URAL®

HOW TO RIDE

FIND OUT HOW TO RIDE THE CLASSIC URAL MOTORCYCLE

USE THE NAVIGATION ON THE LEFT TO LEARN CHAPTER BY CHAPTER ON HOW TO RIDE THE URAL

RIDE A TRUE CLASSIC

RIDE THE URAL!

URAL®
CLASSIC SIDECAR MOTORCYCLE

Introduction

Motorcycle enthusiasts have been attaching sidecars to their machines since about 1895. Motorcycle/sidecar combinations are alternatively referred to as "rigs," "hacks," "chairs" or "outfits." While combinations continue to be only a small minority of motorcycles worldwide, sidecars are still being built and attached to today's motorcycles. There are probably more outfits on the road than ever before. There are all sorts of sidecar rigs in operation, including some that lean into corners and some with steerable sidecar wheels. But the majority of sidecar rigs are straightforward three-wheelers built by attaching a sidecar rigidly to a motorcycle.

The URAL motorcycle/sidecar combinations have been built with the same basic frame arrangement for 55 years, although the operating systems have gradually been refined. There are two basic URAL sidecar combinations, one with a single driven rear wheel and a similar model with both the rear and sidecar wheels shaft-driven. Throughout this manual we will point out differences in handling and operating techniques for the different models.

The most important lesson about motorcycle/sidecar combinations is that the resulting three-wheeler is neither a motorcycle nor an automobile, but an entirely different vehicle with very different operating characteristics. Even the veteran motorcyclist with hundreds of thousands of miles of three-wheeled experience becomes a novice when learning to pilot a hack for the first time.

Scope

The purpose of this manual is to assist the novice sidecar operator to learn how to drive a combination on the street. The manual includes both explanations of basic sidecar riding techniques and driving exercises the novice can practice to gradually build skill.

For the benefit of those with no prior motorcycle experience, the first lesson starts with a description of motorcycle controls, followed by novice practice exercises on the machine. Subsequent lessons describe strategies for driving in traffic, followed by exercises to help build more advanced sidecar handling skills.

The focus of this manual is on operating skills. It does not cover topics such as how to attach a sidecar to a motorcycle or sidecar alignment specifications. For purposes of this manual, it is assumed that the novice has a sidecar combination available to use for practice.

This manual applies only to URAL motorcycle/sidecar combinations with the sidecar mounted on the right-hand side. The operation of both single-wheel-drive and dual-wheel-drive URAL sidecar combinations is explained.

Training Considerations

While lots of new owners have taught themselves to drive a sidecar outfit, the techniques for handling a rig are complex enough that you are encouraged to take a sidecar operator course if one is available. It is much better to learn under the guidance of an experienced instructor who can coach you through the exercises and help you learn good habits.

This manual may be used by sidecar instructors as a curriculum guide. The general layout of the manual is similar to other "learn-to-ride" training courses.

Teaching yourself

If you choose to teach yourself, using this manual as a "do-it-yourself" course of instruction, be aware that we cannot guarantee your safety. This information is presented as a public service to assist you in learning, based on the best information available. It's up to you to put it into practice. Study the lessons carefully, paying special attention to notes, cautions and warnings.

Notes remind you of details of particular importance.

Cautions indicate a possibility of damage to the vehicle.

Warnings mean there is the possibility of personal injury to yourself or others.

If you have difficulty mastering the riding exercises, you are encouraged to take a formal sidecar operator course or seek the assistance of an experienced sidecar driver.

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Chapter 1

INTRODUCTION TO DRIVING THE URAL

A motorcycle/sidecar combination is neither a motorcycle nor an automobile, but an entirely different vehicle with very different operating characteristics. Even if you are a veteran motorcyclist with many of miles of experience, you should consider yourself a novice sidecar driver when learning to operate a combination. Most importantly, three wheelers steer "backwards" from two-wheelers. And, since motorcycle/sidecar outfits are not symmetrical, they accelerate and brake differently in left turns than in right turns. Cornering tactics include learning to balance the outfit on both three wheels and two wheels.

We cannot stress too much the importance of gaining knowledge and basic operating skills off-street before taking a sidecar rig onto the public roads. Even experienced motorcyclists are wise to master the basic skills away from traffic, to ensure that surprises don't turn into accidents.

HOW TO USE THIS MANUAL

This manual describes the physical dynamics of URAL sidecar outfits, the proper operating techniques, the mental skills needed to minimize the risks of operating motorcycle/sidecar combinations on the public roads and evasive maneuvers that may be needed to avoid collisions when riding in traffic.

If at all possible, you are encouraged to participate in a sidecar operator course, where a trained instructor can use this manual to coach you through the exercises. If you absolutely can't locate a sidecar course, at least try to find an experienced sidecarist who is willing to help. Your URAL dealer should be able to help you through this training or refer you to a local training course or help find a veteran sidecarist willing to assist you.

This manual is divided into lessons and riding exercises. Each lesson explains specific dynamics and operating techniques, followed by a series of riding exercises to practice the skills. The exercises build skill in steps, so each exercise must be mastered before progressing to the next exercise. The entire course of study and riding practice takes approximately 20 hours. The experienced motorcyclist should be able to master the skills in somewhat less time.

The layouts of the riding exercises are diagrammed in the back of this manual. Layouts are intentionally kept simple. Most of the exercises in this manual can be accomplished on a large "figure-8" layout. The actual dimensions are not critical, but learning will be more progressive if the paths of travel are well marked by either painted lines or temporary markers.

Brightly-colored tennis balls cut in half make excellent exercise markers.

REASONS FOR SIDECARS

Motorcycle/sidecar combinations are historic vehicles that suggest a more romantic time.

Sidecars have an inherent mystique that makes them interesting, even to people who might otherwise avoid motorcycles. And certainly owning a sidecar is a unique activity that not many people have experienced. But there are also some very practical reasons for driving a sidecar outfit.

ADVANTAGES OF SIDECARS

The unique advantage of a rigid three-wheeler over a two-wheeler is the inherent stability. A two-wheeler requires constant balance and the rider must support it when stopped. On treacherous surfaces such as oily pavement or gravel, a two-wheeled motorcycle can lose traction and fall down. In Russia, the URAL is a utilitarian commuting vehicle, even when roads are covered with snow and ice. The tricycle gear supports a sidecar outfit, so it doesn't fall over when stopped. The rig can slide sideways without falling down on poor surfaces, similar to an automobile. Unpaved roads or off-road situations that would be difficult to ride on a two-wheeler are quite manageable on a sidecar outfit. Yet, unlike the enclosed automobile driver, the sidecar operator can enjoy being out in the fresh air, just like any other motorcycle enthusiast.

Since a sidecar outfit doesn't need to be supported by the driver when it stops, people with physical limitations such as short legs don't have to be concerned with dropping the motorcycle at a stop sign. Those with physical disabilities are often able to operate a sidecar outfit even when it would be impossible or painful to handle a two-wheeled motorcycle. Some URAL outfits have had the controls custom altered to meet the physical needs of the operator.

Rigid sidecar "rigs" have more carrying capacity than the typical two-wheeled motorcycle. Carrying children in a sidecar is much less risky than carrying them on the back of an open motorcycle. The big advantage of a sidecar is that the occupants can't slip off should they momentarily forget to hang on, become fatigued or fall asleep while riding. Some family pets enjoy going for a ride in the hack.

Unlike most owner-assembled sidecar combinations, the URAL is engineered as a three-wheeled sidecar vehicle, with features such as a leading link front fork, a strong frame and permanently attached sidecar connections.

DISADVANTAGES OF SIDECARS

Of course, attaching a sidecar to a two-wheeled motorcycle has certain drawbacks. A sidecar rig is larger than a two-wheeled motorcycle, so it takes up more space when parked. The extra weight and wind resistance of the sidecar requires the engine to work harder than for a comparable "solo" motorcycle. Tire wear is greater. The steering geometry is different from a two-wheeled motorcycle, so it isn't practical to disconnect the sidecar and ride the motorcycle "solo". Experienced motorcyclists may not enjoy a rigid sidecar combination that doesn't lean into corners like a conventional motorcycle. And since sidecarists are such a minority of motorists, they must be rugged individualists capable of solving their own problems independently.

DIFFERENT TYPES OF SIDECARS

While the typical sidecar combination is simply a metal or fiberglass body supported on a frame attached to the side of the motorcycle, there are a surprising number of different

types of sidecars. The sidecar can have a flat utility platform or package box instead of a passenger body. Others may have just a rail for transporting another motorcycle, a bicycle, a wheelchair or a canoe. The URAL Tourist and Sportsman models have a large passenger body suitable for carrying passengers or pets. The Utility model has a large metal box for carrying cargo.

A sidecar can be mounted on either side of a motorcycle. In countries such as the US, where traffic drives on the right side of the road, sidecars are mounted on the right side of the motorcycle. In countries such as England, Japan and South Africa, where traffic drives on the left, sidecars are mounted on the left side. All URAL combinations imported to North America have the sidecar mounted on the right-hand side. The instructions in this manual only apply to the operation of a URAL with a right-hand mounted sidecar.

RISK AWARENESS

While sidecar outfits are more stable than two-wheelers, all motorcycles require a higher degree of concentration and application of driving skill than a typical automobile. The rider is exposed to both the elements and to potential physical injury. Unlike contemporary automobiles which can provide crash restraints such as seat belts or air bags, motorcycles offer little protection to the rider in the event of an accident. More importantly, sidecar outfits are narrower and less stable than automobiles and therefore require more skill to control.

IMPORTANCE OF EDUCATION, TRAINING

The only reliable tactic for avoiding injury while motorcycling is to avoid accidents. It is possible to gradually learn accident avoidance techniques by spending many years in the saddle, but there are many operating skills and accident scenarios which are not self-obvious. The novice sidecarist may not understand what is happening during a maneuver or may not possess the necessary control skills needed to avoid an accident. The best technique for quickly learning the fundamentals of sidecar operation is to follow a course of study, preferably a rider training course taught by a certified instructor who can provide individual coaching through the exercises.

RISK ACCEPTANCE

The novice sidecarist should understand that it is impossible to make any form of transportation totally "safe". We cannot take all the risk out of motorcycling, even sidecar operation. Each of us must accept responsibility for our choice of transportation, learn what the risks are and then take steps to manage those risks. If you intend to teach yourself to ride a sidecar combination without benefit of a trained instructor, be aware that we cannot guarantee success. Each lesson in this manual contains the best available information, but it is always possible to misunderstand important details. Study each lesson carefully before you try the subsequent riding exercise on the motorcycle. Most importantly, practice the exercises in the exact order presented. Do not skip any intermediate exercise. Spend sufficient time on each exercise to become really familiar with it. Advance to the next exercise only when you have mastered the current one.

PROTECTIVE GEAR

We highly recommend that the operator of a sidecar outfit wear the same protective gear as if on a two-wheeler. A speeding outfit can overturn, slide off the road or collide with another vehicle. As with a "solo" motorcycle, the sidecar operator is likely to be thrown off in an accident. To help protect yourself against possible injury, we recommend an approved helmet, tall leather boots with stepped heels, leather gloves and abrasion resistant jacket and pants.

We'll describe riding gear in more detail a little later on.

LEGAL RESTRICTIONS

State laws dictate licensing, mandatory riding gear and minimum motorcycle equipment for operation on the public roadways of that state. Each state has different laws. In general, all laws relating to two-wheeled motorcyclists apply to operators and passengers of motorcycle/sidecar combinations. Almost all states recognize a motorcycle/sidecar combination as a "motorcycle". The sidecar itself is not usually licensed or registered as a separate vehicle.

In most states, a motorcyclist is required to have a motorcycle license to operate any type of motorcycle on the public roads, whether a two-wheeler or a three-wheeler. The motorcycle license is usually an endorsement to the person's automobile driver's license. Some states require motorcyclists to take the riding test on a two-wheeled motorcycle, even if the license is for a sidecarist. Other states allow a driving exam on the sidecar, similar to an automobile test. A sidecarist intending to take the riding test on their sidecar outfit should make a specific request of the license examining office to determine local regulations.

Some states have mandatory helmet, eye protection and footwear laws which apply to both driver and the passenger in the sidecar. Even where helmets or eye protection are not required by law, we recommend wearing an approved helmet and shatterproof eye protection such as a plastic faceshield or riding goggles. Many states require both the headlight and taillight of the motorcycle to be turned on whenever the outfit is in operation, day or night.

You are advised to contact your state driver licensing office or motor vehicle department to obtain information about current motorcycle laws.

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Chapter 2 (Part 1)

THE URAL

The operating controls for the URAL are described in detail in the Owner's Manual. If you are **not** an experienced motorcyclist, it is important for you to understand the functions of each control and its location on the motorcycle.

If you **are** an experienced motorcyclist, but not familiar with the URAL, take the time to review the URAL controls and familiarize yourself with any that are different from your current machine.

THROTTLE

The engine **throttle** control is the right twist grip on the handlebar. To increase engine power, roll the top of the twistgrip towards you. To reduce power, roll the top of the twistgrip away from you.

CLUTCH LEVER

The **clutch lever** is on the left side of the handlebar. Squeezing the clutch lever disengages the engine from the drive train, as when stopping the motorcycle. Easing out the clutch lever connects the engine gradually to the drive train, as when moving away from a stop.

GEAR SHIFT LEVER

The **gear shift lever** is on the left side of the engine, next to the left footpeg. It has a toe pad at the front and a heel pad at the rear.

Gears are shifted with the left foot.

To shift, press and release the shift lever, which then springs back to a center position. You will have to rotate your heel in towards the motorcycle to do this. An alternative method which you may prefer is to move your foot back and use our toe to step on the rear pedal to shift to higher gears. Try both ways and use the one that with which you're the most comfortable.

To shift to a higher gear, step on the heel pad of the shift lever and then release it.

To shift into lower gears, step on the toe lever and release it.

Each time you press the lever down, the transmission is shifted to the next lower gear.

URAL transmissions have a **reverse** gear. The reverse lever is behind the right footpeg. The transmission must be in neutral before reverse can be engaged.

A green **neutral light** on the instrument cluster shows when the transmission is in neutral or reverse. Neutral is halfway between first and second gears. To help find neutral, watch

the neutral light as you shift.

BRAKES

The URAL has separate front and rear **brakes**. The sidecar wheel brake is linked to the rear motorcycle brake. The front brake lever is on the right handlebar grip, just in front of the throttle. Squeezing the lever applies the front brake, as when bringing the motorcycle to a stop. The rear brake pedal extends forward of the right footpeg. You apply the rear brake with your right foot. Normally, both front and rear brakes are applied together.

Chapter 2 (Part 2)

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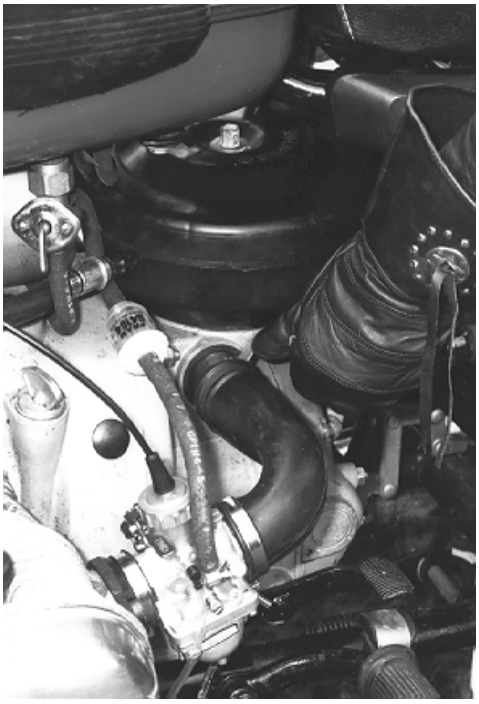
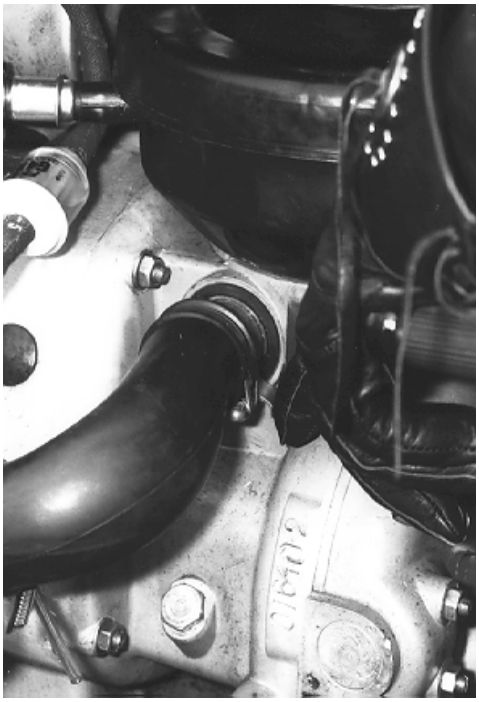
CHAPTER TWO (Part 2)

ENGINE STARTING





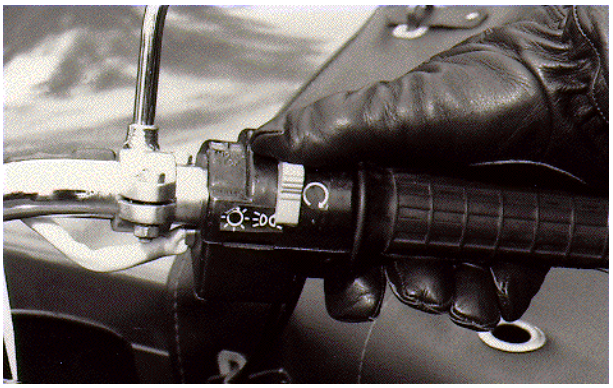
Fuel valve, ignition switch, air shutter, choke, cutoff switch, starter

The >URAL has a starter pedal that is kicked with your foot to turn the engine over. To prepare for starting the engine, first turn on the **fuel valve** under the tank, then turn on the **main ignition switch** which is at the left of the headlight. The switch is on in the first position. Shift the transmission into neutral, check the reverse lever for (forward) position, then release the clutch lever. If the engine has not been run within the last hour or the temperature is cold, the mixture must be enrichened for starting. An **air shutter** on the carburetor inlets adjusts air flow. The Mikuni carburetors also have **choke** levers to aid starting in cold weather. See

the Owner's Manual for the detailed starting procedure.

The engine **cutoff switch** is on the right handlebar grip housing. To start the engine, turn

the cutoff switch to the run position and crank the engine by kicking downward on the **starter pedal**.



To stop the engine, turn the **cutoff switch** to the stop position. It isn't necessary to shift to neutral when stopping the engine. Just squeeze the clutch lever, turn off the cutoff switch and after the engine stops, release the clutch lever. Sidecar outfits are normally parked in first gear to prevent rolling away. Unless lights or horn are needed, turn off the main ignition switch. If the motorcycle will not be run immediately, turn off the fuel valve.

LIGHTING & SIGNALS, HEADLIGHT, STOPLIGHT, TURN INDICATORS, HORN

The >URAL **headlight** and **taillight** are connected to the main ignition switch so that the lights are on whenever the switch is turned on. The headlight has two beams; a **low beam** for normal riding and a **high beam** for night-time riding when there is no traffic approaching. The high/low switch is on the left handlebar grip. A blue **high beam indicator** light in the instrument cluster shows when the headlight is on high beam.

The tail-light also contains a **stoplight** which comes on when the brakes are applied, to warn following traffic. The stoplight is activated automatically when either brake is applied.

Turn signals are activated by a switch on the left handlebar grip.

The **horn** is honked by pressing a button on the left handlebar grip.

PRE-RIDE CHECKS, TIRES, OIL, FUEL

The motorcycle and sidecar should be checked for operable condition before riding it, especially if it has not been ridden for several days. **Tires** should be checked for proper inflation before the motorcycle is driven, while the tires are at ambient temperature. Both motorcycle tires should have minimum tread depth and no obvious damage.

Engine lubricating **oil** should be checked with the dipstick for correct level to ensure there is sufficient oil to maintain lubrication. Engine oil should also be observed for contamination. A very dark color usually indicates the oil is dirty and should be changed. Oils come in different viscosities and service grades for different uses. Refer to your Owner's Manual for the correct oil.

The >URAL has gravity **fuel** feed from the tank down to the engine fuel system. There is no fuel gauge, so fuel must either be checked by opening the tank cap and observing the level or by monitoring mileage. With the **fuel valve** lever in either horizontal position, fuel is shut off. For riding, fuel is on when the valve handle is straight down. As fuel is used, flow will eventually stop with some "reserve" fuel remaining in the bottom of the tank. The **reserve fuel** is only an emergency supply to get you to a nearby fuel station. Turning the fuel valves to the reserve (straight up) position allows the remainder of the fuel to be used. After refueling, most motorcyclists reset the **trip meter** on the odometer. Before the trip meter reaches a mileage at which the tank would reach the reserve level based on previous fuel consumption, the tank is refilled. This technique avoids the need to open the tank to visually determine fuel level.

There is a **steering damper** to control unwanted oscillations of the front end. If steering feels too loose, screw down the large knurled knob just behind the center of the handlebars. If steering is too sluggish, unscrew the knob slightly.

Chapter 3

URAL®
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Chapter 3

BASIC DRIVING SKILLS

THE OPERATOR, MENTAL ATTITUDE

It is important to understand that motorcycles can be dangerous. Any operator of a motorcycle, whether a two-wheeler or a sidecar combination, is exposed to potential risk. While it is not possible to remove all the risks from operating a sidecar outfit, it is possible to reduce the risks by adopting a conservative mental attitude, developing proficient sidecar handling skills and wearing protective riding gear.

One key to accident avoidance is being constantly alert to what's happening on the roadway ahead. Risk reduction starts by thinking of sidecar combinations as serious vehicles requiring knowledge and skill, even if the outfit is only ridden occasionally around the neighborhood. Experienced riders make a habit of constantly searching the road for potential hazards and taking steps to avoid problems before they get too close to take evasive action.

Staying alert to road conditions requires clear thought, so the wise rider avoids drugs that would effect vision, hearing or judgment. Alcohol is commonly implicated in fatal motorcycle accidents. It is very important to avoid drinking before or during a ride. It is also important to avoid riding after taking any drugs that cause disorientation or drowsiness.

Even when a sidecarist does everything right, there is still the potential for an accident. A motorist may not expect a motorcycle or may refuse to yield right-of-way. A sidecarist may be riding at a sensible speed for traffic and yet overturn the outfit in a corner that is banked the wrong way. A deer could leap onto the roadway or rocks might tumble off a gravel truck.

RIDING GEAR

Since there isn't time to put on crash-resistant riding gear just as an accident is happening, the wise sidecarist wears durable riding gear all the time.

The end purpose of riding gear is to protect skin against abrasion and cushion the brain against sudden impacts. But riding gear also provides protection against heat, cold, precipitation, wind, noise and debris. Riding gear must be comfortable if it is to be worn consistently, so style must be secondary to functionality. The primary pieces of riding gear are: jacket, pants, boots, gloves, helmet, eye protection and rain gear.

Leather is an excellent choice for motorcycling gear. Leather is flexible, comfortable, breathable, non-melting and one of the most abrasion-resistant materials available. Jackets, pants and gloves are made in a variety of leathers other than cowhide, with the most durable being goatskin and deerskin being the most flexible. Elk skin makes a comfortable riding glove that retains it's shape and insulative qualities even when wet.

However, leather riding suits are expensive, heavy, difficult to clean and cannot be made

waterproof. Certain man-made fabrics have excellent comfort and abrasion resistance, with much less weight than leather. Fabric suits are washable and available with water-resistant linings and removable abrasion pads at knees, elbows and shoulders. Outdoor garments of cotton, nylon, vinyl, PVC or polyester are generally unsatisfactory as motorcycling gear, due to poor abrasion and heat resistance and lack of important details. A floppy collar that might be fine for hiking can flap viciously against a motorcyclist's neck at highway speed. Cotton jeans are comfortable, but have almost no abrasion resistance. Nylon fabric melts from the heat of friction and burns into the skin.

BOOTS

Special motorcycling boots are available, but usually only in D width. Shin-height "Wellington" style leather boots with a stepped heel are adequate for motorcycling and are available in a wide variety of sizes and widths. Slip-on or zippered boots without buckles or laces are preferable, to avoid the hazards of catching a foot on a motorcycle part while riding. A stepped heel is important to resist slipping off the footpeg. Tall (11 inch or higher) boots help protect the ankles against flying stones, stinging insects and hot exhaust pipes. Composition soles are preferable to smooth leather soles.

GLOVES

Leather gloves are comfortable and abrasion-resistant. There are many different styles of motorcycle gloves available, with features such as gauntlets, zippers, curved fingers, abrasion pads, insulation and waterproof covers. Leather work gloves are adequate for summer sidecaring, but gauntlets are important to keep insects from flying up an open jacket sleeve and to help protect the wrists against sun and wind burn.

HELMETS

A helmet protects the head against wind, rain, heat and cold, but the ultimate purpose is to cushion the brain against sudden shocks during an accident. If a rider is thrown off a motorcycle during an accident, it is possible to slide into a curb or roadside object with a hard edge. It is important to protect the brain, because the brain is a soft tissue that is easily injured by sudden impacts and brain tissue does not heal like other body organs.

A helmet helps reduce the severity of shock to the brain in the event of a sudden impact. The hard external helmet shell serves to hold a crushable liner inside and secures the helmet on the head via a chin strap. The internal foam liner absorbs shock by crushing. Once a helmet has been through an accident, it should be rebuilt with a new crushable liner or replaced with a new helmet.

There are three testing standards for helmets in the United States, the Federal Department Of Transportation (DOT), the American National Standards Institute (ANSI) and the Snell Memorial Foundation (SNELL). Most states have standardized on a DOT approval. The SNELL rating is primarily for racing gear, where higher impact speeds and multiple strikes may occur. A helmet may meet both DOT and SNELL ratings. Helmet specialists generally advise that a DOT rating is sufficient for street motorcycling.

Whatever the standard, it is most important for a helmet to fit the rider's head snugly and for the helmet to not come off in a crash. Different brands of helmets have different internal shapes and different riders have different head shapes. The best method for selecting a helmet is to try on different brands at your >URAL dealer. Be aware that helmets tend to loosen with use. A new helmet should fit snugly enough that a rider can shake his or her head without having the helmet wiggle around. Within a few days of use the helmet will loosen up and be more comfortable.

Helmets with a single chin strap design may not stay on the rider's head during a violent impact. A Y-shaped strap attachment to the helmet shell is superior to a single point attachment, regardless of other helmet features.

Different styles of helmets have more or less head coverage, even though each may meet the minimum DOT standard. The full coverage ("full face") helmet covers all of the head plus the chin. A standard ("3/4" or "open face") helmet covers all of the head but has an open face area. The half ("shorty") helmet covers the head above the ears only. The preferred style of helmet should take into consideration the type of eye protection to be used.

Be aware that there are fake motorcycle helmets available that some riders wear as a protest against mandatory helmet laws. Fake DOT stickers are sometimes applied in an attempt to avoid arrest. Fake helmets do not comply with helmet laws. More importantly, flimsy plastic hats with no internal crushable liner cannot provide even minimal brain protection. Sidecar operators and passengers are encouraged to wear genuine approved helmets.

EYE PROTECTION

Eye protection is important not only because the eyes are easily injured, but because even non-injury debris in the eye may be so distracting that the driver loses control of the outfit. Most states require eye protection, either directly over the eyes or as a windshield mounted to the motorcycle. Eye protection for a motorcyclist should be both shatterproof and windproof. Shatterproof generally means plastic rather than glass. Windproof eye protection helps prevent debris or insects from reaching the eye. Sunglasses with glass lenses are not advised for motorcycling because they are not sufficiently shatterproof. The simplest and cheapest type of eye protection is a flat plastic "competition" shield that snaps around the front of a standard helmet. Full coverage helmets usually include a flip-up shield. A half helmet may not provide adequate mounting for the shield of your choice.

With or without a windshield, many riders prefer a helmet faceshield or goggles that fasten around the helmet with an elastic strap. Sidecarists who must wear prescription eyeglasses should try on faceshields, helmets and goggles to ensure that the gear fits over their glasses without discomfort.

RAINGEAR

Waterproof riding gear is essential for staying dry and therefore retaining body warmth through cold showers. Raingear also protects expensive leather gear from damage. As with other gear, motorcycling is hard on rainwear. The wind blast at highway speed can shred a lightweight rainsuit within a few miles. A hot exhaust pipe can instantly melt thin vinyl or nylon material. And raingear carried unused must survive abrasion and still be waterproof when needed.

There are two styles of raingear to add as a final layer of waterproof protection: one-piece suits and separate jacket/pants. When considering raingear for motorcycle use, try on the rainsuit over your normal riding gear while sitting on the motorcycle. Be certain the rainsuit is large enough to wear comfortably over your normal gear and be long enough in the arms and legs to cover the extremities while you are in a riding position. One-piece rainsuits are more stylish and waterproof, but very hard to wiggle into by the side of the road. Two-piece suits are more bulky, but easier to put on.

As an alternative to carrying separate raingear, some riders prefer fabric riding suits with water-resistant as well as abrasion-resistant qualities. Good riding gear will last for a number of seasons of continuous use. The expense of durable gear should be weighed against the value of comfort as well as the expense of potential injury.

Now that we have covered some of the basics of getting prepared to ride, let's consider how we operate a motorcycle. If you aren't familiar with motorcycle controls, you may find it helpful to refer to the >URAL Owner's Manual as we go through the details. We'll go through this again later, on the motorcycle.

GETTING ON THE MOTORCYCLE

The normal way to climb on a sidecar motorcycle is to grasp both handlebar grips, stand up on the left footpeg and swing the right leg over the saddle. It is also a good habit to squeeze the front brake lever while getting on or off, to prevent the machine from rolling if the transmission is not in gear. After sitting down in the saddle, the smart rider immediately checks the mirrors and adjusts them as needed to be able to see the left rear as well as the right rear behind the sidecar.

STARTING THE ENGINE

To prepare for starting, the key is inserted and the main switch turned on from the first (off)position to the center position. The third position is inactive on North American >URALs. The switch is on when the red generator light comes on. The transmission must be in neutral for starting. Observe the green neutral light on and check that the reverse lever is also in neutral (forward position).

If necessary, shift the transmission into neutral by shifting up to second gear and then nudging the lever halfway down. It may help to roll the outfit forward and back a few inches to allow the transmission to shift. If your >URAL is reluctant to shift into neutral, try shifting down into first gear, then simultaneously stepping on the heel pad while shifting the reverse lever into reverse. Shifting the reverse lever forward again places the transmission in neutral and ready for starting.

Turn on the fuel valve. If the engine hasn't been run for more than an hour or if the weather is cool, close the air shutter to enrich the fuel mixture for starting. If the engine is warm, close the air shutter about halfway. If the temperature is very cold, close the air shutter and also depress both carburetor chokes.

With the transmission in neutral, the main switch on and the fuel valve on, the engine is almost set to start. Turn the handlebar cutoff switch to the run position and spin the engine by pushing the kick-start lever briskly. It is necessary to leave the clutch released, to allow the kick-start gears to spin the engine. The normal position for starting the >URAL engine is standing on the rear footpeg on your right foot and pushing the start lever down with your left foot.

When the engine fires and starts to run, roll on just enough throttle to keep it running but don't rev it over about 2,000 rpm. Immediately open the air shutter more and open the carburetor choke levers if they were used. Let the engine run at a fast idle for a few moments, opening the air shutter all the way as the engine warms up. With familiarity you will learn how much shutter, choke and throttle works best when starting in various temperatures. Swing into the saddle and you are ready to ride away.

RIDING POSTURE

Sit straight in the saddle, with your head and eyes up. Pull your knees in snug against the fuel tank and pull your elbows in close to your jacket. Left fingers cover the clutch lever. ("Cover" means in a position to use the control, but not yet squeezing or pushing.) Your left foot should be on the footpeg, covering the shift lever. Your right foot should be on the footpeg, covering the rear brake pedal. With a sidecar outfit, you don't need to support the machine with your feet while stopped, so you keep your feet on the pegs.

CLUTCH SLIPPING

To get the outfit rolling from a stop, it is necessary to let the clutch slip for a few feet as the engine starts to pull. Hold the front brake on, squeeze the clutch lever all the way in and shift down into first gear. Release the brake, roll on the throttle slightly and slowly ease out the clutch lever to the point where the engine begins to pull the outfit forward. Keep the clutch squeezed slightly, gradually roll on a little more throttle and then ease out the clutch all the way as the rig begins to move. If the engine stalls, you need to ease out the clutch more gently and roll on a little more throttle.

TURNING TECHNIQUE

When you need to turn, reduce speed by rolling off the throttle. Turn your head, look in the direction you want to go and point the front wheel towards the turn. If you have no prior motorcycle experience, making turns will be intuitively obvious.

Special note for experienced motorcyclists:

If you are an experienced two-wheeled motorcyclist, steering a three-wheeler may be difficult at first. Remember that two-wheelers are balanced and steered by "countersteering". That is, to initiate a left turn, the rider of a two-wheeler first leans the bike over by pushing on the left grip. But rigid three wheelers don't lean into turns, so the habit of countersteering or "push steering" turns a sidecar outfit the wrong way. So long as all three wheels remain in contact with the ground, the front wheel of a sidecar outfit is immediately pointed towards the direction you want to go. To put this another way, two-wheelers steer backwards from sidecar rigs. You may need to unlearn some two-wheeler habits.

Since sidecar outfits are not symmetrical, the technique for left turns is somewhat different from right turns. The outfit won't lean into the turn like a "solo" bike, but instead rolls slightly towards the outside of the turn like an automobile. The sidecar driver compensates by leaning body weight towards the turn and by applying extra force to the handlebars.

Sidecar outfits with single-wheel-drive tend to veer towards the right when speeding up and veer left when slowing down, because the driving and braking forces are not centered on the rig. The driver must compensate for this veering or "yawing" tendency by adjusting pressure on the handlebars to keep the machine pointed in the right direction. Outfits with dual wheel drive, such as the >URAL Sportsman, have less tendency to veer, because the driving force is divided between the rear wheel and sidecar wheel.

Chapter 3 (Part 2)

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Chapter 3 (Part 2)

SHIFTING

As you increase speed, the engine turns faster. It is necessary to shift to higher gears to keep the engine from over-revving. To shift gears, roll off the throttle, simultaneously squeeze the clutch lever and step down firmly on the heel pad. Ease out the clutch lever, adjust the throttle and release pressure on the heel pad. The transmission shifts up or down one gear at a time.

When you are slowing down, it is necessary to shift to lower gears to keep the engine from lugging and stalling. Roll off the throttle, squeeze the clutch lever and step down firmly on the toe of the shift lever. Roll on the throttle slightly as you ease out the clutch lever, then release pressure on the shift lever. If you are planning to come to a complete stop, just keep the clutch squeezed and downshift through all the gears one after the other as the machine slows down. It is better to shift all the way down to first gear or neutral before the machine comes to a stop, so that the transmission gears are still turning while being shifted.

With experience, you will soon learn to match engine speed to transmission gear so that the engine is always in the right RPM range; never over-revving or lugging. Experienced riders "blip" the throttle when downshifting to match engine revs to bike speed to smooth the shift. It is normal to hear a "clunk" as the transmission shifts from one gear to the next.

To back up, stop, in either low gear or neutral and continue to squeeze the clutch. Reach down and push the reverse lever back with your right hand or right heel. As you ease out the clutch the outfit will go backwards. **WARNING: Back up very slowly as the outfit can become unstable at excessive speeds.** Pull the lever forward again to put the transmission in neutral.

STOPPING

Roll off the throttle, squeeze the clutch lever and apply both brakes. Continue to keep your head up and look forward to where you want to stop. Remember to downshift through all the gears before the machine comes to a stop. Keep both of your feet on the pegs when stopped.

PARKING THE OUTFIT

Stop the engine with the cutoff switch and wait for it to stop. Release the clutch lever and then turn off the main switch. If the outfit won't be run for more than a few minutes, also shut off the fuel valve.

When parking a sidecar outfit, it is important to keep it from rolling away. As a general rule, always park with the transmission in either first gear or reverse. The easiest way to be sure the transmission is in gear is to try rolling the outfit forward and back with the clutch released. If it is in gear, it will only roll an inch or two. The >URAL also has a parking brake. It is the triangular knob located above the right foot peg behind the reverse

lever. Push down on the rear brake pedal, then push down the knob and turn it counterclockwise 90 degrees to lock the brake. It is important to engage the parking brake whenever parking on hills.

SUGGESTIONS FOR RIDING PRACTICE

Now that we have gained some familiarity with motorcycle controls, it's time to practice some exercises on the outfit. The following riding exercises are designed to build sidecar operating skills progressively, assuming no prior motorcycle or sidecar experience. Even if you already know how to ride a motorcycle, you are encouraged to go through each sidecar exercise, however briefly. If you are a novice motorcyclist, take the time to master each exercise before moving on to the next. If you have difficulty with any subsequent exercise, go back and practice the previous exercise some more.

If at all possible, you are advised to practice riding under supervision of an instructor or at least an experienced sidecarist. For the driving practice exercises you will need a flat area of approximately 100 x 200 feet, clear of obstructions. The range layout is diagrammed in the back of this manual. A smooth paved parking lot free of curbs, poles or other vehicles is ideal. Any level surface is acceptable, including a grassy field. It helps to have some small traffic cones or other markers to lay out the exercises. Brightly-colored tennis balls cut in half make excellent markers. Whatever you use to mark the exercises, we will refer to all course markers as "cones".

Be aware that the exercises quickly progress in skill and speed. It is possible for you to make a mistake during the process of learning and have an accident. You are encouraged to wear the recommended riding gear whenever driving the outfit, even during slow speed exercises.

Chapter 3 Excerises

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Chapter 3 - Exercises

Exercise 1

FAMILIARIZING YOURSELF WITH THE OUTFIT

In this exercise, you will sit on the stationary outfit, locate and operate all the controls, and familiarize yourself with the weight and balance of the rig. You won't be riding the outfit yet, so no riding area is needed for this exercise. You may wish to keep your Owner's Manual handy if you don't quite remember where all the controls are located.

Mount the motorcycle

With the engine off, climb aboard, standing on the left footpeg and swinging your right leg over the saddle. Stand up straight to avoid scuffing your right boot across the saddle.

With the handlebars centered, adjust the mirrors. Turn the handlebars full left, then full right, and back to center. Observe the friction of the front tire and the arc of the handlebars. Assure that the handlebars or mirrors do not strike the sidecar windshield or the fuel tank. Adjust the steering damper for modest friction, neither too tight nor too loose.

Identify the following controls:

Parking brake: Press down on the rear brake pedal and set the parking brake. Release the parking brake and reset it.

Throttle: Roll open 1/4 turn, then roll open 1/2 turn, then roll closed. Throttle spring should close throttle when you roll it open and then release it.

Engine cutoff switch: Turn the cutoff switch to the RUN position, and then to the STOP position.

Clutch lever: Squeeze the clutch lever all the way in, then ease out halfway and hold, then

release all the way.

Air shutter: Close the air shutter, open halfway, then open all the way.

Carburetor chokes: Close both carburetor chokes by pushing them down, then open both by pulling levers up.

Fuel valve: Turn the fuel valve to ON, then select RESERVE, then turn off the valve OFF.

Main ignition switch: Turn ON the main switch to the first position, but leave the cutoff switch OFF. Observe the red generator light on and the headlight on.

Horn: Beep the horn three times.

Turn signals: Signal for a left turn, observe the left turn lights blinking, cancel.

Signal a right turn, check turn lights on sidecar, then cancel. Note: It is possible that the

turn signals won’t blink when the engine is not running. If this is the case, check turn signal operation later when the engine is running.

Rear brake: Press the rear brake pedal. Look back to check the red brake light

illuminates bright. Release brake pedal and observe brake light extinguishes.

Front brake: Squeeze and hold the front brake lever, observe brake light illuminates, then release lever.

Shift lever: Squeeze the clutch and shift the transmission to neutral. Observe

the green neutral light. If you have difficulty finding neutral, release the parking brake, dismount, stand alongside the outfit and roll it forward and back a few inches while moving the shift lever with your foot. It may be helpful to shift up to second gear and push down slightly to find neutral. Leave the transmission in neutral and the clutch released, but hold the outfit to prevent it from rolling away. You can now turn off the main ignition switch to conserve your battery.

Reverse lever: With the transmission in low or in neutral, push the reverse lever back firmly until it engages in reverse. Roll the outfit forward and back to check that reverse is engaged. Then pull the reverse lever forward to neutral. The motorcycle should roll freely back and forth. With the transmission in neutral, set the parking brake.

Kick start lever: Check the cutoff switch OFF. Hold both handgrips, stand up on the passenger peg on your right foot, and plant the ball of your left foot on the kick start lever. Push down on the lever gently until you feel resistance, then kick the engine through briskly two or three times, taking care not to strike the driver's footpeg with your toe. Note that the transmission must be in neutral and the clutch lever released to allow the kick starter to crank the engine.

Park the outfit.

Transmission: Squeeze clutch, shift down to first gear, release the clutch lever.

Cutoff switch: Check in STOP position.

Ignition switch: Check switch off, remove key.

Fuel valve: Turn off fuel. (lever horizontal)

With the sidecar empty, grasp both handlebar grips firmly, turn the handlebars full right. Stand on the left footpeg and see if you can lift the sidecar wheel off the ground by swinging yourself briskly away from the motorcycle and pulling on the handlebars.

Observe the weight of the sidecar and the effort required to raise it. If you can, pull the sidecar up in the air until the outfit is almost balanced, then let it drop back on the sidecar wheel. Notice that the sidecar becomes much easier to lift as the motorcycle leans over farther.

Caution: During all of the novice riding exercises, either carry an adult passenger in the sidecar, or carry approximately 100 pounds of ballast in the car. Bags of sand are excellent for ballast because they won't easily slide around.

Chapter 3 Exercise 2

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Chapter 3 - Exercises

Exercise 2

MOVING THE OUTFIT (engine off)

The purpose of this exercise is to be certain you can stop the outfit using the brakes, before you practice starting the engine. You don't need a passenger in the sidecar for this exercise. If you have someone to assist, have them push the outfit forward while you are sitting in the saddle. If you don't have anyone to assist, walk alongside the outfit and push it holding the handlebar grips.

Check the engine cutoff switch STOP, and turn ON the main ignition switch to the first (center) position. Unlock the parking brake. Check the reverse lever in neutral. Squeeze the clutch lever, shift the transmission into neutral, and release the clutch lever. Check the Neutral light ON. Then turn OFF the main ignition switch.

Start the outfit rolling forward for a few feet, then stop it using the brakes. If you have someone pushing you, use both brakes together. Do this several times in a straight line, then turn it around and push it back, stopping several times. If you are pushing the outfit by yourself, use just the front brake to stop it. Take care to avoid hitting your legs with the footpeg or engine cylinder.

Exercise 3

STARTING AND STOPPING THE ENGINE

The purpose of this exercise is to practice starting and stopping the engine. The rig remains stationary, so you don't need any practice area. Starting the engine takes a combination of preparation and kicking technique.

Prepare for starting:

1. Main ignition switch ON.

2. Fuel valve ON.

3. Transmission in NEUTRAL.

4. Reverse lever in NEUTRAL. (forward position)

5. Carburetor chokes down (depending on temperature)

6. Air shutter CLOSED (as required depending upon temperature).

7. Cutoff switch to RUN position.

8. Release parking brake if set.

9. Roll the outfit forward and back to ensure transmission is in neutral.

Start the engine

1. Stand up on the passenger peg and push down briskly on the kick starter to spin the

engine. The engine should start within three or four kicks.

2. Roll on enough throttle to keep the engine running at a fast idle.

Open air shutter lever halfway as soon as the engine starts and lift up chokes if they are on. Then gradually open air shutter fully as engine warms up.

Note: Starting the engine becomes easier as you gain experience. If the temperature is cool or the engine hasn't been run for a while, keep the air shutter closed for three or four kicks. If it doesn't start, it may have become flooded with excess fuel. To clear the fuel, open the air shutter, roll the throttle full open, and kick it through several times. Before attempting to start it again, check that the ignition switch is ON (look for the red generator light), and the cutoff switch is in the RUN position.

Caution: If the outfit begins to pull forward as you push down on the start lever, that means the transmission is still in gear. Be certain the transmission is in neutral for starting.

Stop the engine, park the outfit.

1. Turn the cutoff switch to the stop position to stop the engine.

2. Turn off the main switch and remove key.

3. Close the fuel valve.

4. Shift to first gear.

5. Check transmission in gear by rolling outfit forward and back.

6. Set parking brake.

Exercise 4

LEARNING TO USE THE CLUTCH IN FORWARD AND REVERSE