

Tips and Practice Guide *for the*

OFF-HIGHWAY MOTORCYCLIST





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OFF-HIGHWAY MOTORCYCLIST

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The information contained in this publication is offered for the benefit of those who have an interest in and ride off-highway motorcycles. The information has been compiled from publications, interviews and observations of individuals and organizations familiar with the use of off-highway motorcycles. Because there are many differences in product design, riding terrain and riding styles, there may be organizations and individuals that hold differing opinions. Consult your local regulatory agencies for information concerning the operation of motorcycles and appropriate riding locations in your area.



The Motorcycle Safety Foundation is a national, not-for-profit organization promoting the safety of motorcyclists with programs in rider training, operator licensing and public information. The MSF is sponsored by the U.S. manufacturers and distributors of BMW, Ducati, Harley-Davidson, Honda, Kawasaki, KTM, Piaggio/Vespa, Suzuki, Vengeance, Victory and Yamaha motorcycles.



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FOREWORD

Tips and Practice Guide for the Off-Highway Motorcyclist has been prepared to answer your questions and provide examples of the safe and appropriate use of motorcycles in an off-highway environment. It is designed to increase your knowledge of motorcycle operation and your respect for the capabilities of this unique form of travel and recreation.

This publication was made possible through a grant from the CALIFORNIA OFF-HIGHWAY VEHICLE PROGRAM in cooperation with the Specialty Vehicle Institute of America.

KNOW YOUR OWNER'S MANUAL

Your off-highway motorcycle comes supplied with a complete owner's manual that not only explains maintenance and mechanical procedures, but also contains special hints, tips and warnings specifically associated with your model machine. Familiarize yourself with it thoroughly before practicing your riding techniques. Have an experienced rider or professional instructor assist you in learning the special skills and techniques by using this booklet as well as your owner's manual.

INTRODUCTION

If you are about to become the owner of an off-highway motorcycle, you can look forward to lots of fun and excitement. Your motorcycle is designed for many types of off-highway conditions, but it's really only as capable as you are. As your riding skills develop, you will be rewarded with an increased sense of pride and satisfaction; as your skills increase, so will your enjoyment.

This booklet is limited to a discussion of recreational riding. Regardless of what kind of riding you do, you should read this booklet thoroughly for tips that may be helpful in many kinds of riding.

OTHER SOURCES OF INFORMATION

In addition to the information provided in *Tips and Practice Guide for the Off-Highway Motorcyclist*, there are other sources of safety information. The owner's manual provides specific maintenance and operating procedures for your motorcycle. It also includes warnings, cautions, and operating tips. Motorcycle dealers have literature and safety information. Another booklet, *Parents, Youngsters and Off-Highway Motorcycles*, gives detailed riding procedures for young riders.

For information on off-highway rider training courses, go online at www.dirtbikeschool.com or call the nationwide toll-free number, (877) 288-7093 for answers to additional questions about The MSF DirtBike School, locations of the training sites nearest you and immediate *RiderCourse*SM enrollment information.

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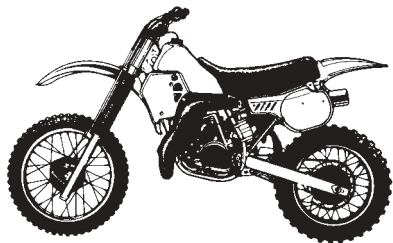
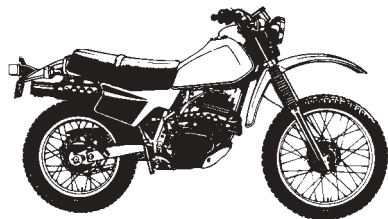
WHAT IS AN OFF-HIGHWAY MOTORCYCLE?

There are three basic types of off-highway motorcycles:

Dual-purpose motorcycles come equipped with highway-approved lighting and turn signals, D.O.T.-approved tires, a U.S. Forest Service (USFS)-approved spark arrester, and conform to Environmental Protection Agency (EPA) noise and exhaust emission standards. These motorcycles are designed for use on paved roads as well as off highway.

Enduro models usually have less complete or no lighting, have knobby tires, and meet EPA noise standards and USFS spark arrester requirements. Enduro motorcycles are for off-highway use only.

Motocross models have no lighting equipment, do not meet EPA noise or emission standards, or USFS spark arrester requirements. These are high-performance motorcycles designed for use by highly skilled riders in closed-course competition. Unmodified, they cannot legally be ridden on public land.



CONTROLS

Be sure you know the location and operation of all the controls on your off-highway motorcycle: brakes, engine stop switch, throttle, shift lever, clutch, choke and fuel valve. Learn how to find and use the controls without looking at them. You will not have time to look for the controls when riding. If you switch to another vehicle, take the time to familiarize yourself with its specific controls. Control locations may vary from model to model. Check your owner's manual for location.

BE PREPARED

You are understandably anxious to take a test run on your newly acquired motorcycle, but before you do, be sure you and your machine are ready. If you are not, the results can range from embarrassment to severe injuries or death.

PROTECTIVE GEAR

The nature of off-highway riding demands that you wear protective clothing. Although complete protection is not possible, knowing what to wear and how to wear it can make you more comfortable when you ride and reduce the chance of injury in case of a spill.

Helmets

Your helmet is the most important piece of protective gear for safe riding. A helmet can help prevent serious head injury.

There are a few basic tips to keep in mind when selecting a helmet. Select an approved helmet that meets or exceeds your state's safety standards and bears either the Department of Transportation (DOT) label, the American National Standards Institute label (ANSI z90.1), or the Snell Memorial Foundation label.

Your helmet should fit snugly and it should fasten securely. Full face helmets help to protect your face as well as your head. Open-face helmets are lighter and cooler in hot conditions, but should be used with mouth protection. Proper eye protection should be used with both types of helmets.

There is also a special time not to wear a helmet — when stopped to talk to landowners or other people you meet on the trails. To some people your helmet is a mask and can be intimidating.



Eye Protection

You must be able to see clearly in order to ride safely. An object such as a rock, branch, or even a bug that hits you in the face can distract you. But if you are hit in the eyes, you can be blinded. Regular sunglasses do not provide proper eye protection while riding in the off-highway environment. A face shield or goggles will help protect you more fully. They should be:

- Securely fastened.
- Free from scratches.
- Well ventilated to prevent fogging.
- Bear the standard markings VESC 8 (or V-8) or z87.1 in one corner or be constructed of a hard-coated polycarbonate.
- Tinted for riding on bright days or clear for night riding. Yellow is best for overcast days.

Clothing

Good gloves should help keep your hands from getting sore, tired or cold, as well as offer protection in the event of a spill. Off-highway style gloves, available at motorcycle dealerships, provide the best combination of protection and comfort. They are padded over the knuckles for extra protection.

The most protective footwear is a pair of strong, over-the-calf boots with low heels to help prevent your feet from slipping off the footrests. Off-highway style motorcycle boots offer the best protection for feet, ankles and legs.

It's important to protect your skin from scratches. A long sleeved shirt or jersey and long pants are minimal requirements for rider protection. Off-highway riding gear such as off-highway pants with kneepads, jersey and chest/shoulder protector provides better protection.



PRE-RIDE INSPECTION

Inspecting the mechanical condition of your off-highway motorcycle before each ride is important to minimize the chance of injury of being stranded. It will also ensure the long-term enjoyment of your machine. Remember, you can ride farther in an hour than you can walk in a day. Your owner's manual will show you what to check on your particular machine. Here are the most common checks:

Tires and Wheels

1. Air pressure: Always maintain the recommended tire pressure for the type of terrain on which the motorcycle is being ridden — check your owner's manual. Under-inflated tires may cause wheel damage when ridden in rocky, rough terrain and allow the motorcycle to “squirm” or “wander” on smooth, hard terrain. Over-inflation may damage the tires and cause an unnecessarily harsh ride. To accurately measure tire pressure, use a standard tire pressure gauge.
2. Condition: Check for cuts and gouges that may cause air leakage. Also check the tires for missing knobs and excessively worn tread.

3. Wheels: To avoid loss of control or injury, make sure axle nuts are tight and secured. Grasp each tire and try to rock it on its axle to detect worn out bearings or loose nuts. There should be no free play or slip as you rock the wheel. Inspect your wheels for broken or loose spokes and cracks on the hub or rim.



Controls

1. Throttle and other cables: Make sure the throttle moves smoothly and snaps closed with the handlebars in any position. Check throttle operation with the engine idling in neutral by moving the handlebars from full-lock left to full-lock right. The idle speed of the engine should not vary with handlebar movement. Check cables and controls for damage from a spill or accumulated dirt and mud, which might restrict free operation.

2. Brakes and clutch: Check that the controls operate smoothly and are adjusted according to the owner's manual. Make sure they are positioned for easy reach while in the sitting and standing positions. Your brakes are a crucial part of riding and they must always be in tip-top condition.
3. Gearshift lever: Be sure the shift lever is firmly attached and positioned for safe operation. It should not be so low that your toes are pointed to the ground or so high that shifting is awkward.

Lights and Switches

1. Ignition switch (if so equipped): Check the condition of the switch and make sure it works properly by switching it off and on during your warm-up period.
2. Engine stop switch: Be sure the wires to the switch are unobstructed and that the switch does turn off the engine.
3. Lights (if so equipped): Be sure all lights, especially the head and taillights, work properly.



Oil and Fuel

1. Check oil levels while the engine is off. Don't get stranded because you are out of fuel or oil.
2. Always start your ride with a full fuel tank in case you get lost.
3. Check for fuel and oil leaks before you start your ride.
4. If your motorcycle requires pre-mixed fuel, be sure you mix the correct oil-to-gas ratio specified in the owner's manual.

Chain and Chassis

1. Chain: Inspect your chain, chain guide and rollers for proper adjustment and adequate lubrication. Check for wear.
2. Nuts and Bolts: Rough terrain will loosen parts. Look and feel for loose parts before the engine is started. Shake handlebars, footrests, etc., before each ride and periodically check major fasteners with a wrench. Check that handlebar mounting bolts are firmly secured and inspect the bars for any cracks or bends.

3. Frame and suspension: Inspect frame, swing arm and suspension components for bending, cracking or dinging that could be results of heavy use or rock damage. Front and rear suspension should move smoothly over the full range of travel. Check your owner's manual for specific recommendations and suspension settings for individual riders and conditions.

PERIODIC MAINTENANCE

Off-highway riding is hard on your motorcycle, so it is especially important to perform periodic maintenance as outlined in your owner's manual. Don't risk injury or vehicle breakdown due to lack of proper maintenance.



TOOL KIT

Now you are finished with the pre-ride inspection and you took care of those things that looked like they might cause trouble. But what if you have a problem out on the trail?

Carrying the right tools and equipment with you when you go riding is important to safe enjoyment of your off-highway motorcycle. They take up very little room in a fender or fanny pack. Examine the tool kit that came with your machine. You may want to add a few spare parts — a spark plug or two, a couple of chain master links, perhaps some wire and tape, and maybe a headlight bulb. Plan to carry what you need for emergencies. Consider carrying a good strong tow rope, drinking water, emergency tire repair kit, weatherproof matches and a bit of food too. If first aid is not within reasonable distance, take an official Red Cross traveler's first aid kit with you.

READING THE TERRAIN

Before getting started, you have to know the land you are riding on and what your machine will do, in order to get the most out of the ride. Use the existing trails. Stay away from terrain where you really don't belong, like dangerous slopes and impassable swamps.

Watch carefully for sharp bumps, holes, ruts or obstacles and be able to identify muddy, sandy, rocky, dusty and wet conditions so you can adjust your speed and riding style accordingly.

A responsible rider stays out of trouble not simply by handling the machine well, but by being smart enough to stay out of risky situations in the first place. Learn to "read" the terrain as you ride. Look well ahead on the trail. Know what's coming; be prepared to react long before you get there. Be constantly alert for hazards. Don't ride "over your head"; know how to adjust your speed to trail conditions and visibility.



SPECIAL SITUATIONS

When riding off-highway, a motorcyclist will encounter many different types of objects, obstacles and surfaces. Riding techniques will vary slightly for each of these and can be improved through safe and sensible practice methods. Some of these may include:

Climbing A Hill

Remember:

- Some hills are too steep for your abilities. Use your common sense.
- Some hills are too steep for your motorcycle regardless of your abilities.

Never ride past your limit of visibility — if you can't see what is on the other side of the crest of a hill, slow down until you can get a clear view.

When approaching a hill you should:

- Keep both feet firmly on the footrests.
- Shift into low gear and speed up BEFORE ascending the hill.
- For small hills, shift your body weight forward by sliding forward on the seat. For steep hills, stand on the footrests and lean well over the front wheel in order to shift as much weight forward as possible.

- If the hill is steep and you must downshift to prevent stalling, shift quickly and smoothly. Also, don't forget to close the throttle while shifting. This will help prevent front wheel lifting.
- If you don't have enough power to continue uphill but you have forward momentum and enough space to turn around safely, turn around before you lose speed and then proceed downhill. (See hill exercises beginning on page 28.)



Descending A Hill

When descending a hill you should:

- Keep both feet firmly on the footrests.
- Point the vehicle directly downhill.
- Transfer your weight to the rear.
- Shift the transmission into low gear and descend with the throttle closed.
- Apply brakes to reduce speed.



Whoop-De-Doos

These are closely spaced bumps usually in heavily used sections of trail. They create a “roller coaster” effect when riding up one bump and then down the next one. You can approach these “whoops” in one of two ways. Both should be done while standing on the footrests.

Ride at a slow or moderate pace, keeping both wheels on the ground. Use your legs and arms as shock absorbers, while keeping body weight directly over the center of the motorcycle. Establish an appropriate speed and rhythm over the bumps.

The other method is for more advanced riders and is performed by rear-weighting the suspension. Accelerating through the “whoops” while standing on the footrests and keeping your body weight rearward allows the front wheel to skim over the bumps, smoothing out the otherwise rough ride. To avoid excessive jarring, remember to stand on the footrests with your knees and elbows slightly bent.

Protruding Obstacles

Particularly while trail riding, your feet could catch on rocks, roots or stumps protruding from the ground. Such objects could also deflect your front wheel if

you do not see them in time. Be sure to maintain your concentration on the trail ahead of you, scanning for obstacles protruding into your path. When riding on narrow trails, keep the balls of your feet on the footrests so your toes do not hang below the level of the motorcycle frame.

Water And Mud

You may find more water and slippery mud in some seasons and climates than in others; water and mud can conceal obstacles on your pathway or trail. Damp leaves and pine needles can be especially slick. Ride more cautiously during these periods. Ride slowly and be prepared for what your wheels may encounter. Be aware also that brake application will have to be much more gradual to avoid slipping and sliding of the tires on wet dirt or mud. Brakes may not be as effective when wet. Dry the brakes after a deep-water crossing by applying light pressure to them while riding until they return to normal power.

While riding in mud, you will most likely encounter ruts.

- Maintain momentum through the muddy section while remaining relaxed, and allow the wheels of the motorcycle to follow one of the ruts.

- Keep your weight centered and stand on the footrests.
- Maintain an even throttle setting. If you lose speed and the cycle begins to bog down, do not open the throttle abruptly. This will only cause the rear wheel to dig itself deeper into the mud. Instead, apply the throttle gradually to maintain forward momentum.



Berms

This is a built-up portion on the outside of a turn, sometimes called a banked turn. Heavily used turns on tracks or trails will often have berms built up from tires pushing dirt gradually into a curved wall around

the turn. You can ride around a banked turn faster than a flat turn; centrifugal force will help keep your motorcycle in the banked turn. But be cautious about riding near the top edge of the berm; it may give way and cause your tires to slip over the edge.



Embankments And Ledges

Many of the same techniques for climbing and descending hills apply to embankments and ledges. These obstacles, however, are usually shorter in length, but steeper. Only after becoming proficient at climbing and descending hills should you attempt these. When riding down a ledge, slowly roll over the edge using both brakes, keeping your weight to the extreme rear while standing. If the ledge is extremely steep and more of a cliff, then look for another way around and down.

Climbing an embankment will require momentum, forward weighting and careful throttle control. Stand on the footrests, keeping your chest and head forward and above the handlebars. Plan to slow the motorcycle as you crest the top of the embankment in case you have to make a quick maneuver to prepare for another obstacle.

Sand

When riding in sand, maintain a relaxed posture keeping your feet on the footrests and your head and eyes up, looking ahead. The cycle will waiver in its path slightly, this is normal. Keep the throttle on and shift to a higher gear, enabling the motorcycle to gain enough speed to rise to top of (or “plane”) the sand. Rolling off the throttle will effectively provide a braking action; the motorcycle begins to “plow” back into the sand as speed decreases.

A helpful reminder when riding in sand is to accelerate sooner and brake later than you would on surfaces having greater traction. Because of the nature of sand, the motorcycle takes longer to get going and slows down much faster than on a hard surface. Therefore, use of the throttle and brakes must be adjusted accordingly.

If you are riding in large areas of bare sand (as in dunes), be careful of hills or drop-offs that may be camouflaged by the absence of shadows. When the sun is high in the sky, sandy hills, holes and cliffs can appear to be all the same color, drastically affecting your sense of perspective.



Rocks

Soft surfaces like dirt, sand and grass are somewhat forgiving if you make a mistake. Rocks are not forgiving at all. If the rocks are numerous and small, the motorcycle will handle very similar to sandy conditions. If the rocks are large, the rider will have to carefully select a path around or over each one. Momentum is, again, very important, especially if the rocks are loose. Watch for rocks with sharp edges that could damage a tire, engine case or low-hanging foot. Maintain a higher tire pressure in rocky conditions and make sure your motorcycle has a heavy-duty skid plate to help protect the engine.

SEASONS OF THE YEAR

Ideal riding conditions are usually found in spring and fall, though many motorcyclists ride all year 'round. In summer when temperatures are higher, be especially conscious of the effect of heat on engine and body. Be sure all motorcycle oil, coolant and lubrication levels are sufficient. Carry drinking water along on trail rides, and protect yourself from dehydration.

In winter when temperatures are low, be prepared in case you are stranded. You should wear warm, protective clothing and carry waterproof matches and a

light. If riding in snow, be careful of hidden obstacles. Do not ride on groomed snowmobile trails. Motorcycles are single-track vehicles and will spoil such trails for multi-track and flotation-tired vehicles.

Remember, never ride alone in any season. A buddy will be able to help you or go for assistance if needed. Plus the riding experience is more enjoyable when shared with friends.

NAVIGATION — NOT GETTING LOST

Carry a detailed U.S. Forest Service or Bureau of Land Management (BLM) off-highway area map or topographic map with you at all times. A compass will help you determine your direction of travel. If you think you may have trouble finding your way back, stack stones beside the trail in a recognizable shape known to your riding party. Use the stones to mark directions through intersections on the trail.

In wide-open areas, make mental notes on surrounding landmarks. Determine by compass your direction of travel before you leave your base camp. Take an occasional look behind you on the way out so you know what the ride will look like when you return.

KNOW THE LAWS

The laws and regulations that control how and where you use your off-highway motorcycle are important. They help to keep you out of trouble; they keep the sport healthy by controlling less responsible riders; they help protect the land you ride on and the people who own it. Always obey posted signs. Motorcycle dealers and off-highway motorcycle clubs can often provide you with a summary of local laws or direct you to park rangers, game wardens, or others who will be glad to help you. Below are examples of some of the signs you may encounter:

The boundary of Travel Restricted Areas may be marked as shown below; also refer to Road, Trail and Area Restrictions:



Other route signs you may encounter are:

SYMBOLS



TWO-WHEEL
MOTOR VEHICLE



SNOWMOBILE



HIGH
CLEARANCE
VEHICLE 4x4 &
PICKUP



ATV

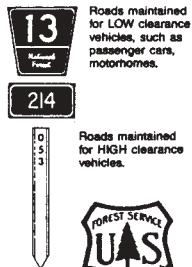


Symbol with RED
SLASH indicates ac-
tivity not allowed.

TRAVEL MANAGEMENT POSTER



NATIONAL FOREST ROUTE MARKERS



Roads maintained
for LOW clearance
vehicles, such as
passenger cars,
motorhomes.

Roads maintained
for HIGH clearance
vehicles.

YOU AND THE REST OF THE WORLD

There's one fundamental factor that controls your riding — access to land. Developing and maintaining riding opportunities means getting along with the rest of the world-private landowners, public land managers and people you meet on trails. The better you get along with all these people, the easier it will be to find and keep good riding areas.

FINDING A PLACE TO RIDE

Some sources for finding places to ride are:

- Your motorcycle dealer
- Off-highway motorcycle clubs or associations
- Using state maps (features and topographical)
- *American Motorcyclist Association (AMA) Trail Riding Guide*
- U.S. Forest Service
- Bureau of Land Management

YOU AND MOTHER NATURE

Riding behavior that harms the land is self-defeating and irresponsible. Learn to protect and preserve your riding areas, in other words, Tread Lightly.

- Obtain a Travel Map from the Forest Service or regulations from other public land agencies. Learn the rules and follow them.
- Keep your motorcycle quiet. Don't make your exhaust system noisier — there is nothing people dislike more than a loud off-highway vehicle. Keep your spark arrester in place.
- Avoid running over young trees, shrubs and grasses — damaging or killing them.
- Stay off soft, wet roads and trails readily torn up by vehicles (particularly during hunting seasons). Repairing the damage is expensive.
- Travel around meadows, steep hillsides, or stream banks and lakeshores that are easily scarred by churning wheels.
- Resist the urge to pioneer a new road or trail, or to cut across a switchback.
- Use courtesy when you meet others on the trails. Pull off and give right of way to horseback riders or hikers. It is best to shut off the engine whenever near horses — a panicked horse is a danger to you and its rider.

- Stay away from animals that are rearing young or suffering from food shortage. Stress can sap their scarce energy reserves.
- Obey gate closures and regulatory signs. Vandalism costs tax dollars.
- Stay out of Wilderness areas. They're closed to all vehicles. Know where the boundaries are.
- Get permission to travel across private land. Respect landowner rights.

Future opportunities for exciting travel with your off-highway motorcycle are in your hands —
TREAD LIGHTLY!

tread lightly![®]

LEAVING A GOOD IMPRESSION



OTHER SAFE RIDING PRACTICES

Here are a few more tips to make your off-highway motorcycling experience safe and enjoyable:


- Always perform a pre-ride inspection of your motorcycle.
- Ride in the company of others so that you can assist each other in the event of trouble.
- Wear bright-colored clothing to increase visibility to others.
- Carry a first aid pack and tool/repair kit with you.
- Carry some snacks and drinking water.
- Don't let youngsters or shorter adults ride motorcycles that are too tall or powerful for their capabilities.
- Watch for hidden obstacles in sandy, snowy or muddy conditions.
- Except for dual-purpose machines, off-highway motorcycles are not designed for use on pavement. They should never be ridden on the highway or any public roadways.
- Tell someone where you are going and when you plan to return.
- Avoid following too closely behind another rider and restricting your visibility.

REGISTRATION

In many states the law requires that you register your motorcycle as part of the state's off-highway vehicle registration program. Fines for riding unregistered vehicles can get expensive, to say nothing of the risk of having your off-highway motorcycle impounded. Besides, most states use the registration fees to develop riding trails and facilities. So, by registering your motorcycle, you and your friends may be helping to buy or maintain places to ride.

The following practice guide will give you some basic riding strategies you can use for different types of terrain and riding situations. By learning and





practicing them, you will have more fun riding your off-highway motorcycle.

PRACTICE GUIDE

This portion of the *Tips and Practice Guide for the Off-Highway Motorcyclist* has several exercises to help you develop the skills necessary to become a safe rider. Read through all the exercises before starting any of them. Do not attempt these exercises until you can perform basic skills such as starting the motorcycle, using the clutch and throttle correctly, shifting, riding in a straight line and stopping. If you do not have these skills, be sure to seek instruction before practicing the skills in this guide.

Bring a friend to help you practice, and take this guide along for reference. Keep practicing until you can do each exercise at least five times without a problem. But do not practice for more than one or two hours at a time. When you get tired, you cannot practice effectively.

WHAT TO BRING

Bring five objects that you can use as markers. Milk cartons or plastic bottles filled with sand work well. Don't use glass bottles or other breakable objects. You should also bring a tape measure to mark distances or at least measure your stride so you can pace off the distances. (One hundred feet usually equals 35 to 40 paces.)

LET'S GET STARTED

Find a large, fairly level, open off-road area, free from obstacles and hazards to use while learning to ride your off-highway motorcycle. Make sure you have permission to use the area in which you will ride. Take a few minutes to review the riding tips and practice exercises in this booklet before you start your engine.

SAFETY RULES

The practice exercises in this guide can be dangerous if you don't follow the instruction provided. Also, be sure to follow these safety rules:

- Wear proper protective clothing. This includes a DOT-approved motorcycle helmet, boots, gloves, eye protection, long pants and a long-sleeved shirt.
- Inspect your motorcycle before you begin. Consult your owner's manual
- Check the practice area for potential hazards.
- Bring an experienced friend along to help if anything goes wrong, and critique your progress.
- Don't mix alcohol or other drugs with riding.
- DO NOT carry passengers while practicing the exercises.
- Pay attention to additional safety tips found throughout this guide.

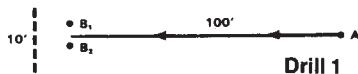
Remember

- Consult your owner's manual for the starting procedure for your model motorcycle.
- Be sure the engine is sufficiently warmed up before you start riding. It should run smoothly with the choke off.
- Fully retract the sidestand. If the sidestand is extended it may interfere with rider control during a left turn.
- Look where you are going — not at the controls!

Shifting Tips

- Release the brake and gradually apply the throttle while slowly releasing the clutch. If the clutch is engaged too quickly, the motorcycle might move suddenly, causing you to lose control or fall off the motorcycle.
- Learn where the clutch engagement point is to prevent stalling and allow smooth shifting.
- Always close the throttle while shifting to prevent the front wheel from lifting.
- Learn the sounds of your engine so you can shift to keep the engine speed in the most efficient range.

EXERCISE 1

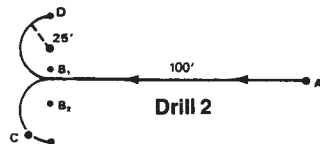


Drill 1

Objective: You must be able to put the motorcycle in gear, slowly accelerate, shift smoothly and come into a smooth, safe stop in both the sitting and standing/riding positions. Practicing these drills will help you master stopping in a straight line and in a curve as when stopping to avoid an obstacle or for a rest on a trail ride.

Skills: starting out, shifting, braking, turning

BRAKING



Drill 2

DIRECTIONS

Drill 1: Braking — straight path. Put marker A down to indicate your starting point. Then place markers B1 and B2 100 feet down a straight path. Start your motorcycle and ride (from point A) straight toward the second markers (B1 and B2). Begin to slow down, using both brakes, before you reach markers B1 and B2. Come to a smooth, non-skidding stop with the front tire between markers B1 and B2 and the engine in first gear with the clutch in. Put your left foot down to stay upright, keeping your right foot on the rear brake pedal. Practice this exercise a few times in first gear. Then try it in second gear. Ride straight toward B1-B2, accelerate and shift into second. Begin to slow down and shift back to first gear BEFORE you reach markers B1 and B2. Now perform the same drill while standing on the footrests.

Drill 2: Braking — In a turn. Place markers C and D as indicated in the diagram. Start at marker A and ride toward B1-B2. Accelerate and shift into second. Begin to slow and shift back to first gear as you go through markers B1-B2. Once through the markers, turn the handlebars to the left so that you make a gradual turn and come to a smooth, non-skidding stop with your front tire next to marker C. Practice this to the right with your front tire next to marker D. Practice a few times in second gear; then practice in higher gears until you can stop smoothly and consistently at markers C and D. As in Drill 1, continue using your left foot to stay upright when stopped, leaving your right foot to operate and maintain pressure on the rear brake pedal. Now perform the same drill while standing on the footrests.

COACHING TIPS

- Be sure sidestand is retracted before starting off.
- Using both brakes when slowing to a stop, keeping in mind that the majority of your braking power is in your front brake.
- Keep head and eyes up.
- Look straight ahead when stopping in a straight line.

- Look around the turn as you slow in a curve.
- Shift to a lower gear as you decelerate.
- Finish the stop with your left foot on the ground and your right foot applying the rear brake. The motorcycle should be in first gear.
- Keep your body weight to the rear when braking, in sitting or standing positions.

WATCH FOR

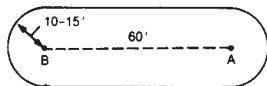
- a. Overshooting the final marker.
- b. Rear wheel skids.
- c. Front wheel locks.
- d. Loss of balance when stopping in a curve.

SUGGESTIONS

- a. Begin braking and slowing sooner.
- b. Apply less pressure on rear brake. Do not release rear brake suddenly if the motorcycle has begun to slide to one side. Traction may be regained suddenly causing an abrupt shift in motorcycle and rider weight.
- c. Apply less front brake pressure.
- d. Decrease the lean angle as you begin stopping. As the motorcycle straightens up, apply more brake pressure.

EXERCISE 2

TURNING



Drill 1

Objective: You must be able to coordinate speed and body position to maintain balance while turning and weaving in both the sitting and standing riding positions. Practicing these drills, first sitting down on the seat and then standing on the footrests, will help you avoid obstacles and ride down curvy trails.

Skills: Throttle, control, shifting weight, turning, braking



Drill 2

DIRECTIONS

Drill 1: Turning — large oval. Place markers A and B 60 feet apart as indicated in the diagram. Ride around the outside of the markers so that you have made a large oval. Ride to the left a few times without putting your foot down or stopping and then ride to the right. Do not shift gears during this drill.

Drill 2: Turning — small circles. Now use those same markers as the centers of two large circles. Ride around marker A to the left. Continue riding around to the left and decrease the radius of the circle so that you are making tighter turns. Then ride around marker B to the right and practice decreasing your turning radius.



Drill 3

Drill 3: Turning — Figure 8. Combine the circles around marker A and marker B so that you are doing a large figure 8. As your skills increase, move the markers closer together so that the figure 8 becomes smaller.



Drill 4

Drill 4: Turning — Weaving. Place a line of 5 markers on the ground each 20 feet apart in a straight line. Begin at one end of the line, going to the left of the first marker; then to the right of the second continuing the weave pattern to the end of the line. Turn around and come back in the opposite direction performing the weave again. Make sure you can perform this 20-foot weave without making any mistakes, then move the markers 10 feet apart and repeat the drill.

EXERCISE 2

TURNING CONT.

COACHING TIPS

- Be sure sidestand is retracted before starting off.
- Keep head and eyes up, concentrating on your intended path of travel.
- Initiate left turns by placing pressure (push) on the left handgrip. For right turns, place pressure on the right handgrip.
- Keep your weight forward by sliding to the front of the seat prior to turning. This increases front wheel traction, making turning easier.
- Slow before the turn, and gently increase the throttle as you exit the turn.
- Lean the motorcycle in the direction of the turn, and adjust body position to counter the motorcycle lean for this particular exercise.
- Put foot over the rear brake, and use the brake lightly if necessary.
- Do not grab the front brake; use it lightly if necessary.
- Practice left and right turns.

Note: An easy-to-remember summary of coaching tips for turning is “slow, look, lean and roll (on the throttle).”



COACHING TIPS FOR WEAVE

- Keep head and eyes up.
- Maintain a steady speed while weaving.
- Turn by pushing on the handgrips in the direction of the turn. (Push right to go right; push left to go left.)
- Lean with the motorcycle in this particular exercise.

WATCH FOR

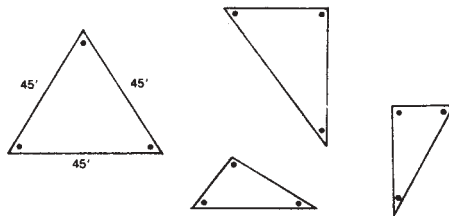
- a.* Turning too soon or overshooting turn.
- b.* Not sure when or where to turn.
- c.* Speed increases in turn.
- d.* Turning too wide.
- e.* Swinging too wide away from markers.
- f.* Hitting markers.

SUGGESTIONS

- a.* Keep eyes up and look where you intend to go. Don't look down.
- b.* Look through the turn to where you want to go, not where you are.
- c.* Concentrate on separating throttle twist from handlebar turn.
- d.* Increase lean angle of motorcycle.
- e.* Look past the marker, decrease lean angle and push less on the handgrip.
- f.* Look past the last marker, increase lean angle slightly and push more on the handgrip.

EXERCISE 3

SHARP TURNS



Objective: You must be able to maintain balance and control while making sharp turns. Practicing this drill will help you maneuver your motorcycle through heavily wooded areas and switchback trails.

Skills: Shifting weight, turning, throttle control, braking.

DIRECTIONS

Drill 1: Place three markers to create a triangle with sides of equal length at least 45 feet long. Ride around the outside of the triangle turning to the left. Stay within three feet of the triangular path. After you master this, ride the triangle to the right. Now ride the triangle in each direction while standing on the footrests. Then change the sides and angles of the triangle and practice in the sitting position first, then the standing position. Make sure you ride in both directions, practicing right and left sharp turns.

COACHING TIPS

- Keep your weight centered over the motorcycle, lean the motorcycle underneath you when turning sharply.
- Keep your feet on the footrests.
- Slow before the turn.
- Look through the turn at your intended path of travel.
- Gently increase the throttle as you exit the turn.
- Squeeze the tank with your knees.
- Use the friction point of the clutch (slip the clutch) as you turn if necessary to prevent the engine from stalling.

WATCH FOR

- a.* Turning too wide around corners.
- b.* Loss of balance or control on corners.
- c.* Rear wheel sliding while rolling the throttle.

SUGGESTIONS

- a.* Look through the turn at the intended path of travel.
- b.* Slow, look, lean the motorcycle, and roll on the throttle.
- c.* Roll on throttle more gently.



EXERCISE 4

Hills



Drill 1

Objective: You must be able to ride uphill, turn your motorcycle around and ride downhill. These exercises will help you practice techniques for climbing hills — riding up and down hills successfully — as well as give you help if you lose momentum on an uphill climb.

Skills: maintaining balance, shifting weight, braking and throttle control.

Make sure both front and rear brakes are in working order before doing this drill.

DIRECTIONS:

Drill 1: climbing, turning, and descending. For this exercise, select an easy hill free of obstructions and easy to climb on foot. Start your approach to the hill by accelerating before the base of the hill. Shift into a lower gear at the base if necessary to maintain momentum while climbing the hill. Keep your body weight uphill. Turn your motorcycle to the left in an arc before you reach the top, while keeping your weight uphill. Keep turning, using your remaining momentum until you are facing downhill. Shift your weight to the rear of the motorcycle (uphill), and descend the hill in a low gear. Slow by applying the front and rear brakes together. Keep your weight rearward. Repeat this exercise to the right.



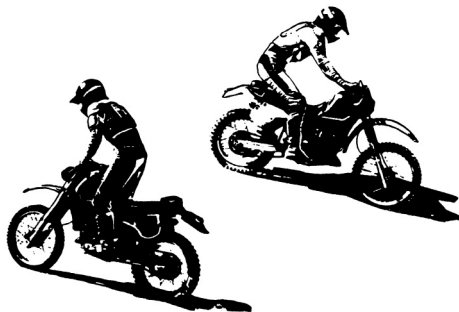
Drill 2



Drill 3

Drill 2: climbing, stopping and descending. Ride straight up the hill, turning slightly to the right as you stop the motorcycle. As you come to a stop, lean into the hill and plant your left foot on the ground. Leave the motorcycle in gear and turn off the engine. Hold onto the front brake firmly and dismount to the left (uphill). Always remain on the uphill side of the motorcycle. Turn the front wheel to the left and, using the front brake and clutch, back the motorcycle down until it is facing across the hill. Remount the motorcycle from the uphill side and restart the engine. To get the motorcycle pointing downhill, wiggle the handlebars back and forth to “walk” the front end down the hill. When ready to descend, use a low gear, and keep your weight rearward. Release the brakes and ride to the bottom, applying the brakes smoothly.

Drill 3: stopping while descending. As you descend the hill, slow by gradually applying both brakes. Stop before reaching the bottom.



COACHING TIPS FOR CLIMBING

- Some hills may be too steep for your abilities. Do not exceed your capabilities.
- Remember, some hills are too steep for your motorcycle regardless of your abilities.
- Keep both feet on the footrests until almost at a complete stop.
- Shift your body weight forward by sliding forward on the seat as you go up the hill. For steeper hills, stand on the footrests and lean forward as much as possible.

COACHING TIPS FOR DESCENDING

- To go downhill, shift your weight back. On steeper downhills, extend your knees and elbows and bend forward sharply at the waist so that your posterior is over the back of the seat.
- Use both brakes to slow you down as you descend the hill and descend in a gear that will utilize the engine compression to slow the descent.

COACHING TIPS FOR TURNING ON A HILL

- The key to successful performance of this exercise is to smoothly shift your weight from forward (as you climb) to the uphill side (as you turn) and to the rear (as you descend).
- For smooth weight shifts, transfer weight to the footrests and raise up off the seat, turning the motorcycle underneath you.

WATCH FOR

- a. The motorcycle losing momentum going up the hill.
- b. Motorcycle descending too quickly.
- c. Wheels locking, creating a slide.
- d. Motorcycle rolling backward while you are on it.
- e. Loss of balance while turning motorcycle perpendicular to the hill.

SUGGESTIONS

- a. Approach at a higher speed. Do not attempt to turn the motorcycle if you do not have the momentum to make the U-turn. Apply the brakes before you lose all speed to keep the cycle from rolling backward.
- b. Maintain smooth braking. Be sure you are in gear and the transmission is engaged. Do not apply the throttle.
- c. Release brakes and then immediately reapply brakes smoothly.
- d. Do not let the motorcycle roll backward if you are on it. If it does begin to roll back, dismount to the uphill side immediately.
- e. Lean in toward the uphill side of the motorcycle. If the cycle begins to fall down the hill, dismount to the uphill side immediately.

EXERCISE 5

TRAVERSING HILLS



Objective: You must be able to ride across a hill without stalling or sliding the motorcycle. Practicing this will help you ride over cambered to hilly terrain.

Skills: Shifting weight, maintaining balance and throttle control.

DIRECTIONS

For this exercise, select an easy hill free of obstructions. Start your approach and accelerate before the base of the hill. Shift into a lower gear at the base if necessary to maintain momentum while climbing the hill. Turn the motorcycle to the left, ride across the slope and then ride down the hill. Repeat the exercise to the right.

Reminder: Traversing hills is tricky business, so practice this carefully. Maintaining a smooth throttle and weight transfer will help the motorcycle traverse without sliding down the hill.

COACHING TIPS

- Stand with both feet firmly on the footrests.
- Apply the same principles for climbing and descending as you did in the previous exercise.
- Concentrate body weight on the outside (downhill) footrest while leaning the motorcycle in toward the uphill slope. This forces the tires into the hill while traversing.
- Maintain a constant speed without any abrupt throttle or braking applications.
- To maintain a traverse perpendicular to the slope of the hill, keep body weight situated evenly between front and back wheels.
- If the rear wheel begins to slide down the hill, point the front wheel down the hill if the terrain allows. If this terrain prohibits you from turning down the hill and putting weight on the outside footrest doesn't help, then dismount on the uphill side immediately.

WATCH FOR

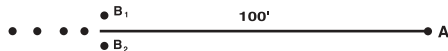
- a. Rear wheel sliding downhill.
- b. Motorcycle loses momentum going up the hill.
- c. Front wheel starts to climb the hill.
- d. Inability to maintain a traverse perpendicular to slope of hill.

SUGGESTIONS

- a. Weight the outside (downhill) footrest, keep body position forward and maintain even throttle setting. If necessary and terrain allows, turn the front wheel slightly downhill.
- b. Approach at a slightly higher speed. Downshift if necessary.
- c. Move body position back slightly and ease off the throttle.
- d. Position body equally between front and back wheels, weighting the outside (downhill) footrest while maintaining even throttle setting.



EXERCISE 6

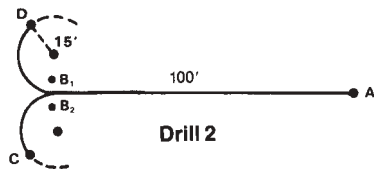


Drill 1

Objective: You must be able to stop in the shortest possible distance. Practicing these drills will help you stop quickly should an obstacle suddenly appear in your path.

Skills: Shifting gears, stopping, braking while turning.

QUICK STOPS



Drill 2

DIRECTIONS

Drill 1: Quick stops — straight path. Start at marker A and ride toward B1-B2 in second gear. Be sure to maintain your speed until you pass B1-B2. When the motorcycle PASSES markers B1-B2, stop as quickly and safely as you can. Notice where you stop. Put some sort of marker down there. Do it again and stop smoothly and quickly, but in a shorter distance. Make your first two attempts in second gear. Remember to begin braking and shift back to first gear only AFTER you have passed the second markers. Shift to higher gears when you have mastered the exercise in second gear.

Drill 2: Quick stops — in a turn. Place markers C and D as indicated in the diagram. Start at marker A and ride toward B1-B2. When you reach B1-B2, veer left and ride in second gear toward C. When you PASS marker C, stop as quickly and safely as you can by straightening your front wheel, decreasing lean angle and applying minimum brake pressure, before applying brakes with more pressure.

COACHING TIPS

- Keep your head and eyes up; focus on where you want to go.
- Straighten up the motorcycle (reduce lean angle) before applying full brake pressure.
- Keep feet on footrests until almost stopped.
- When stopped, the left foot should touch the ground first, and you should be in first gear.
- Do not skid either wheel.
- Use both brakes.
- Keep weight to the rear while in sitting or standing positions.

WATCH FOR

- a.* Overshooting the marker.
- b.* Motorcycle nearly falls over when braking in a turn.
- c.* Rear wheel skids.
- d.* Front end slides or skids.

SUGGESTIONS

- a.* Apply more pressure to the brakes once the lean angle is decreased.
- b.* As soon as you begin stopping, decrease your lean angle and then apply more brake pressure.
- c.* Apply less pressure on the rear brake and make sure the motorcycle is straight up.
- d.* Apply less front brake pressure.



Objective: You must be able to cross an obstacle by choosing the best approach path and by using proper weight shifts. Practicing this drill will help you maneuver the motorcycle over obstacles that you cannot avoid such as logs or bumps across your path.

Skills: Surmounting obstacles, shifting weight, throttle control.

DIRECTIONS

Choose small obstacles for initial practice. A small rut, mound or small log should work fine. Approach the obstacle at walking speed and as close to a 90-degree angle as possible. Rise up slightly on the foot-rests, weight back, then bounce down on the footrests and pull up slightly on the handlebars, applying a small amount of throttle as the front wheel reaches the obstacle. Lean forward and roll off the throttle after the front wheel clears the obstacle. Return to your normal riding position after the rear wheel clears the obstacle.

COACHING TIPS

- Be sure to bend your elbows and knees so that you can use them as shock absorbers.
- Mounds and ruts both act as obstacles. Be sure to stand on the footrests for each.
- Keep weight back while the front wheel rolls over the obstacle, then shift weight forward, allowing the rear wheel to climb or cross the object.

WATCH FOR

- a. Excessive jarring from impact.
- b. Front wheel pushes obstacle rather than crossing over it.
- c. Rear wheel hits obstacle with excessive impact.
- d. Front wheel goes over object, then motorcycle stops.

SUGGESTIONS

- a. Bend knees and arms.
- b. In addition to pulling up on the handlebars, apply a small amount of throttle as the front wheel meets the obstacle. Roll off the throttle as soon as the front wheel has gone over the object.
- c. Lean forward slightly once the front wheel has gone over the obstacle in order to unweight the rear wheel. The throttle must be rolled off before the rear wheel hits the obstacle.
- d. Maintain momentum after front wheel rolls over object by keeping throttle slightly open to enable rear wheel to climb object.

PUBLICATIONS

For Motorcycling

Parents, Youngsters and Off-Highway Motorcycles — Especially developed for parents and youngsters, this booklet is designed to help parents determine whether their youngsters are ready to ride an off-highway motorcycle. It contains easy-to-use readiness guidelines and checklists for parents to review with their youngsters. It also covers pre-operating and operating procedures, tips on protective gear, riding techniques and many other safety points.

A Guide to Off-Highway Riding Video

Narrated by former motocross champion, Bob “Hurricane” Hannah, this VHS videotape helps you prepare for a fun, safe ride.

You and Your Motorcycle: Riding Tips

This booklet contains safe riding tips relating to the motorcycle, the rider and the roadway.

Motorcycle Skill Test Practice Guide

Contains exercises that can be practiced to help develop skills needed to pass a skill test to receive a motorcycle license endorsement.

Cycle Safety Information Sheets

Flyers that contain useful information on riding gear, helmets, statistics and state licensing requirements.

Publications Catalog

This catalog lists all MSF publications and accessories available. Single copies of publications are free by contacting:

**Motorcycle Safety Foundation
2 Jenner Street, Suite 150
Irvine, California 92618-3806**

For ATV Riding

Parents, Youngsters and ATVs — Especially developed for parents and youngsters, this booklet provides important safety information and tips on learning to ride an ATV. It is designed to help parents determine whether their youngsters are ready to ride an ATV. It contains easy-to-use readiness guidelines and checklists for parents to review with their youngsters. It also covers: pre-operating and operating procedures, tips on protective gear, riding techniques, and many other safety points.

Tips and Practice Guide for the ATV Rider

Provides brief, easy-to-read segments on the different types of ATVs, proper riding apparel, controls, and tips for riding an ATV in a variety of terrain and conditions. It also illustrates and describes exercises developed to help riders practice proper riding techniques.

Ride Safe, Ride Smart Video

This video provides information on the different uses of ATVs and stresses the importance of wearing the proper protective gear and taking a training course to improve ATV riding skills.

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