agencies. The Foundation has helped more than half the states in the nation adopt the Motorcycle Operator Manual for use in their licensing systems.

Improved licensing, along with high quality motorcycle rider education and increased public awareness, has the potential to reduce crashes. Staff at the Foundation are available to assist governmental and private agencies in efforts to improve motorcycle safety.

Tim Buche
President,
Motorcycle Safety Foundation

MOTORCYCLES MAKE SENSE – SO DOES PROFESSIONAL TRAINING

Motorcycles are inexpensive to operate, fun to ride and easy to park. Unfortunately, many riders never learn critical skills needed to ride safely.

Professional training for beginning and experienced riders prepares them for real-world traffic situations. Motorcycle Safety Foundation RiderCourses™ teach and improve such skills as:

- Effective turning
- Braking maneuvers
- Protective apparel selection
- Obstacle avoidance
- Traffic strategies
- Maintenance

For the basic or experienced RiderCourse nearest you, call toll free: 800.446.9227 or visit msf-usa.org

The Motorcycle Safety Foundation’s (MSF) purpose is to improve the safety of motorcyclists on the nation’s streets and highways. In an attempt to reduce motorcycle crashes and injuries, the Foundation has programs in rider education, licensing improvement, public information and statistics. These programs are designed for both motorcyclists and motorists. A national not-for-profit organization, the MSF is sponsored by BMW, BRP, Harley-Davidson, Honda, Kawasaki, KTM, Piaggio, Suzuki, Triumph, Victory and Yamaha.

The information contained in this publication is offered for the benefit of those who have an interest in riding motorcycles. The information has been compiled from publications, interviews and observations of individuals and organizations familiar with the use of motorcycles, accessories, and training. Because there are many differences in product design, riding styles, federal, state and local laws, there may be organizations and individuals who hold differing opinions. Consult your local regulatory agencies for information concerning the operation of motorcycles in your area. Although the MSF will continue to research, field test and publish responsible viewpoints on the subject, it disclaims any liability for the views expressed herein.

Printing and distribution courtesy of Motorcycle Safety Foundation msf-usa.org

Second Revision .................. December 1978
Third Revision .................. February 1981
Fourth Revision .................. January 1983
Fifth Revision .................. October 1987
Sixth Revision .................. April 1991
Seventh Revision .................. September 1992
Eighth Revision .................. January 1999
Ninth Revision .................. March 2000
Tenth Revision .................. January 2002
Eleventh Revision ................. July 2002
Twelfth Revision .................. May 2004
Thirteenth Revision ............... June 2007
Fourteenth Revision .............. March 2008
Fifteenth Revision ................ June 2009
Sixteenth Revision ............... January 2011
Seventeenth Revision .......... February 2014

Printed in USA 000254
## T-CLOCS: Pre-Ride Inspection Checklist

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**EARNING YOUR LICENSE**

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### THE RIDER AND THE MOTORCYCLE

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**EMERGENCY INFORMATION**

<table>
<thead>
<tr>
<th>Name</th>
<th>Home Phone</th>
<th>Work Phone</th>
<th>Cell Phone</th>
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**Contact this person if rider is injured**

<table>
<thead>
<tr>
<th>Name</th>
<th>Home Phone</th>
<th>Work Phone</th>
<th>Cell Phone</th>
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**Cycle Insurer Name/Phone**

<table>
<thead>
<tr>
<th>Insurer Name</th>
<th>Phone</th>
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**Doctor's Name/Phone**

<table>
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**Blood Type**

Blood Type

**Allergies/Medical Conditions**

Allergies/Medical Conditions

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**T-CLOCS ITEM**

**WHAT TO CHECK**

**WHAT TO LOOK FOR**

**CHECK-OFF**

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<tr>
<td>C-CHASSIS</td>
<td>Frame Condition</td>
<td>Cracks at gussets, accessory mounts, look for paint lifting.</td>
</tr>
<tr>
<td></td>
<td>Steering-Head Bearings</td>
<td>No detent or tight spots through full travel, raise front wheel, check for play by pulling/pushing forks.</td>
</tr>
<tr>
<td></td>
<td>Swingarm Bushings/Bearings</td>
<td>Raise rear wheel, check for play by pushing/pulling swingarm.</td>
</tr>
<tr>
<td></td>
<td>Suspension</td>
<td>Front Forks Smooth travel, equal air pressure/damping, anti-dive settings. Left Right Rear Shock(s) Smooth travel, equal pre-load/air pressure/damping settings, linkage moves freely and is lubricated. Left Right Chain or Belt</td>
</tr>
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Motorcycling is a unique experience. Compared to a car, you don’t sit in a motorcycle, you become part of it. Not as a passive driver, but as an active rider. Driving a motorcycle gives you a sense of freedom that is not experienced in a car, as you become one with the machine.

Along with that freedom comes responsibility. All states require some form of license endorsement demonstrating you possess a minimum level of skill and knowledge. This book and other motorcycle publications can help prepare you to be successful. You might also consider taking a formal hands-on training course, even if your state doesn’t require that you complete one. You’ll learn how to improve your riding skills and mental strategies, so you can be a safer, more alert rider.

The diagram above illustrates the complex environment that awaits you, and supports the concept that, as the Motorcycle Safety Foundation says, “Safe riding depends as much on the mental skills of awareness and judgment as it does on a physical skill of maneuvering the machine.”

Successfully piloting a motorcycle is a much more involved task than driving a car. Motorcycling requires a fine sense of balance and a heightened sense of awareness and position amidst other roadway users. Motorcycles respond more quickly to rider inputs than a car, but are also more sensitive to outside forces, like irregular road surfaces or crosswinds. A motorcycle is also less visible than a car due to its narrower profile, and offers far less protection by exposing its rider to other traffic and the elements. All these risks can be managed through study, training, and practice.
**HAND SIGNALS**

- **Turn Signal On** – open and close hand with fingers and thumb extended.

- **Comfort Stop** – forearm extended, fist clenched with short up and down motion.

- **Highbeam** – tap on top of helmet with open palm down.

- **Hazard in Roadway** – on the left, point with left hand; on the right, point with right foot.

- **Pull Off** – open and close thumb extended.

- **Stop** – fingers closed, thumb to mouth.

- **Refreshment Stop** – arm positioned as for right turn, forearm swung toward shoulder.

- **Fuel** – arm out to side pointing to tank with finger extended.

---

**PREPARING TO RIDE**

What you do before you start a trip goes a long way toward determining whether or not you’ll get where you want to go safely. Before taking off on any ride, be sure to:

1. **Wear the Right Gear**
2. **Become Familiar with the Motorcycle**
3. **Check the Motorcycle Equipment**
4. **Be a Responsible Rider**

Whether or not you’ll get where you want to go safely before taking off on any ride, be sure to:

- **Helmet Use**
- **Proper use of the helmet**
- **Face or eye protection**
- **Protective clothing**

---

**Helmet Selection**

Helmet Types:

- **Extended Chin/Full Face**
- **Sport and Downhill**
- **Comfort and Street**

**Helmet Use**

- **Proper use of the helmet**
- **Face or eye protection**
- **Protective clothing**

**Helmet Selection**

- **Extended Chin/Full Face**
- **Sport and Downhill**
- **Comfort and Street**

---

**Helmet Type**

When you ride, your gear is “right” if it protects you. In any crash, you have a far better chance of avoiding serious injury if you wear:

- A DOT-compliant helmet
- Face or eye protection
- Protective clothing

**Helmet Use**

- **Proper use of the helmet**
- **Face or eye protection**
- **Protective clothing**

**Helmet Selection**

- **Extended Chin/Full Face**
- **Sport and Downhill**
- **Comfort and Street**
PREPARING TO RIDE

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 fly off your head before it gets a chance to protect you.

Eye and Face Protection

A plastic impact-resistant faceshield can help protect your whole face in a crash. It also protects you from wind, dust, dirt, rain, insects and pebbles thrown up from cars ahead. These problems are distracting and can be painful. If you have to deal with them, you can’t devote your full attention to the road.

Goggles protect your eyes, though they won’t protect the rest of your face like a faceshield does. A windshield is not a substitute for a faceshield or goggles. Most windshields will not protect your eyes from the wind. Neither will eyeglasses or sunglasses. Glasses won’t keep your eyes from watering, and they might blow off when you turn your head while riding.

To be effective, eye or faceshield 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.

Tinted eye protection should not be worn when little light is available.

Clothing

The right clothing protects you in a collision. It also provides comfort, as well as protection from heat, cold, debris and hot and moving parts of the motorcycle. It can also make you more visible to others.

- Jacket and pants should cover arms and legs completely. They should fit snugly enough to keep from flapping in the wind, yet loosely enough to move freely. Leather offers the most protection. Sturdy synthetic material provides a lot of protection as well. Wear a jacket even in warm weather to prevent dehydration. Many are designed to protect without getting you overheated, even on summer days. Some riders choose jackets and pants with rigid “body armor” inserts in critical areas for additional protection.

- Boots or shoes should be high and sturdy enough to cover your ankles and give them support. Soles should be made of hard, durable, slip-resistant material. Keep heels short so they do not catch on rough surfaces. Tuck in laces so they won’t catch on your motorcycle.

Hand Signals

1. Single File – arm and index finger extended straight up.
2. Double File – arm with index and middle finger extended straight up.
3. Stop – arm extended straight up, palm facing back.
4. Speed Up – arm extended straight out, palm facing up, swing upward.
5. Slow Down – arm extended straight out, palm facing down, swing down to your side.
6. Follow Me – arm extended straight up from shoulder, palm forward.
7. You Lead/Come – arm extended upward 45 degrees, palm forward pointing with index finger, swing in arc from back to front.
PREPARING TO RIDE

THREE-WHEEL SUPPLEMENT

always slow before entering a corner. The best path to follow in the curve may not be the one that follows the curve of the road. Following the center of the lane may actually increase the tip over forces. Check opposing traffic for obstacles before you make a turn. When you approach your turn, you should slow down to the speed indicated on your motorcycle speedometer.

CARRYING PASSENGERS AND CARGO

Three-wheel motorcycles are designed to carry passengers and cargo, but always be sure not to exceed the tire or motorcycle loading capacity. The extra weight could change the handling characteristics of the vehicle slightly, so you must give some thought to where the loads are positioned.

On a motorcycle with a sidecar, the best place for a passenger is in the sidecar. Never put a single passenger on the saddle; the added weight on the left side will require more turning force. If you have a second passenger, they should sit directly behind the rider in the sidecar. If a passenger is being carried, the passenger will sit directly behind the rider.

The passenger sitting behind the rider should sit upright at all times. It is not necessary for the passenger to lean into curves with the rider. When carrying loads in a sidecar, secure the load firmly in place, since if the load shifts, handling will be affected. Loads should be distributed toward the rear of the sidecar to reduce tipping of the nose of the sidecar in the event of a sudden left turn.

When loaded, you may find performance is reduced and that stopping distances are longer, so allow a little extra distance. The addition of a sidecar may also affect the way you feel the road. For example, it may be more difficult to feel the road when you are turning left, but easier to feel it when you are turning right.

PATH THROUGH A CURVE

• Gloves allow a better grip and help prevent your hands from getting cold. Your gloves should be made of material that is weather- and wind-resistant.

• Hearing protection reduces exposure to noise while riding and helps protect your hearing.

• A plastic shatter-resistant face shield is beneficial in maintaining a clear view and reducing the risk of injury from debris.

• A windshield protects your head from wind and debris.

• A helmet reduces the risk of head injury in the event of an accident.

KNOW YOUR MOTORCYCLE

To make sure your motorcycle doesn’t let you down:

• Start with the right motorcycle for you.

• Read the owner’s manual.

• Be familiar with the motorcycle controls.

• Check the motorcycle before every ride.

• Keep it in safe riding condition.

• Avoid add-on and modifications that make your motorcycle harder to handle.

• Read the owner’s manual.

• Be familiar with the motorcycle controls.

The Right Motorcycle For You

First, make sure your motorcycle is right for you. It should “fit” you. Your feet should reach the ground while you are seated on the motorcycle, and the controls should be easy to operate. Smaller motorcycles are usually easier for beginners to operate.

At a minimum, your street-legal motorcycle should have:

• Headlight, taillight and brake light

• Gloves allow a better grip and help prevent your hands from getting cold. Your gloves should be made of material that is weather- and wind-resistant.

• Hearing protection reduces exposure to noise while riding and helps protect your hearing.

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At a minimum, your street-legal motorcycle should have:

• Headlight, taillight and brake light
PREPARING TO RIDE

• Front and rear brakes.
• Turn signals.
• Horn.
• Two mirrors.

Borrowing and Lending

Borrowers and lenders of motorcycles, beware. Crashes are more likely to occur among beginning riders — especially in the first months of riding. Riding an unfamiliar motorcycle adds to the problem. If you borrow a motorcycle, get familiar with it in a controlled area. And if you lend your motorcycle to friends, make sure they are licensed and know how to ride before allowing them out into traffic.

No matter how experienced you may be, ride extra carefully on any motorcycle that's new or unfamiliar to you. More than half of all crashes involve riders with less than five months of experience on their motorcycle.

Get Familiar with the Motorcycle Controls

Make sure you are completely familiar with the motorcycle before you take it out on the street. Be sure to review the owner’s manual. This is particularly important if you are riding a borrowed motorcycle.

If you are going to use an unfamiliar motorcycle:

• Make all the checks you would on your own motorcycle.
• Find out where everything is, particularly the turn signals, horn, headlight switch, fuel-supply valve and engine cut-off switch. Find and operate these items without having to look for them.

Lane Position

The track of the dual wheels of a three-wheel motorcycle or motorcycle with a sidecar is almost the same width as some automobiles. Unlike a motorcycle, you are limited, therefore, in lane positioning. Keep toward the center of the lane to be sure the track of the dual wheels does not cross the painted lines into opposing traffic. Riding too far to the right could cause loss of traction if the tire leaves the pavement.

Lane positioning when riding in groups is also an important consideration. You will not be able to use a staggered formation, such as you would when riding two-wheeled motorcycles. Ride single file and always maintain a safe margin, two seconds minimum, between vehicles.

Parking at the Roadside

Because of the limitations on mobility and motorcycle length, it is not practical to park your motorcycle at a 90 degree angle with your rear wheel touching the curb, as you would with a two-wheel motorcycle. Position your motorcycle in a parking space so you are parked parallel to the curb and set the parking brake. Some three-wheel motorcycles have reverse, so you can more easily maneuver into a parking space designed for an automobile. Parking parallel to the curb will facilitate pulling away from the curb and entering the lanes of traffic.

Acceleration and Deceleration

A three-wheel motorcycle with two drive wheels tends to be much more stable during acceleration and braking than a motorcycle with a sidecar. Attaching a sidecar to your motorcycle adds a non-powered, off-centered mass of weight. So, during acceleration, the sidecar will feel as though it is lagging behind you, causing the vehicle to feel as though it is being steered to the right. During deceleration or braking, the momentum of the sidecar continues to carry it forward, giving the feeling that the sidecar is trying to pass you, making the motorcycle feel as though it is being steered left.

• On acceleration, compensate for this tendency by steering slightly in the opposite direction from the sidecar.
• On deceleration, compensate for this tendency by steering slightly in the direction of the sidecar. You can also pull in the clutch when braking.

Swerving

A quick stop may not always be sufficient to avoid an obstacle in your path, even if you properly apply both brakes. Sometimes the only way to avoid a collision is to swerve. A swerve is any sudden change of direction. It can be two quick turns or a rapid shift to the side when maneuvering the motorcycle. Often, there is not much time to adjust your body position.

A three-wheel motorcycle or motorcycle with sidecar is not as maneuverable as a two-wheel motorcycle, so plan well ahead to avoid the need for any sudden turns or swerving. If braking is required, brake either before or after the swerve, never while swerving.

Cornering & Curves

The cornering characteristics of a three-wheel motorcycle or motorcycle with a sidecar differ from those of a motorcycle. Even with three wheels on the ground, a sidecar can tip over if it is being turned too sharply or is going too fast for a corner. Therefore, it is best to
Check tire inflation pressure, before starting out. With the fuel valve closed, your motorcycle may start with only the fuel that is still in the lines, but will stall once the lines are empty. Be sure your fuel valve is open.

Check engine oil and transmission fluid levels.

Check the brake hydraulic fluid and coolant level weekly.

Clean and adjust your mirrors one turns on the brake light. Try both brakes and make sure each operates smoothly. Apply pressure on the rear wheel/wheels in the direction you want the motorcycle to go.

Apply more pressure on the rear wheel/wheels when turning left on a motorcycle through the turn. Slightly lean your upper body in the direction you intend to turn. Concentrate your upper body with the motorcycle to a speed at which you can ride safely through the turn, then release the brakes before the turn.

Approach a turn at speed with your upper body in the direction you intend to turn. Accelerate gradually as you enter the turn. Reduce speed prior to entering the turn.

Roll on the throttle to pull the motorcycle through the turn. Roll off the throttle before exiting the turn.

Slightly lean your upper body in the direction you want to go. Maintain speed as you exit the turn. Accelerate gradually as you enter the turn.

Approach a turn at speed with your upper body in the direction you intend to turn. Accelerate gradually as you enter the turn. Reduce speed prior to entering the turn.

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Roll on the throttle to pull the motorcycle through the turn. Roll off the throttle before exiting the turn.

Slightly lean your upper body in the direction you want to go. Maintain speed as you exit the turn. Accelerate gradually as you enter the turn.
• Look underneath the motorcycle for signs of an oil or fuel leak.

**C — Chassis**

• Check the front suspension. Ensure there is no binding. The rear shocks and springs should move smoothly.

• Be sure the chain or belt is adjusted according to the manufacturer's specifications and that the sprockets are not worn or damaged.

**S — Stands**

• Ensure the side stand operates smoothly and that the spring holds it tightly in the up position. If equipped, the center stand should also be held firmly against the frame whenever the motorcycle is moving.

Additionally, regular maintenance such as tune-ups and oil changes are as important for a motorcycle as routine checkups by your doctor are for you. Wear and tear is normal with use; routine maintenance will help prevent costly breakdowns. The schedule for regular upkeep for motorcycle parts and controls is contained in your motorcycle's owner's manual.

**KNOW YOUR RESPONSIBILITIES**

"Accident" implies an unforeseen event that occurs without fault or negligence. In traffic, that is not the case. In fact, most people involved in a crash can claim some responsibility for what takes place.

Consider a situation where someone decides to drive through an intersection on a yellow light turning red. Your light turns green. You pull into the intersection without checking for possible traffic. That is all it takes for the two of you to crash. It was the driver's responsibility to stop, and it was your responsibility to look before pulling out. Both of you are at fault. Someone else might be the first to start the chain of events leading to a crash, but it doesn't leave any of us free of responsibility.

As a rider you can't be sure that other operators will see you or yield the right of way. To lessen your chances of a crash occurring:

**Be visible** — wear proper clothing, use your headlight, ride in the best lane position to see and be seen.

**Communicate your intentions** — use the proper signals, brake light and lane position.

**Maintain an adequate space cushion** — when following, being followed, lane sharing, passing and being passed.

**Search your path** of travel 12 seconds ahead.

**Identify and separate** hazards.

**Be prepared to act** — remain alert and know how to carry out proper crash-avoidance skills.

Blame doesn't matter when someone is injured in a crash. The ability to ride aware, make critical decisions and carry them out separates responsible riders from the rest. Remember, it is up to you to keep from being the cause of, or an unprepared participant in, any crash.

---

**PREPARING TO RIDE**

• Operate all the controls before you start riding. Know the gearshift pattern and operate the throttle, clutch and brakes a few times. Controls react differently on different motorcycles, and exact locations of controls may vary slightly. Additionally, some motorcycle conversions may be equipped with a single brake pedal or lever control, automatic clutch, or automatic transmission.

**As you begin to ride**, start out slowly and carefully and be aware of your surroundings. Accelerate gently, take turns a little more slowly, and leave extra room for stopping.

**BASIC VEHICLE CONTROL**

**Steering & Tip**

Three-wheel motorcycles handle differently than two-wheel motorcycles. With three wheels on the ground, they are naturally more stable than a two-wheel motorcycle. They also steer differently. Because conventional three-wheel motorcycles cannot lean, they cannot countersteer. Instead, the front wheel is pointed in the direction the rider wants the motorcycle to go.

---

**TEST YOURSELF 2**

More than half of all crashes:

A. Occur at speeds greater than 35 mph.
B. Happen at night.
C. Are caused by worn tires.
D. Involve riders who have less than five months of experience on their motorcycles.

Answer: page 48

---

Under some conditions during the operation of a three-wheel motorcycle, it is possible to have only two wheels in contact with the road surface. This could occur during turning or tight maneuvers whenever enough weight is transferred outside of what are called tip-over lines. This tendency requires careful load and passenger positioning inside the tip-over lines to help maintain maximum stability.

**Body Position**

As with any motor vehicle, operator position is important for control and for reducing or preventing fatigue. The operator should be able to reach both handgrips comfortably, since more handlebar movement is necessary than when riding a two-wheel motorcycle. While it is not necessary for the rider of a three-wheel motorcycle to move drastically during operation, shifting weight in the direction of the turn can improve control.

**Braking**

On a motorcycle with a sidecar, during braking in a sharp turn, the sidecar wheel may lift off the ground. Motorcycle and sidecar tires have limited traction or grip on the road surface, and traction is greater when the motorcycle is rolling, not skidding or slipping. During turning, some of the available tire traction is used for cornering, so less is available for stopping. Thus, a skid can occur if you brake too hard.

**Turning**

The tendency of the rear inside wheel to lift during turning is greater with increased speed and tighter curve radii. During a turn, inertia causes the center of gravity of the motorcycle to shift sideways and outward toward the
Three-Wheel Motorcycle Designs

Three-wheel motorcycle designs vary among manufacturers. Unlike traditional motorcycles, which are considered single-track motorcycles, three-wheel motorcycles could be either dual or triple track motorcycles. Triple track motorcycles can have either dual front wheels or dual rear wheels. Some three-wheel motorcycles have sidecars, while triple track motorcycles can be configured either with dual front wheels or dual rear wheels.

The Right Motorcycle for You

Make sure your three-wheel motorcycle or sidecar-equipped motorcycle is right for you. You should be able to comfortably reach and operate all of the controls, and be able to complete full turns using the handlebars without excessive upper body movements that could jeopardize stability and control. The right motorcycle for you is familiar with the controls of the three-wheel motorcycle. Be sure you are familiar with the controls of the three-wheel motorcycle or motorcycle with a sidecar before attempting to operate it on any highway.

Shifting Gears

The gears are engaged using too much force accidentally. Getting into the next gear or downshifting by using too much force is unnecessary. Use your foot and leg muscles to shift gears smoothly.

Holding Handgrips

To control a motorcycle well:
- Posture — Position yourself comfortably so you are able to operate all the controls and can use your arms to steer the motorcycle, rather than to hold yourself up. This helps you bond with your motorcycle and allows you to react quickly to hazards.
- Seat — Sit far enough forward so your arms are slightly bent when you hold the handgrips. Bending your arms permits you to press on the handlebars without having to stretch.
- Hands — Hold the handgrips firmly to keep your grip over rough surfaces. Start with your right wrist flat. This will help you keep your thumb at the correct angle.
- Knees — Keep your knees against the gas tank to help you keep your balance as the motorcycle turns.
- Feet — Keep your feet firmly on the footrests to maintain balance. Don’t drag your feet. If your foot catches on something, you could lose control. Keep your feet even with or below your elbows. This permits you to use the proper muscles for steering.

Borrowing and Lending

Borrowers and lenders, beware. Crashes are fairly common among beginning operators, especially in the first months of riding. Operating an unfamiliar motorcycle adds to the problem. If you borrow a three-wheel motorcycle, ride it before you allow them to operate in traffic. Such motorcycles operate very differently than two-wheel motorcycles.

Get Familiar with Motorcycle Controls

Be sure you are familiar with the controls of the three-wheel motorcycle or motorcycle with a sidecar before attempting to operate it on any highway. Some controls may differ from those found on other motorcycles. Before beginning your ride:
- Make all the checks you would on your own motorcycle.
- Familiarize yourself with all controls, such as the turn signals, horn, headlight switch, fuel control valve, and cut-off switch. Locate and operate these items without having to search for them.
- Make sure your three-wheel motorcycle or sidecar-equipped motorcycle is right for you. You should be able to comfortably reach and operate all of the controls, and be able to complete full turns using the handlebars without excessive upper body movements that could jeopardize stability and control.

RIDE WITHIN YOUR ABILITIES

This manual cannot teach you how to control direction, speed or balance. That’s something you can learn only through practice, preferably in a formal course of instruction like an MSF RiderCourse. But control begins with knowing your abilities and riding within them, along with knowing and obeying the rules of the road.
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RIDE WITHIN YOUR ABILITIES

As your motorcycle increases speed, you will need to shift up to a higher gear. Shift up well before the engine reaches its maximum recommended speed. As a general rule, shift up soon enough to avoid over-revving the engine, but not so soon to cause the engine to lug.

When upshifting, use a 3-step process: 1) Roll off the throttle as you squeeze the clutch lever, 2) lift the shift lever firmly as far as it will go, 3) smoothly ease out the clutch and adjust the throttle. Once the shift is completed, release the shift lever to permit it to reset for the next shift.

You should shift down through the gears with the clutch as you slow or stop, and can also shift down when you need more power to accelerate.

Make certain you are riding slowly enough when you shift into a lower gear. If not, the motorcycle will lurch, and the rear wheel may skid. When riding downhill or shifting into first gear you may need to use the brakes to slow

enough before downshifting safely.

When downshifting, use a 3-step process: 1) Roll off the throttle as you squeeze the clutch lever, 2) press the shift lever down firmly, 3) ease out the clutch lever as you roll on the throttle. Once the shift is completed, release the shift lever to permit it to reset for the next shift. Rolling on the throttle slightly while smoothly easing out the clutch can help the engine come up to speed more quickly and make the downshift smoother. Shifting to a lower gear causes an effect similar to using the brakes. This is known as engine braking. To use engine braking, shift down one gear at a time and ease out the clutch through the friction zone between each downshift. Keep the clutch in the friction zone until the engine speed stabilizes. Then ease out the lever fully until ready for the next downshift. Usually you shift gears one at a time, but it is possible to shift through more than one gear while the clutch is squeezed.

Remain in first gear while you are stopped so that you can move out quickly if you need to.

Work toward a smooth, even clutch release, especially when downshifting. It is best to change gears before entering a turn. However, sometimes shifting while in the turn is necessary. If so, remember to do so smoothly. A sudden change in power to the rear wheel can cause a skid.

Braking

Improper braking technique remains a significant contributing factor in many motorcycle crashes. Your motorcycle has two brake controls: one for the front wheel and one for the rear wheel. Always use both brakes every time you

need to slow or stop.

SADDLE SEATING

– Seating in which the rider/passenger straddles the vehicle.

– If designed for a passenger, the passenger must be seated behind the operator (or in a separate passenger compartment in the case of a motorcycle with sidecar).

3. Turning diameter of the vehicle at its widest point must be less than 40’.

4. The vehicle meets all applicable federal on-road vehicle standards.

The following vehicles are not included in this definition, and therefore testing requirements may not be applicable. Always refer to your state Department of Motor Vehicles, Department of Licensing or other appropriate state regulatory agency for exact regulations regarding testing for:

• Automotive hybrids or automotive conversions

• Vehicles with automotive controls or seating

• Vehicles with front or rear mounted engines (engines must be mounted mid-frame below the rider to be considered motorcycle-based)

• Vehicles with enclosed or semi-enclosed riding compartments

• Motorcycles or scooters with two close-set wheels in front (contact patches less than 18.1 inches apart) that lean and maneuver like standard, single-track, two-wheel motorcycles or

• Vehicles with any other departure from the above standards.
Earning Your License

Answers to Test Yourself (throughout the booklet):
1-C, 2-D, 3-D, 4-A, 5-B, 6-C, 7-D, 8-D, 9-C, 10-C, 11-D, 12-A, 13-A, 14-C

Answers to Knowledge Test (p.47):
1-B, 2-C, 3-C, 4-C, 5-B

On-Motorcycle Skill Test

Basic vehicle control and crash-avoidance skills are included in this booklet. Examiners who test you will explain this booklet. You must pass both the knowledge test and the On-Motorcycle Skill Test to earn your motorcycle license.

Braking

There are many ways to stop a motorcycle. However, the most efficient way to stop is by applying the rear brake. The rear brake is more powerful and can provide at least 70% of total stopping power. Therefore, it is recommended that you use the rear brake alone or in conjunction with the front brake to stop your motorcycle. Be aware that the rear brake may not always be effective in stopping your motorcycle, especially when riding in wet or slippery conditions.

To stop a motorcycle, you must first reduce your speed by applying the rear brake. As you approach a stop, reduce your speed by steadily applying the rear brake. When you are close to a stop, apply the front brake more strongly to bring your motorcycle to a complete stop. If your motorcycle has a linked braking system, apply the front brake as well. The linked braking system allows the front and rear brakes to work together to provide better control and stability during stops.

Braking in a Curve

When braking in a curve, it is important to maintain your balance and control of the motorcycle. As you approach a curve, reduce your speed by applying the rear brake. As you enter the curve, apply the front brake to maintain your balance and control of the motorcycle. When you exit the curve, gradually release the front brake and apply the rear brake to return to a straight line.

Linked and Integrated Braking Systems

Some motorcycles have linked braking systems, which connect the front and rear brakes on the motorcycle and apply braking pressure to both brakes when either the front lever or rear pedal is applied. This helps you stop the motorcycle faster and more efficiently. When braking in a curve, it is important to apply the brakes smoothly and gradually to maintain control of the motorcycle.

Anti-Lock Braking Systems

Some motorcycles have anti-lock braking systems (ABS), which are designed to prevent wheel lock-up and avoid skidding when stopping. ABS operates when maximum pressure on both the front and rear brake controls is applied. The system is capable of releasing and reapplying pressure more than 15 times per second.

To test the effectiveness of this system, repeatedly stop your motorcycle from 30 mph. If the front wheel begins to skid, the system is working properly. If the system is not working properly, consult your owner’s manual or seek professional repair.

Diagrams and drawings used in this manual are for reference only and are not to correct scale for size of vehicles and distances.

This system is equipped with warning lights and sounders that alert you to potential issues. These indicators should be checked regularly to ensure proper functioning.
Turning

Approach turns and curves with caution. Riders often try to take curves or turns too fast. When they can’t hold the turn, they end up crossing into another lane of traffic or going off the road. Or, they overreact and brake too hard, causing a skid and loss of control.

Use four steps for better control:

• SLOW — Reduce speed before the turn by closing the throttle 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 — To turn, the motorcycle must lean. To lean the motorcycle, 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, or the sharper the turn, the greater the lean angle needs to be.

• ROLL — Roll on the throttle to maintain or slightly increase speed. This helps stabilize the motorcycle.

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.

Knowledge Test

(Sample Questions)

1. It is MOST important to flash your brake light when:
   A. Someone is following too closely.
   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 25%.
   B. About 50%.
   C. About 70%.
   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. Brake on the good tire and steer to the side of the road.
   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.
BEING IN SHAPE TO RIDE

FATIGUE

Riding a motorcycle is more tiring than driving a car. On a long trip, you'll tire sooner than you would in a car. Avoid riding when tired. Fatigue can affect your control of the motorcycle.

- 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.
- Limit your distance—Experienced riders seldom try to ride more than about six hours a day.
- Take frequent rest breaks—Stop and get off the motorcycle at least every two hours.
- Drain your alcohol at least one hour before riding:
  - You cannot be arrested for drinking and riding.
  - Your riding skills will not be affected.
  - Side effects from drinking may still remain.
  - You will be okay as long as you ride slowly.

KEEPING YOUR DISTANCE

The best protection you can have is distance—a “cushion of space”—separating yourself from other vehicles on the roadway. This will provide you with a clear view of emerging traffic situations, so that if someone else makes a mistake, you will have:

- More time to respond.
- More space to maneuver, including an escape route if necessary.
- Avoid other drivers’ blind spots.
- Increase your ability to see and be seen.
- Avoid potential hazards on the road that are on the other side of you, such as oncoming vehicles or hazards that are on your left or right.
- Keep your feet on the foot pegs at all times, and your body relaxed.
- Keep your head up and your eyes on the road, and you can maintain a clear vision around you. Change your lane position as traffic conditions change, if necessary.

LANE POSITIONS

You should position yourself in the portion of the lane where you are most likely to be seen and where you can maintain a space cushion around you. Change position as conditions warrant, keeping in mind that no portion of the lane need be avoided—including the center.

If you are being overtaken by another vehicle, you should position yourself in the portion of the lane where you are most visible. Avoid wind blasts from other vehicles.

TEST YOURSELF

Keep in mind that you will be asked the following questions:

1. How do you know when it is time to stop?
2. How do you know when you need to adjust your lane position?
3. How do you know when you need to change your lane position?
4. How do you know when you need to adjust your speed?
5. How do you know when you need to change your speed?
6. How do you know when you need to adjust your headlight range?
7. How do you know when you need to adjust your foot position?
8. How do you know when you need to adjust your body position?
9. How do you know when you need to adjust your hand position?
10. How do you know when you need to adjust your eye position?
11. How do you know when you need to adjust your ear position?
12. How do you know when you need to adjust your neck position?
13. How do you know when you need to adjust your chest position?
14. How do you know when you need to adjust your shoulder position?
15. How do you know when you need to adjust your arm position?
16. How do you know when you need to adjust your hand position?
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90. How do you know when you need to adjust your leg position?
RIDE WITHIN YOUR ABILITIES

average center strip permits adequate traction to ride on safely. You can operate to the left or right of the grease strip and still be within the center third of the traffic lane. Avoid riding on big buildups of oil and grease usually found at busy intersections or tollbooths.

Experienced riders rely on their own best judgment and instincts. One absolute, however, is to avoid riding in another vehicle's blind spot.

Following Another Vehicle

"Following too closely" is a factor in crashes involving motorcyclists. In traffic, motorcycles need as much distance to stop as cars. Normally, a minimum of two seconds distance should be maintained behind the vehicle ahead.

To gauge your following distance:

- **Pick out a marker**, such as a pavement marking or lamppost, on or near the road ahead.
- **When the rear bumper of the vehicle ahead passes the marker**, count off the seconds: “one-thousand-one, one-thousand-two.”
- **If you reach the marker** before you reach “two,” you are following too closely.

A two-second following distance leaves a minimum amount of space to stop or swerve if the driver ahead stops suddenly. It also permits a better view of potholes and other hazards in the road.

A larger cushion of space is needed if your motorcycle will take longer than normal to stop. 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 three-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 bears down on you from behind. It will also give you a cushion of space if the vehicle ahead starts to back up for some reason.

FOLLOWING

STEP IN TO PROTECT A FRIEND

People who have had too much to drink are unable to make a responsible decision. It is up to others to step in and keep them from taking too great a risk. No one wants to do this — it's uncomfortable and embarrassing. And you are rarely thanked for your efforts at the time. But the alternatives are often worse.

There are several ways to keep friends from hurting themselves:

- **Arrange a safe ride** — Provide alternative ways for them to get home.
- **Slow the pace of drinking** — Involve them in other activities.
- **Keep them there** — Use any excuse to keep them from getting on their motorcycle. Serve them food and coffee to pass the time. Explain your concerns for their risks of getting arrested or hurt or hurting someone else. Take their key, if you can, and secure their bike.
- **Get friends involved** — Use peer pressure from a group of friends to intervene.

It helps to enlist support from others when you decide to step in. The more people on your side, the easier it is to be firm and the harder it is for the rider to resist. While you may not be thanked at the time, you will never have to say, “If only I had...”

MARIJUANA AND MOTORCYCLE OPERATION

Marijuana is gaining acceptance as having legitimate medicinal applications and as a recreational drug in the United States, as evidenced by recent trends in state laws permitting its use. As of early 2014, 20 states allowed marijuana for medical use, and two allowed it for recreational use by people 21 and over.

Although marijuana may be legal for medicinal or recreational use in your state, it is still not legal, safe, or wise to operate a motor vehicle while impaired by marijuana, since it tends to distort your perception of time, space, and speed. This is especially critical for motorcycle riders, who must continually make detailed assessments of complex traffic situations and make split-second decisions requiring precise rider input to navigate safely and maintain an adequate safety margin.

States are beginning to set marijuana impairment limits based on blood content levels of marijuana’s primary psychoactive ingredient, THC. However, compared to alcohol and BAC level, it is difficult to determine the relationship between the amount of marijuana ingested and the resulting THC level in the blood. Complicating factors include marijuana’s potency, which is highly variable, and ingestion method, which has significant bearing on the onset and duration of impairment.

When marijuana is smoked, its effects generally begin within a few minutes and can last from 2 to 4 hours. But when marijuana is eaten the onset of effects could be delayed for more than an hour and the duration of the “high” could be more than 6 hours.

Be safe. Do not operate your motorcycle or any motor vehicle if you are impaired by marijuana, and find alternate transportation if you are planning to be under the influence of marijuana at your destination. Just as with alcohol, riders impaired by marijuana can be convicted of riding under the influence, and be subjected to similar harsh penalties.
BEING IN SHAPE TO RIDE

ALCOHOL AND THE LAW

In all states, an adult with a BAC of 0.08% or above is considered intoxicated. For operators under the age of 21, lower BAC limits (0.00 to 0.02%, depending on state) apply. It doesn't matter if you look or act. A breath, blood, or urine test is what usually determines whether you are riding legally or illegally.

Whether or not you are legally intoxicated is not the real issue. Impairment of judgment and skills begins well below the legal limit. Your chances of being stopped for riding under the influence of alcohol are increasing. Law enforcement is being stepped up across the country in response to the senseless deaths and injuries caused by drinking drivers and riders.

Consequences of Conviction

Years ago, first offenders had a good chance of getting off with a small fine and participation in alcohol-abuse classes. Today the laws of most states impose stiff penalties on drinking operators. And those penalties are mandatory, meaning that judges must impose them.

If you are convicted of riding under the influence of alcohol or drugs, you may receive any of the following penalties:

• License Suspension — Mandatory suspension for conviction, arrest or refusal to submit to a breath test.

• Fines — Severe fines are another aspect of a conviction, usually levied with a license suspension.

• Insurance Rate Increase — A DUI/DWI conviction can put you into a "high risk" category. So, having a DUI on your driving record means you'll be paying for it long after your court or legal interactions have ended.

• Community Service — Performing tasks such as picking up litter along the highway, washing cars in the Motor-vehicle pool or working at an emergency ward.

• Costs — Additional lawyer's fees, lost work time spent in court or alcohol-education programs, public transportation costs (while your license is suspended), and the added psychological costs of being known as a "drunk driver."

MINIMIZE THE RISKS

Your ability to judge how well you are riding is affected first. Although you may be performing more poorly, you think you are doing better and better. The result is that you ride... by taking steps before you drink or choose to totally separate the two. Control your drinking or control your riding.

Make an Intelligent Choice

Don't Drink — Once you start, your resistance is weaker. Setting a limit or pacing yourself are poor alternatives at best. Your ability to use good judgment is one of the first things affected by alcohol. Even if you have tried to drink in moderation, you may not realize to what extent your skills have suffered from alcohol's fatiguing effects.

Or Don't Ride — If you haven't controlled your drinking, you must control your riding.

• Leave the motorcycle — so you won't be tempted to ride. Arrange another way to get home.

• Wait — If you exceed your limit, wait until your system eliminates the alcohol and its fatiguing effects.

• Contact a friend or ride with a buddy. Wait until you exceed your limit. "High risk" doesn't mean"so high it's dangerous." It means you are riding under the influence of alcohol.

PASSING

Know your signs and road markings. Remember, pass on the left if you have room. Do not drive in the center of the lane if you can pass on the left. When passing side by side, get as far as possible from the car you are passing when doing the maneuver with the car in your left mirror. Let the car you are passing know you are passing by using your signals, and by looking into the driver's side mirror. If you do not follow these procedures, you are putting yourself in a dangerous position and creating a dangerous situation for others.

PASSING AND BEING PASSED

As you pass, make eye contact with the driver you are passing. This will let the driver know you are passing and that you are not a threat.

When your passing is complete, check your mirrors and blind spots before returning to your original lane. Signal your intention to return to your original lane. This will let the driver know you are returning to your original lane.

BEING FOLLOWED

When behind a car, ride where the driver can see you in the rearview mirror. Riding in the center portion of the lane should put your image in the middle of the rearview mirror — where a driver is most likely to see you.

Riding at the far side of a lane may permit a driver to see you in a sideview mirror. But remember that most drivers don't look at their sideview mirrors. A better way to be seen is to ride in the far right lane of the center of the road, where you are most likely to be seen. But remember that most drivers don't look at their sideview mirrors.
18 RIDE WITHIN YOUR ABILITIES

Being Passed

When you are being passed from behind, stay in the center portion of your lane. Riding close to the passing vehicle could put you in a hazardous situation.

Avoid being hit by:

• The other vehicle — A slight mistake by you or the passing driver could cause a sideswipe.

• Extended mirrors — Some drivers forget that their mirrors hang out farther than their fenders.

• Objects thrown from windows — Even if the driver knows you’re there, a passenger may not see you and might toss something on you or the road ahead of you.

• Blasts of wind from larger vehicles — They can affect your control.

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.

Lane Sharing

Cars and motorcycles need a full lane to operate safely. Lane sharing is usually prohibited.

Riding between rows of stopped or moving cars in the same lane can leave you vulnerable to the unexpected. A hand could come out of a window; a door could open; a car could turn suddenly. Discourage lane sharing by others. Keep a center-portion position whenever drivers might be tempted to squeeze by you. Drivers are most tempted to do this:

• In heavy, bumper-to-bumper traffic.

• When they want to pass you.

• When you are preparing to turn at an intersection.

• When you are moving into an exit lane or leaving a highway.

Blood Alcohol Concentration

Blood Alcohol Concentration or BAC is the amount of alcohol in relation to blood in the body. Generally, alcohol can be eliminated in the body at the rate of almost one drink per hour. But a variety of factors may also influence the level of alcohol retained. The more alcohol in your blood, the greater the degree of impairment.

Three primary factors play a major part in determining BAC:

• The amount of alcohol you consume.

• How fast you drink.

• Your body weight.

Other factors also contribute to the way alcohol affects your system.

Your sex, physical condition and food intake are just a few that may cause your BAC level to be even higher. But the full effects of these are not completely known. Alcohol may still accumulate in your body even if you are drinking at a rate of one drink per hour. Abilities and judgment can be affected by that one drink.

A 12-ounce can of beer, a mixed drink with one shot (1.5 ounces) of hard liquor, and a 5-ounce glass of wine all contain the same amount of alcohol.

The faster you drink, the more alcohol accumulates in your body. If you drink two drinks in an hour, at the end of that hour, at least one drink will remain in your bloodstream.

Without taking into account any other factors, these examples illustrate why time is a critical factor when a rider decides to drink.

If you drink:

— Seven drinks over the span of three hours you would have at least four (7 – 3 = 4) drinks remaining in your system at the end of the three hours. You would need at least another four hours to eliminate the alcohol from the four remaining drinks before you consider riding.

— Four drinks over the span of two hours, you would have at least two (4 – 2 = 2) drinks remaining in your system at the end of the two hours. You would need at least another two hours to eliminate the alcohol from the two remaining drinks before you consider riding.

TEST YOURSELF

Usually, a good way to handle tailgaters is to:

A. Change lanes and let them pass.

B. Use your horn and make obscene gestures.

C. Speed up to put distance between you and the tailgater.

D. Ignore them.

Answer - page 48

BEING PASSED

ALCOHOL CONTENT
Riding a motorcycle is a demanding and complex task. Skilled riders pay attention to the riding environment and to operating the motorcycle, identifying potential hazards, making good judgments and executing decisions quickly and skillfully. Your ability to perform and stay in control of your motorcycle is critical to your safety and to the safety of others on the road.

Let's look at the risks involved in riding after drinking or using drugs. What to do to protect yourself and your fellow riders is also examined.

### Why This Information Is Important

Alcohol is a major contributor to motorcycle crashes, particularly fatal crashes. Studies show that 29% of all fatally injured motorcycle riders had BAC levels above the legal limit of 0.08%. An analysis of national data shows that 33% of all motorcycle crashes occur in the 30% of drivers who have a BAC of 0.01 or higher. The legal limit is 0.08 in most states. In crashes involving alcohol, passengers are at least twice as likely to be killed or injured as those involved in crashes where alcohol was not a factor. An analysis of national data reveals that 50,000 serious injuries occur in this type of crash. These statistics are too overwhelming to ignore.

By becoming knowledgeable about the effects of alcohol and drugs you will see that riding and substance abuse don't mix. Take positive steps to protect yourself and prevent others from injuring themselves.

### Alcohol and Drugs in Motorcycle Operation

No one is immune to the effects of alcohol or drugs. Friends may brag about their ability to hold their liquor or perform better on drugs, but alcohol or drugs make them less able to think clearly, to think quickly and to react quickly. Alcohol can impair judgment, decrease reaction time and the decision-making processes needed for vehicle operation. The combined effects of alcohol and drugs are more dangerous than either is alone.

Many over-the-counter, prescription and illegal drugs have side effects that increase the risk of riding. It is difficult to accurately measure the impairment or confusion caused by alcohol and the decision-making processes needed for vehicle operation. Even when legal limits are reached, impairment may be reached at lower alcohol levels. The combined effects of alcohol and drugs are more dangerous than either is alone.

### Alcohol in the Body

Alcohol enters the bloodstream quickly. Unlike most foods and beverages, it does not need to be digested. Within minutes after being consumed, it is absorbed into the bloodstream. The body then distributes the alcohol to the brain and the liver. The liver is the only organ that can remove alcohol from the body. The liver can remove 1 ounce of alcohol per hour. If you drink alcohol, do not ride home in a car or truck.

### Operation in Motorcycle

Alcohol and drugs impair your ability to operate a motorcycle. They affect your ability to see, hear, react and think clearly and to ride skillfully. As little as one drink can have a significant effect on your performance.

### Merging

When merging onto the highway, give other cyclists and drivers plenty of space. Keep a safe distance from nearby riders and other vehicles. Be aware of blind spots and adjust your speed accordingly.

### Blind Spots

Merger drivers on an entrance ramp may not see you on the highway. Give them plenty of room. Change to another lane if one is open. If there is no room for a lane change, adjust speed to open up space for the merging driver.

### Avoiding Cars

Do not ride next to cars or trucks in traffic. Keep a safe distance and be aware of your surroundings. If you have to pass, do not pass too close to the car in front.

### Other Tips

- Always wear a helmet. It can save your life.
- Avoid distractions while riding. Keep your hands on the handlebars and your eyes on the road.
- Be aware of your surroundings. Look around before making any moves.
- Keep your motorcycle in good condition. Regular maintenance is essential.
- Be patient and courteous. Share the road with others.
SEE

Good, experienced riders are always aware of what is going on around them. They reduce their risk by using MSF’s three-step SEE strategy:

- Search
- Evaluate
- Execute

SEE will help you assess what is going on in traffic so you can plan and implement the safest course of action as traffic situations change. Let’s look at each of these steps.

Search

How assertively you search, and how much time and space you have, can eliminate or minimize risk. As you search, focus on finding potential escape routes, especially in or around intersections, shopping areas and school and construction zones.

One way to search is to use your “RiderRadar” to aggressively scan the environment ahead of you, to the sides, and behind you to avoid potential hazards even before they arise. There are three “lead times” experienced riders consider. First, be alert and scan for hazards that are about 2 seconds ahead of you, or within your following distance. Scanning your 4-second immediate path can allow you time for a quick response if something should go wrong. Anything that is within 4 seconds of your path is considered immediate because 4 seconds is considered enough time and space to swerve and/or brake for fixed hazards or for someone or something entering your path of travel.

Finally, experienced riders search for hazards that are further out, looking ahead to an area it would take about 12 seconds to reach. This provides time to prepare for a situation before it becomes immediate.

Using the SEE strategy will help you to Search for a variety of factors such as:

- **Oncoming traffic** that may turn left in front of you.
- **Traffic** coming from the left and from the right.
- **Traffic** approaching from behind.

Ten Rules of Group Riding

- **Base the length of the route and segments on ability of the least experienced rider.**
- **Take timely breaks to prevent loss of concentration and reduce fatigue.**
- **Adjust the pace through curves to the ability of the least experienced rider.** If necessary, form two groups with different speeds.
- Don’t tailgate or encourage the rider in front to speed. If you want to ride faster, ride ahead of the group.
- Keep adequate following distance and maintain a staggered formation.
- Do not pass in the group, except in the case of emergency.
- Place inexperienced riders just behind the leader so they can keep pace without riding faster than it is safe.
- **Maintain adequate time distance between riders, especially at intersections.** This allows you to avoid hard braking.
- **Check your mirrors frequently to ensure the group stays together.**
RIDE WITHIN YOUR ABILITIES

When riding in a group, inexperienced riders should position themselves:

A. Just behind the leader.
B. In front of the group.
C. At the tail end of the group.
D. Beside the leader.

GROUP PASSING

When passing on freeways and interstates, a staggered formation is essential. Enter in single file and form up only after all riders have safely merged in traffic. The lead rider should move to the right to allow the group to exit the freeway and protect the group from merging traffic.

INTERSECTIONS

When entering an intersection, always check your mirrors and blind spots. Slow down and give yourself time to react. Be aware of other vehicles and pedestrians, and avoid sudden braking or acceleration.

EXECUTE

To reduce your reaction time, you should:

A. Ride slower than the speed limit.
B. Cover the clutch and the brakes.
C. Shift into neutral when slowing.
D. Pull in the clutch when turning.

INTERSTATE HIGHWAYS AND FREEWAYS

When possible, park as a group, so everyone can get off their motorcycles more quickly. Avoid parking downhill or head-in, and if possible, park where you can get an unobstructed view of traffic. Whenever possible, park so that the group can depart as a unit in single file.

PARKING

When parking your motorcycle, always turn both lights on, so others can easily see you. If possible, park in a designated motorcycle parking area. If not, park as far away from the curb as possible. Always lock your motorcycle and remove the key.

PASSING IN FORMATION

When the group wants to pass slow traffic on a freeway or interstate, the group may pass as a unit. On a two-lane highway, riders in a staggered formation should pass one at a time.

• First, the lead rider should pull out and pass when it is safe. After passing, the lead rider should return to the left position and continue riding.

To reduce your reaction time, you should:

A. Ride slower than the speed limit.
B. Cover the clutch and the brakes.
C. Shift into neutral when slowing.
D. Pull in the clutch when turning.
RIDE WITHIN YOUR ABILITIES

There are no guarantees that others see you. Never count on “eye contact” as a sign that a driver will yield. Too often, a driver looks right at a motorcyclist and still fails to “see” him or her. The only eyes that you can count on are your own. If a car can enter your path, assume that it will. Good riders are always “looking for trouble” — not to get into it, but to stay out of it.

Increase your chances of being seen at intersections. Ride with your headlight on and 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 driver is preparing to cross your path, slow down and select a lane position to increase your visibility to that driver. Cover the clutch lever and both brakes to reduce reaction time. As you enter the intersection, assume that it will. Good riders are always “looking for trouble” — not to get into it, but to stay out of it.

TEST YOURSELF

Making eye contact with other drivers:
A. Is a good sign they see you.
B. Is not worth the effort it takes.
C. Doesn’t mean that the driver will yield.
D. Guarantees that the other driver will yield to you.

Answer - page 48

LARGE INTERSECTIONS

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STAGGERED FORMATION

This is the best way to keep the ranks close yet maintain an adequate space cushion. The group leader rides in the left side of the lane, and the second rider stays at least one second back and rides in the right side of the lane. The third maintains the left position of the lane, at least two seconds behind the first rider. The fourth rider should keep at least a two second distance from the second rider in the right side of the lane, and so on. This formation keeps the group close and permits each rider to maintain a safe distance from others ahead, behind and to the sides.

It is best to move to single file formation when riding in curves, turning, and entering or leaving freeways or highways.

Intersections

Intersections present the highest risk for motorcyclists in a group. When making a left turn at an intersection with a left turn signal arrow, tighten the formation to allow as many riders through the intersection as possible. Make the turn single file — do not ride side-by-side. If not all riders get through the light, stop at a safe point ahead and wait. This will prevent riders from feeling pressured to speed up or run a red light.

Follow those behind

During the ride, use your mirrors to keep an eye on the person behind and confirm that the group is staying together. If a rider falls behind, everyone should slow down to keep the group together.

Keep Your Distance

Maintain close ranks, but at the same time, maintain an adequate space cushion to allow each rider in the group time and distance to react to hazards. A close group takes up less space on the highway, is easier to see, and is less likely to become separated. This must, however, be done properly.

Don’t Pair Up

Never ride directly alongside another rider in the same lane. There is no place to go if you have to maneuver to avoid a car or hazard in the roadway. Wait until you are both stopped to talk.

STAGGERED FORMATION
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RIDE WITHIN YOUR ABILITIES

of gravity and can upset its balance.

• If you use saddlebags, load each

with about the same weight. 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 causing the motorcycle to skid.

• Fasten the load securely with

elastic cords (bungee cords or nets). Elastic cords with more than one attachment point per side are recommended. A loose load may cause the load to shift or fall. You should stop and check the load often to make sure it has not shifted or loosened.

• Include a small tool kit and some

common spare parts that you might need. Water and some energy bars or other food should also be part of your preparation, and don't forget a first aid kit, especially if you are

riding in a group.

Pre-Ride Test

Prior to starting out, take a test

ride with your fully loaded motorcycle through some familiar neighborhood roads to get a feel for the operation of your motorcycle. Also check the security of the load, so that your luggage does not get in the way of your riding.

You will also find that your motorcycle will

perform better and take less effort. You may need to adjust your riding position, so that you are able to reach the handlebar and controls.

Plan

Preparation

Preparing yourself for a group ride

is as important as making sure your

motorcycle is ready. Riding with a group requires an alert mind that is free from worries, distractions and stress. It also requires you to be aware of the influence of alcohol or drugs. For some, even too much caffeine or prescription drugs can adversely affect concentration.

Prior to a long trip, it's a good idea to

have your motorcycle serviced at your local dealership if you aren't able to do the work yourself. A thorough pre-ride inspection of your motorcycle and all of your gear will be the key to a safe and enjoyable trip.

Plan

Before starting out, hold a rider's

meeting to discuss the route, length of riding segments, rest stops and locations for fuel, meals and lodging. Make sure that all riders are familiar with the plan and understand their responsibilities.

Riding in a group

is exciting, but it requires extra care and attention. Make sure that all riders are comfortable with the plan and understand their responsibilities. If oncoming traffic is present, it is usually best to remain in the center-lane position to maximize your space and avoid problems caused by doors opening, drivers getting out of cars or people getting in the way of your riding.

Group Riding

Preparation

Group riding may increase

distractions and stoppage times, and you may need to adjust your riding position, so that you are able to reach the handlebar and controls. You should also make sure that your motorcycle is ready for a group ride, with your fuel tank filled and your tires properly inflated.

Blind Intersections

When passing parked cars, stay

toward the left of your lane. You can avoid problems caused by doors opening, drivers getting out of cars or people getting in the way of your riding.

Passing Parked Cars

When passing parked cars, stay

toward the left of your lane. You can avoid problems caused by doors opening, drivers getting out of cars or people getting in the way of your riding.

BLIND INTERSECTIONS

STOP SIGNS

PARKED CARS
A bigger problem can occur if the driver pulls away from the curb without checking for traffic behind. Even if he does look, he may fail to see you.

In either event, the driver might cut into your path. Slow down or change lanes to make room for someone cutting in.

Cars making a sudden U-turn are the most dangerous. They may cut you off entirely, blocking the whole roadway and leaving you with no place to go. Since you can't tell what a driver will do, slow down and get the driver's attention. Sound your horn and continue with caution.

Parking at the Roadside

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.)

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 skinny, 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. Smaller vehicles 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 motorcycle.

**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.

Bright orange, red, yellow or green jackets/vests are your best bets for being seen. Your helmet can do more than protect you in a crash. Brightly colored helmets can also help others see you.

Any bright color is better than drab or dark colors. Reflective, bright-colored clothing (helmet and jacket/vest) is best.

Reflective material on a vest and on the sides of the helmet will help drivers coming from the side to 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 down, or turn.

When riding with passengers:

- Ride a little slower, especially when taking curves, corners, or bumps. If any part of the motorcycle scrapes the ground at lean angle, steering control can be lost.
- Start slowing earlier as you approach a stop, and maintain a larger space cushion whenever slowing or stopping.
- Wait for larger gaps to cross, enter, or merge in traffic.

**Carrying Loads**

Everything you are likely to need for a riding holiday or weekend trip can be packed on your motorcycle in many different ways. There are complete luggage systems, saddlebags that are permanently attached to the motorcycle, soft bags that do not require a carrier system and can be tied to the seat, and a tank bag for other small items. You can also travel simply with only a backpack. Whatever you decide, do not exceed gross vehicle weight rating when traveling with cargo and a passenger, and always make adjustments to the motorcycle to compensate for the added weight.

**Tips for Traveling with Passengers and Cargo**

- Keep the load forward. Pack heavier items in the front of the tank bag. Lighter items such as your sleeping bag, ground pad or tent, should be packed on a luggage rack behind you. Try to place the load over, or in front of, the rear axle. Mounting loads behind the rear axle can affect how the motorcycle turns and brakes. It can also cause a wobble.
- Plan your route and length of each day's riding segment and allow plenty of time for breaks. Poor weather, breakdowns, and fatigue are always possible.
- Consider selecting some interesting secondary roads to occasionally reduce the monotony of the highway.
- Start as early in the morning as possible. When you are fresh, you ride at peak performance. For most riders, this is usually between 6 a.m. and 11 a.m.—then, take a good hour's break for lunch. Your energy will pick up again in the afternoon.
- Don't forget sun protection in the summer. Some combinations of riding gear can leave your neck exposed, risking sunburn.
- If you wear a backpack, be sure it is securely attached to you. Try to adjust the shoulder straps so that the backpack rests lightly on the seat. This will reduce the tension in your neck and shoulders.
- If you have a tank bag, be sure it is securely mounted and does not obstruct your view of the controls or instruments. If necessary, pack it only partially full. When strapping the tank bag in place, make sure it does not catch any of the brake lines or cables in the area of the steering head.
- Secure loads low, or put them in saddlebags. Attaching a load to a sissy bar raises the motorcycle's center

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**TEST YOURSELF**

**Passengers should:**

A. Lean as you lean.
B. Hold on to the motorcycle seat.
C. Sit as far back as possible.
D. Never hold onto you.  

Answer - page 48
When you’re stopped at an intersection, whether cars are coming up
on your left or not, it is especially important to make sure you
are stopping correctly. So, when you see a stop sign, stop
in the middle of the road, let the light go, turn on your
left or right turn signal and start slowly. You’ll be
able to see other drivers or pedestrians in the
intersection, and you’ll be able to
maneuver around them.

If you are chased by a dog:
A. Kick it away.
B. Stop until the animal loses interest.
C. Swerve around the animal.
D. Approach the animal slowly, then
speed up.

TEST YOURSELF
1. Answer - page 48

Preparing Your Passenger to Ride

Ensure your passenger is able to reach
the passenger footrests, and is able
to hold on to your waist, hips, belt, or the bike's passenger handholds. Children should be placed immediately behind the... the rider will not be able to properly balance him/herself and may interfere with the rider's control of the motorcycle.

As you prepare for your ride, tell your passenger to:
• Get on the motorcycle only after
you have started the engine and
have the transmission in neutral. As the passenger mounts, keep both your feet on the ground and the brakes applied.
• Sit as far forward as possible
without hindering your control of the motorcycle.
• Hold firmly onto your waist, hips
or the bike's passenger handholds for balance and security.
• Keep both feet firmly on the cycle's
footrests, even when stopped. Firm footing will prevent your passenger from falling off and pulling you off.
• Keep legs away from the muffler(s),
chains or moving parts.
• Stay directly behind you and lean
with you through turns and curves. It is helpful for the passenger to look over the rider's shoulder in the direction of turns and curves.
• Avoid unnecessary conversation and
avoid leaning or turning around. Make no sudden moves that might affect the stability of the motorcycle when it is in operation.
• Rise slightly off the seat when
crossing an obstacle.

Also, remind your passenger to:
• Tighten his or her hold when you:
• Approach surface hazards such as
bumps or uneven road surfaces.
• Are about to start from a stop or
begin moving into traffic.
• Are about to turn sharply or make a
sudden move.

Riding With Passengers

Your motorcycle will respond
differently when you ride with a passenger. The heavier your passenger, the longer it will take to speed up, slow
down or stop. Be prepared for your ride. Tell your passenger to:
1. Get on the motorcycle only after
you have started the engine and
have the transmission in neutral. As the passenger mounts, keep both your feet on the ground and the brakes applied.
2. Approach the animal slowly, then
speed up.
3. Stop until the animal loses interest.
4. Kick it away.

Signals

Keep your mirrors in good condition and
clean, so they’ll work properly in cases when you need them most. You can
improve your motorcycle’s brake light is usually
not as noticeable as the brake lights on a car. After the headlight is on, you’ll be
able to see other drivers or pedestrians in the
intersection, and you’ll be able to
maneuver around them.

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4. Kick it away.
RIDE WITHIN YOUR ABILITIES

from behind. If the drivers aren’t paying attention, they could be on top of you before they see you.

- **Before you change lanes.** Make sure no one is about to pass you.
- **Before you slow down.** The driver behind may not expect you to slow, or may be unsure about where you will slow. For example, you signal a turn and the driver thinks you plan to turn at a distant intersection, rather than at a nearer driveway.

Most motorcycles have rounded (convex) mirrors. These provide a wider view of the road behind than do flat mirrors. They also make cars seem farther away than they really are. If you are not used to convex mirrors, get familiar with them. (While you are stopped, pick out a parked car in your mirror. Form a mental image of how far away it is. Then, turn around and look at it to see how close you came.) Practice with your mirrors until you become a good judge of distance. Even then, allow extra distance before you change lanes.

**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.

On a road with several lanes, check the far lane and the one next to you. A driver in the distant lane may head for the same space you plan to take.

**Frequent head checks should be your normal scanning routine, also. Only by knowing what is happening all around you are you fully prepared to deal with it.**

**Horn**

Be ready to use your horn to get someone’s attention quickly.

It is a good idea to give a quick beep before passing anyone that may move into your lane.

Here are some situations:

- **A driver** in the lane next to you is driving too closely to the vehicle ahead and may want to pass.
- **A parked car** has someone in the driver’s seat.
- **Someone is in the street,** riding a bicycle or walking.

In an emergency, sound your horn loud and long. Be ready to stop or swerve away from the danger.

**FLYING OBJECTS**

From time to time riders are struck by insects, cigarettes thrown from cars or pebbles kicked up by the tires of the vehicle ahead. If you are wearing face protection, it might get smeared or cracked, making it difficult to see. Without face protection, an object could hit you in the eye, face or mouth. Whatever happens, keep your eyes on the road and your hands on the handlebars. When safe, pull off the road and repair the damage.

**GETTING OFF THE ROAD**

If you need to leave the road to check the motorcycle (or just to rest), be sure to:

- **Check the roadside** — Make sure the surface of the roadside is firm enough to ride on. If it is soft grass, loose sand or if you’re just not sure about it, slow way down before you turn onto it.
- **Signal** — Drivers behind might not expect you to slow down. Give a clear signal that you will be slowing down and changing direction. Check your mirror and make a head check before you take any action.
- **Pull off the road** — Get as far off the road as you can. It can be very hard to spot a motorcycle by the side of the road. You don’t want someone else pulling off at the same place you are.
- **Park carefully** — Loose and sloped shoulders can make setting the side or center stand difficult.

**CARRYING PASSENGERS AND CARGO**

The extra weight of a passenger or cargo will affect the way your motorcycle behaves, 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 a heavy load on the street, prepare yourself and your motorcycle for safe operation in traffic.

**Preventing Your Motorcycle**

- **Tire Pressure** — Check the air pressure of both tires. Refer to the owner’s manual or the label affixed to the motorcycle for the correct inflation specifications. Though most of the added weight will typically be on the rear wheel, don’t forget to also check the pressure on the front tire. Correct inflation pressures will maintain maximum stability, steering precision and braking capability.

- **Suspension** — With a heavy load, the riding characteristics and balance of the motorcycle will change. On some motorcycles, it will be necessary to adjust the suspension settings (spring preload, compression/damping settings, etc.) to compensate for the lowered rear of the motorcycle. Refer to the owner’s manual for adjustment procedures and specifications.

- **Headlight** — Prior to loading, position the motorcycle about 10 feet from a wall in an unlighted garage and mark the headlight beam location on the wall with chalk. With a full load and passenger, recheck the headlight beam location. Use the adjusting screws on the headlight to lower the beam to the same height. Check your owner’s manual for adjustment procedure.

**Equipment for Carrying a Passenger**

- Be sure your passenger is properly

**TEST YOURSELF**

Reflective clothing should:

A. Be worn at night.
B. Be worn during the day.
C. Not be worn.
D. Be worn day and night

Answer: C

**USING MIRRORS**

**HORN**

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**Preventing Your Motorcycle**

- **Tire Pressure** — Check the air pressure of both tires. Refer to the owner’s manual or the label affixed to the motorcycle for the correct inflation specifications. Though most of the added weight will typically be on the rear wheel, don’t forget to also check the pressure on the front tire. Correct inflation pressures will maintain maximum stability, steering precision and braking capability.

- **Suspension** — With a heavy load, the riding characteristics and balance of the motorcycle will change. On some motorcycles, it will be necessary to adjust the suspension settings (spring preload, compression/damping settings, etc.) to compensate for the lowered rear of the motorcycle. Refer to the owner’s manual for adjustment procedures and specifications.

- **Headlight** — Prior to loading, position the motorcycle about 10 feet from a wall in an unlighted garage and mark the headlight beam location on the wall with chalk. With a full load and passenger, recheck the headlight beam location. Use the adjusting screws on the headlight to lower the beam to the same height. Check your owner’s manual for adjustment procedure.

**Equipment for Carrying a Passenger**

- Be sure your passenger is properly

**TEST YOURSELF**

Reflective clothing should:

A. Be worn at night.
B. Be worn during the day.
C. Not be worn.
D. Be worn day and night

Answer: C
Downshift. D.
the throttle gradually.
Grip the handlebars firmly and close
C.
Use the brakes gradually.
B.

If your motorcycle starts to wobble:

• Notice an instant loss of power to the rear wheel. Close the throttle and brake

Lifting something big — the car.
You're in traffic, however. Remain in your lane. If this raises your心 to go.

• As soon as you

Riding at Night

• The following information offers

— Distances

— Get all the

• RIDE WITHIN YOUR ABILITIES

• Engine Seizure

• Know when and how to stop or

• Change to whatever portion of the

• Be Flexible About Lane Position

• Make Your Motorcycle Known, but

— The horn is not as loud as a car's — therefore, use it,

• No matter how careful you are, there

• Crash Avoidance

• Engine Seizure

• Keep in mind that motorcycles

• CRASH AVOIDANCE

— The

• Underbrace the front tire and

— In case of an oil change, make sure the oil is fresh and clean.

— In case of an oil change, make sure the oil is fresh and clean.

— In case of an oil change, make sure the oil is fresh and clean.

• Load within Unintended Listing

• Keeping your motorcycle

• ANIMALS

• Studies show that most crash-

• QUIK STOPS

• The following information offers

• In case of an oil change, make sure the oil is fresh and clean.

• CRASH AVOIDANCE

• Engine Seizure

• Knowledge of the motorcycle

• Keep in mind that motorcycles
Stopping Quickly in a Curve

If you know the technique, using both brakes in a turn is possible, although it should be done very carefully. When leaning the motorcycle some of the traction is used for cornering. Less traction is available for stopping. A skid can occur if you apply too much brake. Also, using the front brake incorrectly on a slippery surface may be hazardous. Use caution and squeeze the brake lever, never grab.

If you must stop quickly while turning in a curve, first straighten and square the handlebars, then stop. If you find yourself in a situation that does not allow straightening first, such as when there is a danger of running off the road in a left-hand curve, or when facing oncoming traffic in a right-hand curve, 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 can be applied. Always straighten the handlebars in the last few feet of stopping to maintain your balance and remain upright.

Swerving or Turning Quickly

Sometimes you may not have enough room to stop, even if you use both brakes properly. You may encounter an unexpected object in your path. Or the car ahead might squeal to a stop. The only way to avoid a crash may be to turn quickly or swerve around it.

A swerve is a sudden change in direction. It can be two quick turns, or a rapid shift to the side. Apply a small amount of hand pressure to the handgrip located on the side of your intended direction of escape. This will consider letting your feet skim along the surface. If the motorcycle starts to fall, you can catch yourself. Be sure to keep off the brakes. If possible, squeeze the clutch and coast. Attempting this maneuver at anything other than the slowest of speeds could prove hazardous.

Railroad Tracks, Trolley Tracks and Pavement Seams

Usually it is safer to ride straight within your lane to cross tracks. Turning to take tracks head-on (at a 90˚ angle) can be more dangerous — your path may carry you into another lane of traffic.

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

Grooves and Gratings

Riding over rain grooves or bridge gratings may cause a motorcycle to weave. The uneasy, wandering feeling is generally not hazardous. Relax, maintain a steady speed and ride straight across. Crossing at an angle forces riders to zigzag to stay in the lane. The zigzag is far more hazardous than the wandering feeling.

MECHANICAL PROBLEMS

You can find yourself in an emergency the moment something goes wrong with your motorcycle. In dealing with any mechanical problem, take into account the road and traffic conditions you face. Here are some guidelines that can help you handle mechanical problems safely.

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,** 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.

Stuck Throttle

Twist the throttle back and forth several times. If the throttle cable is stuck, this may free it. If the throttle stays stuck, immediately operate the engine cut-off switch and pull in the clutch at the same time. This will remove power from the rear wheel, though engine sound may not immediately decline. Once the motorcycle is “under control,” pull off and stop.

After you have stopped, check the throttle cable carefully to find the source of the trouble. Make certain the throttle works freely before you start to ride again.

Wobble

A “wobble” occurs when the front wheel and handlebars suddenly start to shake from side to side at any speed. Most wobbles can be traced to improper
RIDE WITHIN YOUR ABILITIES

The speed of your motorcycle is directly related to your driving ability and the road conditions. It is imperative that you ride within your ability and that of the road and traffic conditions.

- **Always be aware of your surroundings.**
- **Watch for oil spots when you put your foot down to stop or park.** You may slip and fall.
- **Dirt and gravel collect along the sides of the road — especially on curves, ramps, and bridges.** Be aware of what's on the edge of the road, particularly when making sharp turns and getting on or off freeways.
- **Rain dries and snow melts faster on some sections of a road than on others. Patches of ice tend to develop in low or shaded areas and on bridges and overpasses. Wet surfaces or wet leaves are just as slippery.** Ride on the least slippery portion of the lane and reduce speed.

Cautious riders steer clear of roads covered with ice or snow. If you can't avoid a slippery surface, keep your motorcycle straight and proceed as slowly as possible. If you encounter a large surface so slippery that you must coast, travel at a walking pace.

**CROSSTRACKS**

- **Correct**
- **Incorrect**

When it starts to rain it is usually best to:

A. **Ride in the center of the lane.**
B. **Pull off to the side until the rain stops.**
C. **Ride in the tire tracks left by cars.**
D. **Increase your speed.**

**TEST YOURSELF**

Answer - page 48
RIDE WITHIN YOUR ABILITIES

HANDLING DANGEROUS SURFACES

Your chance of falling or being involved in a crash increases whenever you ride across:
- Uneven surfaces or obstacles.
- Slippery surfaces.
- Railroad tracks.
- Grooves and gratings.

Uneven Surfaces and Obstacles

Watch for uneven surfaces such as bumps, broken pavement, potholes or small pieces of highway trash.

Try to avoid obstacles by slowing or going around them. If you must go over the obstacle, first determine if it is possible. Approach it at as close to a 90° angle as possible. Look where you want to go to control your path of travel. If you have to ride over the obstacle, you should:
- Slow down as much as possible before contact.
- Make sure the motorcycle is straight.
- Rise slightly off the seat with your weight on the footrests to absorb the shock with your knees and elbows, and avoid being thrown off the motorcycle.
- Just before contact, roll on the throttle slightly to lighten the front end.

If you ride over an object on the street, pull off the road and check your tires and rims for damage before riding any further.

Slippery Surfaces

Motorcycles handle better when ridden on surfaces that permit good traction. Surfaces that provide poor traction include:
- Wet pavement, particularly just after it starts to rain and before surface oil washes to the side of the road.
- Gravel roads, or where sand and gravel collect.
- Mud, leaves, snow, and ice.
- Lane markings (painted lines), steel plates and manhole covers, especially when wet.

To ride safely on slippery surfaces:
- Reduce Speed — Slow down before you get to a slippery surface to lessen your chances of skidding. Your motorcycle needs more distance to stop. And it is particularly important to reduce speed before entering wet curves.
- Avoid Sudden Moves — Any sudden change 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.
- The center of a lane can be hazardous when wet. When it starts to rain, ride in the tire tracks left by other riders or traffic.