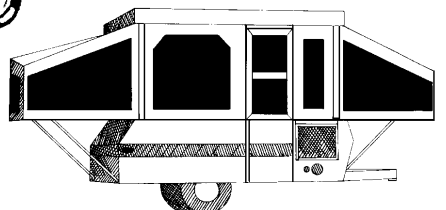
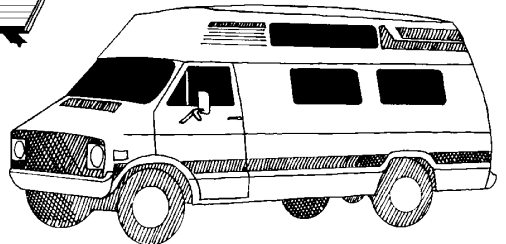
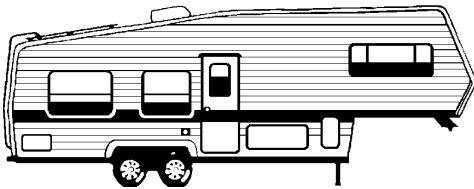
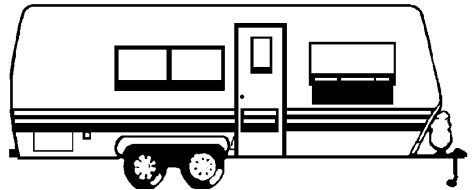
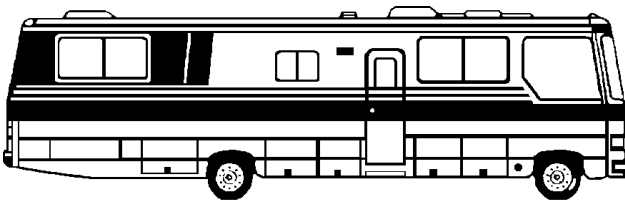


# Recreational Vehicles and Trailers Handbook



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# **PURPOSE OF THIS BOOKLET**

This booklet contains the information needed to qualify for a noncommercial Class A or Class B recreational vehicle trailer endorsement.

This booklet is also a handy reference for people who currently drive recreational vehicles (RVs), pull noncommercial recreational trailers, fifth-wheel trailers including livestock trailers, and motorcycle trailers. It concentrates on the information needed to drive these vehicles safely.

The recreational vehicle is a mobile living experience which more people are discovering. Trailers, motor homes, campers, and van conversions offer a fun way to enjoy your leisure time.

The Department of Motor Vehicles (DMV) is concerned with the safe operation of RVs, recreational trailers, and all other trailers. Most drivers have experience in driving passenger vehicles. However an RV or trailer handles differently. Some of the most noticeable differences are the restricted vision and added braking times. Other differences include bridge heights, buildings with low canopies, space requirement needs, increased following distances, increased turning radiuses, and more space needed for lane changes.

The glossary at the back of this booklet defines terms with which you may not be familiar.

## **Handbooks for Obtaining the Necessary Driver License**

- *California Driver Handbook* which contains basic driver license rules and regulations for safe driving in all situations.
- *Commercial Driver Handbook* which contains the rules and regulations for Class A and Class B commercial vehicles and trailers, multiple trailers, passenger transport vehicles, and commercial Class C vehicles which must be placarded to transport hazardous materials or wastes.
- *California Motorcycle Handbook* which contains rules and regulations for Class M1 and M2 motorcycle operators.
- Various brochures entitled “Fast Facts” or “How To” which provide driver license and registration information for vehicles and trailers.

## **Other Study Materials**

- Owner’s manual for your towing vehicle
- Owner’s manual for your RV or your trailer

# LICENSE CLASSES and REQUIREMENTS

## Noncommercial License Classes:

License classes are based on the size of vehicle you wish to drive or the weight of the trailer you wish to tow. No passenger vehicle, pickup truck, or RV may tow more than one other vehicle without a Commercial Class A license, with endorsement.

You have a...	you may drive...	and you may tow...
Non-com'l Class A license	all vehicles under Class C	<ul style="list-style-type: none"> <li>• any vehicle under Class C.</li> <li>• a travel trailer weighing over 10,000 lbs. GVWR, not used for hire.</li> <li>• a fifth-wheel travel trailer weighing over 15,000 lbs. GVWR, not used for hire.</li> </ul> <p><i>With a vehicle weighing 4,000 lbs. or more unladen, you may tow:</i></p> <ul style="list-style-type: none"> <li>• a livestock trailer over 10,000 lbs. GVWR but not over 15,000 lbs. GVWR if the vehicle is operated by a farmer to transport livestock, not for hire, and within 150 miles of his/her farm.</li> </ul>
Non-com'l Class B	<ul style="list-style-type: none"> <li>• all vehicles under Class C</li> <li>• a housecar over 40 feet but not over 45 feet, with endorsement</li> </ul>	all vehicles under Class C.
Class C	<ul style="list-style-type: none"> <li>• any 2-axle vehicle with a GVWR of 26,000 lbs. or less</li> <li>• any 3-axle vehicle weighing 6,000 lbs. gross or less</li> <li>• any housecar 40 feet and under, in length.</li> </ul>	<ul style="list-style-type: none"> <li>• a single vehicle with a GVWR of 10,000 lbs. or less including a tow dolly, if used.</li> </ul>

*continued on next page*

## Noncommercial License Classes, continued

You have a...	you may drive...	and you may tow...
Class C, continued	A farmer or employee of a farmer may also drive: <ul style="list-style-type: none"> <li>• any combination of vehicles with a GCWR of 26,000 lbs. or less if used exclusively in agricultural operations <b>and</b> it is not for hire or compensation.</li> </ul>	With a vehicle weighing at least 4,000 lbs. or more unladen, you may tow a: <ul style="list-style-type: none"> <li>• trailer coach not exceeding 9,000 lbs. gross.</li> <li>• trailer coach or fifth-wheel travel trailer under 10,000 lbs. GVWR when towing is not for hire.</li> <li>• fifth-wheel travel trailer exceeding 10,000 lbs. but under 15,000 lbs. GVWR, when towing is not for hire and with an endorsement.</li> </ul>
<p><b>NOTE:</b> No passenger vehicle regardless of weight, may tow more than one vehicle. No motor vehicle under 4,000 lbs. unladen may tow any vehicle weighing 6,000 lbs. or more gross. (VC §21715)</p>		
Class M1  Class M2	any 2-wheel motorcycle, motor driven cycle, or a motorized scooter  any motorized bicycle, moped, any bicycle with an attached motor, or a motorized scooter	
<p><b>NOTE:</b> Class M1 or M2 is added to any other class license after passing law and skills tests.</p>		

# NONCOMMERCIAL CLASS A REQUIREMENTS

## Adults:

To obtain an original noncommercial Class A license, you must:

- Complete an application for a driver license (DL 44).
- Pay the application fee.
- Submit a Health Questionnaire (DL 546) dated not more than two years prior to the date of your application.
- Pass the basic Class C law test (unless you qualified for a Class C license within the past 12 months).
- Pass the Noncommercial Class A Vehicles test.
- Pass a vision test.
- Pass a pre-trip inspection test.
- Pass the skills test.
- Pass a driving test towing the type of vehicle you wish to tow.

## Minors:

- Complete the items listed above
- Meet the additional requirements listed in the *California Driver Handbook* in the Provisional License section.

## Examinations:

- **Recreational Vehicles and Noncommercial Class A Trailers Law test.** You must pass the law test based on the information contained in this booklet. You may take the test at any DMV field office. You may make an appointment online at [www.dmv.ca.gov](http://www.dmv.ca.gov) or by calling 1-800-921-1117, DMV's 24/7 voice recognition service.
- **Visual Safety Check.** Before the pre-trip inspection test, you must demonstrate that the turn signals, brake lights, horn, and emergency flashers are working. This is not part of your pre-trip test. If any of these items are not working properly or are missing, your driving test will be postponed.
- **Pre-trip inspection test.** The pre-trip test is a knowledge test. You must identify and explain the features and equipment on the vehicle which should be inspected before operating the vehicle. If your vehicle is equipped with air brakes, you must demonstrate and

explain how the air brake system works. *Inoperable, missing, or unsafe equipment will postpone the driving test.*

- **Skills tests.** Skills tests are designed to demonstrate your skill in stopping, backing in a straight line, completing a right turn around a cone or marker, and backing into a camping space. These tests are done at low speed and test how well you can maneuver the vehicle. You may make an appointment online at [www.dmv.ca.gov](http://www.dmv.ca.gov) or by calling 1-800-921-1117, DMV's 24/7 voice recognition service.
- **Driving test.** The driving test includes entering and exiting a freeway, freeway driving with lane changes, right and left turns into one-way and two-way traffic, railroad crossings, driving on a grade or steep hill, etc. You may make an appointment by calling 1-800-777-0133. Online appointments are not available for driving tests.
- **Health Questionnaire.** A Health Questionnaire (DL 546) form is required and must be given to DMV for review and approval before your license is issued and then every two years after that. The Health Questionnaire expires two years from your signature date. Failure to maintain a valid Health Questionnaire form with DMV will mean that your license is valid only for Class C and, if endorsed, for Class M1 or M2 vehicles. The Health Questionnaire forms are available online at [dmv.ca.gov](http://dmv.ca.gov).

# **PRE-TRIP INSPECTION FOR NONCOMMERCIAL CLASS A**

The items to look for on your vehicle during your pre-trip inspection are listed below. Visually check for and describe how you would check:

- **Lights:** All lights (e.g., high and low beam headlights, turn signals, clearance, identification) must be clean and working.
- **Windshields:** The windshield must be clear and undamaged.
- **Mirrors:** The mirrors must be secure, properly adjusted, and clean.
- **Rims:** The rims cannot be damaged or bent. There should be no welding repairs or rust trails to indicate a rim is loose on the wheel.
- **Tires:** Each tire at every axle must be properly inflated, have evenly worn tread, have no cuts or other damage.
- **Lug Nuts:** All lug nuts must be present, not loose, and have no cracks radiating from lug bolt holes.
- **Brake linings:** The linings (where visible) must not be dangerously thin. Check brake drums and linings for oil, grease, etc.
- **Oil level, coolant level and power steering fluids:** All must be in the safe operating range.
- **Belts:** There should be no cracks.
- **Hoses:** Should not be worn or leaking.
- **Fifth-Wheel Assembly:**
  - Mounting bolts: Cannot be loose or missing.
  - Safety latch: Must be engaged, if equipped.
  - Locking jaws: Must be locked around the trailer kingpin.
  - Platform supporting the skid plat: Cannot be cracked or broken.
  - Release arm: Must be in the engaged position and locked in place.
  - Kingpin: Where visible, cannot be bent.
  - Apron: Where visible, cannot be bent, cracked, or broken.
  - No gap between the trailer and the skid plate.
  - Sliding fifth-wheel: If equipped, has no loose or missing parts in the mechanism, that the locking pins are engaged, and the fifth-wheel is positioned properly so the towing vehicle clears the landing gear.
- **Other Coupling System:**
  - Pin/Ball/Coupler: Must be seated properly in the coupler and locked.

- Equalizing arms: If equipped, must be attached and the chains must be tight.
- Safety chains: Must be in an “X” pattern.
- Breakaway switch: If equipped, must be connected to the first link of the safety chain.
- Air connections: If equipped, must be in good condition and not leaking.
- Electrical connections: Must be seated and locked in place.
- Landing gear: If equipped, must be fully raised and have no missing parts. The handle must be secure and the support frame and landing pads cannot be damaged. Check for air or hydraulic leaks if power operated.
- Frame of trailer: Must have no cracks or bends in longitudinal frame members or cross members.
- **Doors and hinges:** Must not be damaged and open and close properly.
- **Ties:** If equipped with ties, straps, or binders they must be secured.
- **Emergency equipment:** Identify the location of three red reflective triangles and properly charged and rated fire extinguisher.
- **Hydraulic brakes:** Check them by pumping the brake pedal three times and then applying steady pressure for five seconds. The pedal should not move
- **Air Brake System, if equipped.** Demonstrate the following:
  - Air governor cut-out: with the engine running and air gauge rising demonstrate that air pressure gauge will not rise above 130 psi by allowing the gauge to rise to its maximum pressure.
  - Air governor cut-in: with engine running and air gauge static demonstrate that the governor will cut-in no lower than 85 psi by depleting the air supply (pumping the brake pedal) to the point that the gauge will begin rising.
  - Air leakage: when air pressure is in the compressor’s operating range (85-130 psi), shut off the engine and release all air-operated parking brakes. Press down on the brake pedal and when the gauge stabilizes, begin timing for one minute. A single vehicle should not lose more than 3 psi and a combination vehicle should not lose more than 4 psi from the stabilized air pressure reading in that minute.
  - Low air warning device: deplete the air supply (pump the brake pedal) and check that the low-air warning light, buzzer or both engages between 55-75 psi.

# **NONCOMMERCIAL CLASS B (45' Housecar) ENDORSEMENT REQUIREMENTS**

## **Adults:**

To obtain an original noncommercial Class B license, you must:

- Complete an application for a driver license (DL 44).
- Pay the application fee.
- Submit a Physician's Health Report (DL 546A) signed by your physician dated not more than two years prior to the date of your application.
- Pass the basic Class C law test (unless you qualified for a Class C license within the past 12 months).
- Pass the Driver's Examination for 45' Housecar test.
- Pass a vision test.
- Perform a vehicle safety check. (See below)
- Pass a skills test.
- Pass a driving test.

## **Minors:**

- Complete the items listed above.
- Meet the additional requirements listed in the *California Driver Handbook* in the Provisional License section.

## **Examinations:**

- **Recreational Vehicles and Noncommercial Class A Trailers Law test.** You must pass the law test based on the information contained in this booklet. You may take the test at any DMV field office. You may make an appointment online at [www.dmv.ca.gov](http://www.dmv.ca.gov) or by calling 1-800-921-1117, DMV's 24/7 voice recognition service.
- **Vehicle safety check.** The DMV examiner will assist you in checking the proper operation of your vehicle's turn signals, brake lights, horn, emergency flashers, and brake system. Inoperative, missing, or unsafe equipment will result in postponing the driving test.
- **Skills tests.** Skills tests are designed to demonstrate your skill in stopping, backing in a straight line, completing a right turn around a cone or marker, and backing into a camping space. You may make an appointment online at [www.dmv.ca.gov](http://www.dmv.ca.gov) or by calling 1-800-921-1117, DMV's 24/7 voice recognition service.

- **Driving test.** The driving test includes entering and exiting a freeway, freeway driving with lane changes, right and left turns into one-way and two-way traffic, railroad crossings, driving on a grade or steep hill, etc. You may make an appointment by calling 1-800-777-0133. Online appointments are not available for driving tests.
- **Physician's Health Report.** A Physician's Health Report (DL 546A) form signed by your physician is required and must be given to DMV for review and approval before your license is issued and then every two years after that. The Health Report expires two years from the examination date. Failure to maintain a valid Health Report form with DMV will mean that your license is valid only for Class C and, if endorsed, for Class M1 or M2 vehicles. The Health Report forms are available online at [dmv.ca.gov](http://dmv.ca.gov).

### **45' Housecar Endorsement Exemptions**

The following license classes are exempt from the 45' housecar endorsement requirement:

- Commercial Classes A and B
- Noncommercial Class A
- All fire fighter license classes

### **45' Housecar with Air Brakes**

You are **not** required to pass an air brake law test or to perform an air brake system check if your housecar is equipped with air brakes. You will be asked to perform a Vehicle Safety Check which the DMV examiner will help you.

### **45' Housecar Endorsement Refusal**

If you cannot pass the 45' housecar driving test because of lack of skill you will be denied the 45' housecar endorsement. You may request a hearing if you are denied this endorsement. Ask the DMV employee to send a request to the Driver Safety Actions unit in Sacramento. You will then be sent a letter advising you of your hearing rights.

## ***Driving Test Sites***

Call 1-800-777-0133 to make an appointment for your Noncommercial Class A or Class B driving test at any of the following offices:

Arleta	Salinas
Bakersfield	San Bernardino CDL Driving Test Center
Bishop	San Luis Obispo
Capitola	Santa Barbara
Compton	Santa Maria
Culver City	Santa Rosa
El Centro	Santa Teresa
Escondido CDL Driving Test Center	Spring Valley
Eureka	Stockton
Fremont	Torrance
Fresno	Ukiah
Fullerton	Vallejo
Hemet	Ventura
Lancaster	Visalia
Modesto	West Sacramento CDL Driving Test Center
Montebello	Yuba City
Oakland-Coliseum	
Redding	

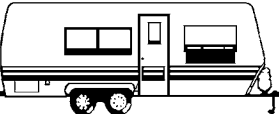



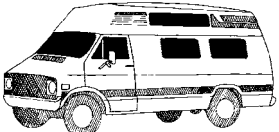

# **RECREATIONAL TRAILER ENDORSEMENT**

A driver must have a fifth-wheel recreational trailer endorsement added to his/her Class C driver license to pull a fifth-wheel recreational trailer over 10,000 lbs., but not over 15,000 lbs. GVWR, which is not used for hire. This endorsement is not required if the driver has a Class A or Noncommercial Class A driver license.

- There is no fee unless your license expires within six months.
- You will take a law test for a noncommercial Class A license based on the information contained in this booklet. You must also pass the Class C law test unless you qualified for a Class C license within the past twelve months.
- You are **not** required to submit a Health Questionnaire.
- You are **not** required to take a driving test to add a Recreational Trailer endorsement to your current license.
- No other tests are required.

# TYPES OF RECREATIONAL VEHICLES

There are several types of recreational vehicles (RVs) and trailers which offer living accommodations in a mobile setting. Any of the following types of vehicles may be operated with the class of license described in the License Chart on pages 2 and 3.

Type of vehicle	Explanation
	<p>Conventional—these vary in size from 13 to 35 feet. Most can be towed with a small size vehicle. A larger model may require a heavier pickup or van as the towing vehicle.</p>
	<p>Fifth-wheel—is coupled to the towing vehicle (usually a pickup truck) with a hitch centered over the vehicle's rear axle. Fifth-wheels vary in length from 17 to 40 feet.</p>
	<p>Folding Camping Trailer—has collapsible sides that are folded down for compact travel and unfolded at a campsite. Most can be towed by an average size vehicle.</p>
	<p>Motor home—divided into two types. The larger one is built on a truck chassis with a gasoline or diesel engine and is capable of traveling long distances due to a large fuel capacity. The smaller or mini-motor home is built on a modified van chassis and usually has a section that overhangs the cab.</p>
	<p>Van Camper and Conversion—van camper is equipped with most of the amenities found in motor homes, but bed size and space to maneuver are limited. Vehicles usually have a raised roof for additional headroom. A van conversion normally has a bed, dinette, sink, and a small water supply but is not as fully equipped for camping as a van camper.</p>
	<p>Truck Camper—a detachable section designed to be transported on a pickup truck. The larger varieties may require trucks with dual-rear wheels. Also called pickup camper or cab over camper.</p>

# **EQUIPMENT AND OPERATING CONTROLS FOR ALL DRIVERS**

Safe operation of your vehicle depends on your familiarity with the vehicle. Take the time to learn from the dealer or seller how each system works and study your owner's manual.

## **Headlight Use**

You must turn on your headlights from a half hour after sunset to a half hour before sunrise or if snow, rain, fog, or other hazardous weather condition requires the continuous use of windshield wipers, or when visibility is not sufficient to clearly see a person or a vehicle for a distance of 1,000 feet.

No vehicle may be driven with only parking lights on. However, parking lights may be used as signals or when the headlamps are also lighted.

## **Tires and Wheels**

Tires on your vehicle must be of the proper size and correctly inflated for the load you are carrying. All tires on the vehicle should be of the same size, type, and construction. Check tire pressure when the tires are cold. Underinflation reduces fuel economy and load carrying capacity. It may also cause control problems and can result in overheated tires and blowouts. Overinflation increases tire wear, affects handling, and can also result in blowouts. Make sure dual tires do not touch.

Tire fires, which can be caused by running on a flat tire, are a danger on vehicles equipped with dual tires. Tire fires are very difficult to put out, so inspect your tires frequently.

Wheels must be compatible with tires and should be replaced if bent, heavily rusted, cause air leaks, or if wheel fasteners continually loosen. Improperly balanced wheel/tire combinations will cause excessive vibrations, tire wear, and possible damage to your vehicle.

## **Exhaust System**

Exhaust gases are deadly because they contain carbon monoxide. Any time you suspect that exhaust fumes are entering the passenger compartment, determine the cause and have it corrected as soon as possible. Rear doors and rear windows should be closed tightly while driving to avoid drawing exhaust gases into the vehicle.

## **Mirrors**

The most notable difference to first time RV buyers or renters is the need to use side-mounted mirrors for rear vision. Backing an RV may also be a new experience. It may appear difficult, but a little practice will help you become competent when backing the RV, especially if you are towing a trailer. (See Trailer Backing on page 35.)

A left- and right-hand outside mirror are required on the towing vehicle if the RV or trailer obstructs the driver's rear vision. Make sure the mirrors are large enough and that they are positioned for vision at least 200 feet to the rear of the vehicle. You need the mirrors to do more than back the vehicle. Check your mirrors frequently for traffic conditions behind you so you can avoid last minute maneuvers and surprises. Side mirrors should be as large as practical, with a separate convex mirror mounted below. Mount the mirrors as wide apart as possible for maximum rear vision and easy backing. Trailer towing mirrors should be adjusted so that the inside edge of the mirror is further out than the outside edge of the trailer. The RV or trailer's rear wheels should be visible in the convex mirrors to check for correct tracking. (See Turning Patterns on page 15.)

Use your mirrors to get a good idea of the size of your vehicle. Larger vehicles need more space to turn without running over curbs or sideswiping stationary objects. You can gain valuable experience by practicing on a residential street or in an empty parking lot.

## **Rear-Looking TV Systems**

Some housecars and motorhomes are equipped with rear-looking closed circuit television systems to help you back your vehicle. The closed circuit TV system should be used in conjunction with your mirrors. The more you practice using the closed circuit TV system for backing your vehicle, the more proficient you will be.

# **DEFENSIVE DRIVING TECHNIQUES FOR ALL DRIVERS**

Defensive driving requires all drivers to think ahead. This is even more important for RV drivers than for drivers of passenger vehicles. The RV driver must be continually aware of the traffic around the vehicle because directional changes are slower and the RV needs more space in traffic. Try to avoid roads during rush hour traffic. If you are driving in unfamiliar areas, ask someone (possibly one of your passengers) to help you with directions and always have a map of the area. If you are driving by yourself, always pull off the road at a safe place and stop the vehicle before looking at a map.

## **Be Prepared**

Listen to the local radio stations where you are traveling. Be aware of traffic slow downs, accidents, or road construction, etc. If you are prepared and have a map, you will be able to take alternative routes.

## **Starting and Shifting**

Always try to start and shift (for manual transmissions) smoothly to prevent wear and tear on the hitch and transmission systems.

## **Turning Patterns**

Longer wheel bases make it necessary to change your turning patterns. You must turn wider at intersections or the rear wheel may roll over the curb. Go further into the intersection before starting the turn and adjust your lane position to increase the turning radius.

Curves in the highway can also be tricky. Stay more to the center of the lane for right turns so the rear wheels will not move off the pavement. For a left turn or curve, stay more to the right of the lane to prevent the back of the trailer from tracking into the oncoming lane of traffic.

Recreational vehicles and some trailers have a high center of gravity, so turning corners and taking curves must be done at slower speeds to prevent swaying. Slowdown before you enter the curve.

If you transport livestock, be careful because they can move around in a trailer. This shifts the center of gravity and makes a rollover more likely. With less than a full load of livestock, use barriers to keep the

livestock together. Even then, be very careful in curves. Livestock will also lean in the curve and this could cause a rollover if you are driving too fast.

## **Winds**

If you are driving in areas with strong winds, take special care. Crosswinds are the greatest threat because they can push a large motor home or a vehicle and trailer combination into another lane if you are not prepared. This is especially true for travel trailers. In most cases, going slower is the best defense against strong winds. If you are towing a trailer, you should gradually apply the trailer brakes to help control a swaying trailer. Headwinds require a heavier throttle to maintain usual speeds. You may be able to control an RV in strong winds, but the safest thing to do would be to pull over and wait it out. If you anticipate driving in very windy areas, call and obtain local weather and road conditions. Good sources of weather information are local airports, highway patrols, state police, or ranger stations. Often, you will see signs along the highway which show radio frequencies for weather information.

## **Snow**

Always carry drive wheel and trailer wheel chains when you travel in snow country. Know how to put them on. Chains are needed for both the tow vehicle and for one axle of a trailer. If you have a motor home with dual-rear wheels, you will need chains for one tire on each side.

## **Ice**

If you are towing a trailer on icy roads, go slowly, especially downhill. Use the lower gears. You may be able to gain additional traction for the tow vehicle by moderately releasing the tension of the load equalizing hitch. Always readjust the hitch after the icy road condition has passed or vehicle stability may be affected during normal driving conditions.

## **Mountain Roads**

Will your vehicle make it up the grade? Almost all grades, regardless of severity, will cause you to slow down. Any grade steeper than six percent is considered extreme and requires special attention. The

steeper the grade or the longer the grade and/or the heavier the load, the more you will have to use lower gears to climb hills or mountains.

When going down steep hills, gravity will tend to speed you up. You must select an appropriate safe speed, then use a low gear and enough braking power to hold you back without letting the brakes get too hot. Use the braking effect of the engine (lower gears) as the principal way of controlling your speed. Save your brakes so you will be able to slow or stop as required by road and traffic conditions. Slow the vehicle and shift the transmission to a low gear *before* starting down a grade.

**Remember:** The use of brakes on a long and/or steep downgrade is only a supplement to the braking effect of the engine. Once the vehicle is in the proper low gear, the following is a proper braking technique:

1. Apply the brakes just hard enough to feel a definite slowdown.
2. When your speed has been reduced to approximately five mph below your “safe” speed, release the brakes. (This brake application should last for about three seconds.)
3. When your speed has increased to your “safe” speed, repeat steps 1 and 2.

Do not drive in the fast lanes on a multiple-lane grade. Stay in the far right lane while climbing a steep grade if your RV or trailer will not maintain the legal speed limit. It would be better to drop to a lower gear and slow down rather than pass slow trucks and tie up the faster lanes because you don’t have enough power.

## **Narrow Roads**

Special “turnout” areas are sometimes marked on two-lane roads. You may pull into these areas and allow vehicles behind you to pass. Other two-lane roads sometimes have a passing lane. When you drive a slow-moving vehicle on a two-lane highway or road where passing is unsafe, and five or more vehicles are following you, pull to the side of the road wherever you can safely do so to let the vehicles pass.

Try to stay to the right of the lane so the vehicles behind you can see ahead. Remember to pull off the road when it is safe and allow the faster vehicles to pass.

## Escape Ramps

Escape ramps have been built on many steep mountain grades, and are used to stop runaway vehicles safely without injuring drivers and passengers. Escape ramps use a long bed of loose, soft material (pea gravel or sand) to slow a runaway vehicle, sometimes in combination with an upgrade.

Know where escape ramps are located on your route. Signs show drivers where ramps are located.

## Road Signs

Pay attention to road signs that warn against travel by vehicles towing trailers. If you missed the sign that warned of a “Dead end” ahead, would you be able to turn your vehicle around? What was the weight limit for the bridge ahead? Did you notice the height clearance for the overpass? You may not notice this type of sign because you’ve never had to worry about them in your passenger vehicle. *You will have to worry about them in your RV.*

## Freeway Driving

You will have slower acceleration when you enter a freeway, so you will need more space. Remember that freeway traffic has the right-of-way, so you must look for gaps large enough to accommodate your vehicle(s). You also need more space when passing other vehicles. Judging how much space you will need takes practice. If you don’t allow enough space and time to complete the pass, you may need to swerve quickly into another lane. This could result in a skid, oversteering, sway, or a fishtailing trailer.

Following distances must also be increased because you cannot slow down and stop your vehicle quickly. When you want to exit a freeway, slow down sooner than you would for a smaller vehicle. Be aware that many off ramps have reducing radius curves (the curve continually tightens). You will need to stay to the outside of the curve so the rear wheels will not rub the curb or drop off the pavement.

By law (VC §22406), vehicles towing trailers must stay in the right hand traffic lane or as close as possible to the right edge or curb. If you drive on a divided highway with four or more traffic lanes in the same direction or where a specific lane or lanes have not been designated, you can drive in the lane just to the left of the right hand traffic lane. When overtaking or passing another vehicle going in the same direction, you

must use either: (1) the designated lane, (2) the lane just to the left of the right-hand lane, or (3) the right-hand traffic lane when use of that lane is permitted.

## **Dirt or Unpaved Roads**

Many times the only road into the campground is a dirt or gravel road. If you have consulted a campground directory (available at bookstores or libraries and frequently online) you will know if a certain road is suitable for your vehicle. Pay close attention to the signs posted and believe them. If a sign prohibits trailers, don't use that road. There may be a hazard such as rocks, low trees, or washed-out sections of the road ahead that only a four-wheel drive vehicle can handle safely.

## **Traveling on a Holiday**

Proper planning can help reduce much of the holiday traffic congestion. Many campsites accept reservations. Since roads leading to many popular attractions will be crowded, you may want to plan on a different route. If you haven't made reservations, remember that private and public camp grounds fill early in the day and it is a good idea to stop early in the day. Get a good rest before starting again the next day.

## **Fatigue**

Driving is not as easy as it appears. Break up your driving time by taking a 15- to 30-minute stretch every two to three hours. Get out of your vehicle and walk around. This will help to loosen tired muscles and rest tired eyes. Use this time to inspect your vehicle. It will also improve your alertness.

**Remember:** Night driving can be especially hazardous since the body naturally wants to sleep at night. Most drivers are less alert at night, especially after midnight. If you are sleepy, the only safe cure is to get off the road and get some sleep. If you don't, you risk your life and the lives of others.

# **LOADING/OVERLOADING INFORMATION FOR RVs AND TRAILERS**

It is almost impossible to overload a passenger vehicle because space tends to limit the amount of weight. You can't take your child's six friends to the baseball game if you are taking all of the team's Little League equipment in the back seat. Space, not weight, is the main concern.

Now you have an RV. The RV is heavier and is capable of being overloaded. Also the storage capacity in most RVs offers any number of possibilities for improper weight distribution. Loading your supplies can have a major impact on how the vehicle handles, as well as on the durability of your tires. The results of overloading can be serious. Passenger safety is at stake. Problems such as tire failure and/or poor handling can leave the driver with inadequate ability to control the vehicle during emergency maneuvers.

## **Load Ratings for RVs**

RV manufacturers provide load ratings on certification tags at various points inside or outside the RV. The certification tags are usually placed as follows (if you can't locate the sticker, check with your dealer):

- Motor homes: on door edge/pillar, or near the driver's position in the interior.
- Pickup/Camper: on back exterior wall.
- Travel Trailers: on front left-side exterior wall.
- Tow Vehicles: on driver's side door frame.

To weigh your RV, a level, commercial platform scale is needed to obtain five weights (look in the yellow pages of your local telephone directory under "Scales—Public Weighers"):

- The entire vehicle with all wheels on the scale.
- Front axle with only the front wheels parked on the scale.
- Rear axle with only the rear wheels parked on the scale.
- Left side with only the left front and back wheels on the scale.
- Right side with only the right front and back wheels on the scale.

Springs, wheels, axles, and tires are all affected by overloading. Tire failure can be disastrous in an RV, especially at high speeds. Be very careful and pay close attention to the inflation pressures stamped on the side of the tire.

Distribute weight as equally as possible on the left and right side of your RV. The need for this will be clear when turning and maneuvering your RV in traffic.

Pickups with campers present another type of weight distribution problem. The camper is added to the truck as cargo, rather than being built on its own chassis or being towed. GVWR and GAWR listings still apply. The manufacturers are also required to tell you the weight distribution limits, or “center of gravity zones” which are listed in truck and camper owner’s manuals. The main focus in balancing a camper is to be sure the weight of the camper does not create a tailheavy or topeavy vehicle and cause stability problems.

### **Loading a Motorcycle Trailer**

The biggest problem with towing a motorcycle trailer is loading it so there is equal weight on each wheel. The less unused space in your trailer, the less load shifting problems you will have. If you carry an ice chest inside the trailer, be sure to pack it over the axle. If you carry the ice chest on the trailer tongue, load it at the same time you load the trailer to obtain the proper tongue weight. Remember to readjust the weight as you use the contents of the ice chest to maintain proper tongue weight. Loading your motorcycle saddle bags will also assist with traction and handling when towing a motorcycle trailer.

Pack frequently needed items at the top of the trailer or last. Never overload the trailer beyond the GVWR.

# **HANDLING EMERGENCIES INFORMATION FOR ALL DRIVERS**

All drivers are placed in emergency situations at some point in their driving careers. Although you can't avoid emergency situations, you can give some thought to them so you can be mentally prepared. If you think about a certain emergency situation and decide how you would handle that emergency, you will be better prepared to react properly if it really happens.

## **Accidents**

Good defensive driving techniques will help you from becoming involved in accidents. One important technique is to keep a three-second or more following distance from the vehicle ahead of you. Keeping your distance gives you time to react and avoid an accident. Refer to the *California Driver Handbook* for information on three-second following distances.

## **Plan Your Escape**

To avoid successfully an accident situation, you need to plan your escape. As a defensive driver you have already prepared for this by maintaining a space cushion around your RV which you will need to avoid an emergency. Glance at the shoulder of the road. Does it look firm enough and wide enough to support your vehicle? Is your vehicle well maintained so that you don't have to worry about unexpected mechanical problems? Remember to make gentle steering movements.

## **Signal Your Intentions**

Always use your vehicle's mechanical signals when you move through or out of traffic. In an emergency, and once you are on the side of the road, use emergency flashers, flares, or some other emergency signaling device to warn oncoming traffic. Emergency signaling devices are even more important if you are unable to pull completely away from the flow of traffic or you are on the top of a hill or around a curve in the road and other drivers cannot see you.

If you have a flat tire, make sure the person who changes the tire is not in the way of oncoming traffic. If a narrow shoulder does not permit the vehicle to be parked far enough away from traffic flow, proper use of emergency signaling devices and a person flagging traffic away from

the scene are important safety precautions. Be sure the jack is adequate to lift the vehicle and that wheels are blocked.

## **Fires**

All recreational vehicles must carry at least one dry chemical or carbon dioxide (CO<sub>2</sub>) type extinguisher in working condition with a rating of at least 4-B. The most effective fire extinguishers use halon gas and are good investments for RV safety. It can keep a small, manageable fire from becoming a major, uncontrollable fire.

The best fire protection includes:

- proper maintenance and inspection of fuel systems and electrical equipment,
- the use of a smoke detector, and
- an LP gas detector.

Make sure the fire extinguisher is suitable for the type of fire and it is large enough to put out the fire. If you have a fuel or electrical fire, first try to shut off the source of the fuel. Turn off the fuel valves and unplug the electrical circuits. If you aren't sure, shut off everything. All family members should be able to put out a small gas or oil fire with the extinguisher.

The most common extinguisher is a 2 1/2 lb. ABC which is suitable for all types of fires, including fuel fires and electrical fires. There is no substitute for the correct type of fire extinguisher. The letter designates the type of fire suitability:

- A—ordinary materials like wood and paper
- B—petroleum products such as gasoline, propane kerosene
- C—electrical

Be sure to recharge the extinguisher after it is used, even if it is not totally empty. Conventional CO<sub>2</sub> extinguishers should be recharged periodically even if they are not used. The dry powder used in CO<sub>2</sub> extinguishers tends to compact with road vibration. Before using it, rap the CO<sub>2</sub> extinguisher sharply on its side and bottom to shake the powder loose.

Put the extinguishers where fires are more likely to occur and where they can be easily reached. For example, with a tow vehicle and travel trailer, you should have one in the tow vehicle and another near the kitchen in the trailer.

## Fuels

RVs normally carry two types of fuels: gasoline and propane. Some RVs use diesel and propane. Very few do not have propane aboard.

Propane is no more dangerous to use than gasoline. Either fuel, if mishandled, can cause disaster. Propane vapor is as explosive as gasoline vapor. When propane leaks from one of the lines inside an RV, it can build up in volume to the point where it may explode. Leaking gasoline can also cause an explosion if its vapor collects in a closed area. Of course, a source of ignition must be present to set it off. In any case, both fuels deserve healthy respect. Knowledge and preventive maintenance are the keys to safety.

Make frequent inspections of your RV's fuel systems. Look closely to see if lines are rubbing against sharp edges of the vehicle. Is the neoprene (synthetic rubberlike plastic) gasoline line cracking because it is old? Is the carburetor starting to leak? Did you recently check the joints in the propane lines with soapy water? (Soap bubbles will indicate a leak.)

If your vehicle is equipped with a liquefied petroleum gas or natural gas tank in a hard-to-see area of the vehicle, it must be identified by the letters "CNG," "LNG," or "LPG" one inch high or larger. The letters must be placed in a visible spot as near the tank as possible.

### Overfilled Propane Tanks

A common hazard with propane is inexperienced service personnel overfilling propane tanks. All propane tanks are designed to be filled only to the 80 percent level, which allows the fuel to expand in warm or hot weather (outage). If the tank is filled beyond the 80 percent level, expansion during warm or hot weather may cause the tank's relief valve to leak the excess pressure into the air. A source of ignition near the tank could cause a fire. The 80 percent valve on the tank indicates proper filling. Propane flow into the tank should stop immediately when white vapor begins to appear from the valve.

# **DRIVING YOUR RV SAFELY**

It's fun traveling with your home as you explore the different regions of the country. However, it can be dangerous if you are not familiar with the differences that the weight, size, and visibility demands of your RV driving. The transition from driving the family car to driving an RV is different, but not necessarily difficult. The points discussed below will help you to be a safe RV driver.

## **RV Heights**

Most RVs are taller than passenger vehicles so you will need to learn quickly about road clearances, service station canopies, bridge heights, and to watch for low hanging obstacles such as tree branches. Your owner's manual, your RV dealer, or the RV manufacturer are the best sources for helping you determine the maximum road height for your RV. Once you know, post the height somewhere on the RV or in the tow vehicle so it will always be handy as a reference.

## **RV Lengths**

Many highways either restrict or recommend non-use for vehicles over a certain length. Vehicle Code §35400 restricts the operation of housecars over 40 feet only on specified highways and within one mile of either side of those highways for access to fuel, food, or lodging. These highways include, but are not always limited to, the National System of Interstate and Defense Highways and all state routes. For exceptions to this list, visit the Caltrans website at: [dot.ca.gov](http://dot.ca.gov).

## **Maneuvering the RV**

The additional weight and size (length) of an RV makes it less maneuverable than a passenger vehicle. A safe maneuver in your family car may be dangerous in the RV. Since it is heavier, the RV may not stop as quickly and you will need more following distance. Defensive driving in an RV requires making changes slowly, braking gradually, and being familiar with its handling characteristics.

## **Braking**

Most RVs are heavier than passenger vehicles and require greater braking distances. You must allow more time for the vehicle to slow or stop. If you are towing an RV, you must also worry about brake fade. Brake fade can happen when the brakes are overheated from prolonged use or the brakes are out of alignment. To help avoid brake fade on downgrades, use the lower gears to allow the engine to help slow the vehicle.

## **Speed**

RVs are naturally slower than passenger vehicles. It takes longer to climb a hill in an RV because it's heavier than a passenger vehicle. Keep this in mind, practice good manners, and observe the law by using turnouts when there are five or more vehicles behind you that wish to pass. The drivers behind you will be able to see ahead more easily if you try not to drive next to the center of the lane. If you are traveling with other RV owners in a caravan, be sure to leave enough space between your RV and the RV in front of you for other drivers to enter when they want to pass.

## **Safety Belts**

Always wear your safety belt when driving. Even though many motor homes accommodate passengers in places where safety belts are not required by federal law (i.e., dining table), if the area has a safety belt—wear it. Riding in a place which is not equipped with a safety belt increases the danger of injury in case of an accident.

## **Weather Conditions**

Bad weather conditions such as winds, fog, snow, and ice, are hazards to all drivers. A motor home owner has an advantage over other passenger vehicles because of the added weight over the drive wheels. This gives the vehicle better traction in bad weather. However, its added weight can also make it more difficult to move if it gets stuck. Plan your trips to avoid bad weather conditions as much as possible.

Remember, if hazardous weather conditions require the use of windshield wipers you must also turn on your headlights.

## Motor Homes Towing Cars or Other Vehicles

Towing small cars behind motor homes has become popular as a way of providing transportation after the motor home is parked at a camp site. Towing a car differs from towing travel trailers or fifth-wheel trailers. Very little hitch weight is involved when the car is towed on all four wheels and only minimal hitch weight is involved when the car is towed on a dolly.

If you wish to tow a vehicle behind your motor home, you need to consider whether or not your motor home can handle the extra weight under all conditions (i.e., climbing steep hills or mountains). Your vehicle must have sufficient power to climb grades without holding up traffic and its braking power must be sufficient to stop the combined weight of the motor home plus the car and/or tow dolly effectively. Motor home chassis manufacturers provide limits on gross combined weight (motor home plus car).

If you are towing a car, be sure the hitch attachment on the motor home is secure. Hitch weight ratings are usually stamped on the hitch assemblies. The tow bar attachment is also a concern because of the integrated frame construction used in most small cars. If you use a tow bar, safety chains are required, but a breakaway switch is not. Fully operational tail, brake, and turn signal lights are required on the towed car.

It's easy to forget you are towing a car when driving a large motor home because you can't see it. So remember to allow extra space when entering a freeway or passing another vehicle so you won't cut off the other driver. Your vehicle combination cannot exceed 65 feet. However, cities and counties may prohibit vehicle combination lengths over 60 feet, when posted. (VC §35401)

One other thing to consider—you may only tow a single vehicle with your Class C driver license. You *may not* tow two vehicles or trailers with a Class C license. (Example: You **cannot** tow a boat trailer/boat and car behind your motor home or pickup/camper.)

# **TOWING YOUR TRAILER SAFELY**

Perform a safety inspection before each trip. Make sure that:

- The pin securing the ball mount to the receiver is intact.
- The hitch coupler is secured.
- Spring bar hinges are tight with the safety clips in place (load equalizer or weight distributing hitches).
- Safety chains are properly attached.
- The electrical plug is properly installed.

People who tow trailers share the same safety concerns as other RV owners. However, a tow vehicle and a trailer form an articulated (hinged) vehicle which presents an additional set of concerns. The weight considerations described on page 30 are very important to safe towing. The tow vehicle must be a proper match for the trailer. If the trailer is properly equipped, it can perform safely under a variety of driving conditions. The tow vehicle should also have enough performance to climb mountain grades without excessive loss of speed. Here are three basic types of trailers:

1. Conventional travel trailers (includes folding camping trailers).
2. Fifth-wheel trailers.
3. Motorcycle, tent, and cargo trailers.

The major difference between the three types of trailers is the way they are hitched.

## **Conventional Trailers**

The ball and coupler hitch is used on a wide variety of tow vehicle and trailer combinations. This hitch consists simply of a ball attached to the rear of the tow vehicle and a coupler (socket) at the tip of a tongue or A-frame attached to the front of the trailer. This hitch is commonly used on recreational trailers.

A load distributing hitch is used for heavier models such as utility trailers, boat trailers, and travel trailers. (See the Balance and Hitch Adjustment sections on pages 31 and 32.) These load distributing hitches use special equipment to distribute the tongue load to all axles of the tow vehicle and trailer to help stabilize the tow vehicle. Here are some terms you should know when discussing hitch adjustment and in evaluating hitch performance:

- **Receiver:** Hitch platform fitted to the tow vehicle.
- **Ball Mount:** A removable steel component that fits into the receiver. The hitch ball and spring bars (only on load distributing hitches) are attached to it.
- **Sway Control:** A device designed to lessen the pivoting motion between tow vehicle and trailer when a ball-type hitch is used.
- **Coupler:** The ball socket at the front of the trailer A-frame that receives the hitch ball.
- **Spring Bars:** Load-leveling bars used to distribute hitch weight among all axles of tow vehicle and trailer in a load distributing ball-type hitch.

## **Fifth-wheel Trailers**

Not as much attention is given to balance, hitching procedures, and weight restrictions for fifth-wheel trailers because they are basically very stable. A disadvantage that the fifth-wheel has over conventional trailers is that much of the truck bed space is not available. The fifth-wheel hitch occupies the center of the truck bed and the hitch pin is in front of the center line of the tow vehicle's rear axle. Hitch weight of fifth-wheel trailers is usually around 20 percent of the trailer weight. Hitches are rated for up to 15,000 pounds of gross trailer weight. Here are some terms used to describe typical fifth-wheel hitch components:

- **Fifth-wheel Plate:** Unit that contains hitch plate, plate jaws, and handle (mounted in the truck bed).
- **Handle:** Device used to release or lock the plate jaws.
- **Hitch Plate:** "Wheel" that allows the trailer to rotate.
- **Pin:** The connecting device attached to a fifth-wheel trailer (designed to fit into the plate jaws mounted in the truck bed).
- **Pin Box:** Structure attached to the bottom front section of the trailer frame (the pin is attached to the bottom).
- **Plate Jaws:** Holds the pin.
- **Side Rails:** Support rails, bolted to the tow truck bed (supports the fifth-wheel hitch).

## **Motorcycle, Tent, and Cargo Trailers**

There are several types of couplings between the towing vehicle and the trailer. There are the:

- Ball and socket
- Ball type with a swivel

- Universal-joint type with a detachable pin
- Pin and swivel type

The coupling you choose should be:

- Non-slip, non-loosening, and non-binding
- Easy to hook and unhook
- Free moving

Motorcycle riders towing a trailer must remember to ride closer to the center of the road. You have the width of your trailer to worry about. Be careful of the “oil strip” in the center of the road at intersections. Also, watch for uneven road surfaces and road edges which can unbalance the trailer.

## Transporting Passengers

Here are the rules for transporting people in RVs or recreation trailers:

- People are **not** allowed in a trailer coach while it is being towed. (VC §21712[d])
- People are allowed in a fifth-wheel trailer coach (VC §21712 [f])
- A camper with people in it must have an unblocked exit door which can always be opened from both the inside and outside. (VC §23129)

## Weighing a Trailer

You can find a public scale by looking under “Weighers—Public” in the yellow pages of your local telephone directory.

Trailers must be carefully weighed to make sure that loads are properly distributed, front to rear as well as left to right. There are two additional considerations with trailer weights:

1. The tow vehicle pulling the trailer and
2. The hitching system that connects the two.

Both the tow vehicle and the hitching system have weight capacities which affect the safe handling of the vehicle. As a new RV owner or driver you should be aware of this.

- **Tow Vehicle**—do not exceed the GVWR of the tow vehicle. This includes the curb weight of the vehicle, payload, and hitch weight. Hitch weight is the percentage of the trailer weight that is placed on the trailer coupler of the tow vehicle. (Refer to the next section on Trailer Vehicle Hitch Weight.) Tow vehicles also have GAWR limits.

Payload and hitch weight must be divided evenly between the axles to conform with the maximum weight limits and to avoid oversteering problems.

- **Trailer Vehicle Hitch Weight**—approximately 10–15 percent of a trailer’s gross weight is designed to be loaded in front of the front axle and onto the hitching mechanism. This ensures needed stability for road handling. If your trailer is not stable, you may have a problem with not enough weight on the hitch. Here are some methods to figure out hitch weight:
  1. Park your loaded trailer on a scale so that the hitch coupler extends beyond the end of the scale, but the tongue jack post (the post on the front of the trailer which rests on the ground when unhitched) is on the scale.
  2. Block the trailer vehicle wheels, unhitch the tow vehicle, and obtain a weight rating. This is the curb weight of the trailer vehicle alone.
  3. Place a jack stand (or 4” x 4” blocks) under the coupler (beyond the scale) so that the tongue jack post is supported off the scale and the trailer is fairly level. Note this weight rating.
  4. Subtract the reading in #2 from the reading in #3 for the hitch weight.

In any RV, vehicle stability and safety can be affected by weight distribution. If, for example, rear axle weight is low, it is best to load the heaviest supplies toward the rear. Keep heaviest supplies low, to keep the center of gravity low and ensure best handling.

## **Balance**

Before you tow a trailer, evaluate trailer weight distribution. Hitch weights for travel trailers should typically be at least 10 percent of the trailer’s gross weight for acceptable handling. In some cases it can go to 15 percent or higher. Hitch weight for larger trailers is limited by the capacities of tow vehicles and hitches. The strongest load-distributing hitch is rated for a maximum hitch weight of 1200 pounds. Most passenger car suspensions cannot handle that much weight and the trailer should be towed with a pickup truck or van. Improper weight distribution can cause the trailer to fishtail (sway back and forth across the lane).

## Hitch Adjustment

If your hitch weight is less than 10 percent of the gross trailer weight, you can compensate for some of this by loading heavy supplies such as tools and canned goods as far forward as possible. If your trailer's water tank is behind the axle(s), travel with as little water in the tank as possible to reduce weight in the rear. Trailers with water tanks located in front usually handle best when the tanks are full, because the water adds to hitch weight.

Be sure that the spring bars of the load distributing hitch are rated high enough to handle the hitch weight of your trailer, plus a safety margin of at least 10 percent. Check for adequate rear suspension of the tow vehicle. This means that the vehicle sits relatively level prior to hitching the trailer.

Load-distributing hitches are designed to distribute the hitch weight relatively evenly to all axles of the tow vehicle and trailer. The tow vehicle and trailer should be in a level position (attitude) in order for the hitch to do its job properly. Here is how to check:

1. With the tow vehicle loaded for a trip, measure the distance between the vehicle and the ground at reference points, which you can establish, in front and rear. Keep the figures handy for later use.
2. Hitch the trailer and adjust the tension on the spring bars so the tow vehicle remains at roughly the same attitude (i.e., if the rear drops an inch after hitching, the front should also drop an inch).
3. Inspect the trailer to be sure it is level. If not, hitch ball height should be raised or lowered, as necessary. You may need spring bars rated for more weight if you cannot keep the tow vehicle from sagging in the rear.

Safety chains are required for travel trailers. Safety chains are not required for fifth-wheel trailers. The purpose of safety chains is to prevent the trailer from separating from the tow vehicle in event of hitch failure such as a hitch ball that has loosened. The chains should be crossed in an "X" fashion below the ball mount, with enough slack that they do not restrict turning or allow the coupler to hit the ground.

Breakaway switches are also required for any trailer having a gross weight of 1500 lbs. or more and manufactured after December 31, 1955. They are designed to activate trailer brakes if the tow vehicle

becomes separated from the trailer. One end of the breakaway switch is attached to an electrical switch on the trailer frame and the other end is looped around a stationary hitch component on the tow vehicle. If the two vehicles become separated, the cable pulls a pin inside the breakaway switch and applies full power from the trailer battery to the trailer brakes.

Even though hitch component failure is rare, the breakaway switch and the safety chains must be in good working order.

The hitch on the motorcycle trailer should be on the same plane as the rear axle on the motorcycle or slightly below. This will help prevent the trailer from pushing up on the rear end when braking. Also, the hitch should be as close to the rear tire as possible to provide a more solid support without interfering with the tire. Anchor the hitch so that two mounts are on each side. One of the two mounts on either side should resist a downward force and one of the two mounts on the other side should resist the rearward pull.

The tongue length on the trailer is generally twice the trailer wheel width but no more than six feet from the axle to the end of the tongue. Good design will allow for good sway control. If the tongue is too short, the trailer will sway. If too long, the trailer will be sluggish and cut corners when turning.

For motorcycle trailers, you should consider a trailer designed for motorcycles because auto trailer tongue weights are too heavy. A trailer with a good aerodynamic design will enhance handling and performance. You also want a low center of gravity.

## **Sway Control**

You should have good trailer handling if the weight and hitch adjustments are correct. However, the coupling between a tow vehicle and trailer should also prevent side to side motion for best possible towing comfort and safety. If you detect sway in your trailer, stop and check to see if the load has shifted. Check for suspension problems and make sure the tires and wheels are secure and inflated properly. Be sure the trailer hitch is secure. A small reduction in tire air pressure or a slight increase in tongue weight may help. A sway control device should be included when the hitch is installed. This device helps give the tow vehicle and trailer a “one-vehicle” feel. There are two basic types of sway control systems available:

- Friction bar—slides in and out and is activated by the motion of the vehicles. When you brake or turn, the trailer weight compresses the bar which then compresses the trailer against the tow vehicle.
- Dual cam sway control—usually works better for large trailers with heavy tongue weights. The cam action is applied to the spring of the trailer to reduce sway and shifts the weight forward. It also adjusts weight shifts which allows the trailer to follow the tow vehicle.

## **Trailer Lights**

Trailers in California are required to have reflectors, tail lights, brake, and license plate lights. Also, signal lights are required if the tow vehicle lights are hidden. Trailers over 80 inches wide must have clearance lights. Most manufacturers comply with these requirements, however, it is up to you to be sure that all lights operate correctly.

## **Trailer Brakes**

In California, brakes are required on any trailer coach or camp trailer having a gross weight of 1500 lbs. or more. Usually the braking capacity on tow vehicles is good, however, it may not be good enough to safely stop the several hundred to several thousand additional pounds that your trailer weighs. Most conventional and fifth-wheel trailers have electric brakes, activated by a controller in the tow vehicle. The controller automatically coordinates the tow vehicle and trailer braking so the two systems work together when the brake pedal is applied.

The controller can also be helpful in stabilizing a trailer that sways because of bad road conditions. Manually applying the trailer brakes by using the hand lever on the controller will restabilize a trailer that is likely to sway.

Folding camping trailers and boat trailers are usually fitted with surge brake systems which operate separately from the tow vehicle's brakes. Surge brakes are applied by a mechanism attached to the receiver/ball connection. As the tow vehicle slows, the forward motion of the trailer compresses the mechanism which in turn applies the trailer brakes.

Motorcycle trailers do not need brakes unless the weight exceeds 1500 lbs. gross. If you install brakes on your motorcycle trailer, be sure the brakes *do not* brake harder than the motorcycle or the motorcycle may flip backwards over the trailer when the brakes are applied. The brakes must always be properly adjusted.

## **Trailer Backing**

Backing a trailer can be frustrating for inexperienced owners. The most important item to remember is that the trailer will go in the opposite direction of the tow vehicle. It is helpful to have another person help you back the trailer.

Here are two methods for backing trailers:

1. Turn the vehicle's wheels to the right to make the trailer go left, and vice versa.
2. Put your hand at the bottom of the steering wheel. The trailer will go in the same direction your hand moves (moving your hand to the right will cause the trailer to go right, and vice versa).

Sharp steering wheel corrections will cause the trailer to jackknife and may cause damage to the rear of the tow vehicle or the front of the trailer.

## **Conclusion**

This booklet gives you some important information about RV and trailer safety. A good understanding of RV and trailer safety and lots of driving practice will help you operate your vehicle with greater confidence and enjoyment.

Be safe and enjoy your travels.

# GLOSSARY

**Breakaway switch**—a safety device that automatically activates the brakes of a towing vehicle if it separates from the trailer hitch.

**Bus**—any vehicle, including a trailer bus, designed, used, or maintained for carrying more than 15 persons, including the driver, for hire or for carrying more than 10 persons, including the driver, by any non-profit organization. (VC §233)

**Camper**—structure designed to be mounted to a vehicle which provides facilities for human habitation or camping. (VC § 243)

**Camp trailer**—vehicle under 16 feet in length designed to be used on a highway capable of human habitation for camping or recreational purposes. (VC §242)

**Curb weight**—the weight of the vehicle with full fuel, water, and propane tanks.

**Dolly**—a mobile platform that rolls on casters or wheels, used for moving loads.

**Endorsement**—permission granted by a licensing authority to applicants qualified by examination to drive specified vehicles.

**Fifth-wheel**—vehicle designed for recreational purposes to carry persons or property on its own structure and so constructed as to be drawn by a motor vehicle by means of a kingpin connecting device. (VC §432)

**GAWR**—Gross axle weight rating (for each axle)—the maximum weight that can be safely carried by each axle. Distribute the weight properly so you don't exceed the GAWR ratings.

**GCW**—Gross combination weight—the total weight of a powered unit plus trailer(s) plus the cargo.

**GCWR**—Gross combination weight rating—the maximum GCW specified by the manufacturer for a specific combination of vehicles plus the load.

**Gross weight**—the weight of the vehicle plus its load.

**GVWR**—Gross vehicle weight rating—the maximum weight that your RV can carry, including driver, passengers, and cargo.

**Hazardous Material**—any material that poses an unreasonable risk to health, safety, and property during transportation.

**Housecar**—motor vehicle originally designed, or permanently altered, and equipped for human habitation, or to which a camper has been permanently attached. (VC §362)

**Landing gear**—equipment designed to support the weight of a vehicle and its load on the ground.

**Motorhome**—vehicle designed to provide temporary living quarters, built as an integral part of, or permanently attached to, a self-propelled motor vehicle chassis or van.

**Tracking**—also called offtracking. The rear wheels of a vehicle or trailer follow a different path than the front wheels.

**Trailer bus**—motor truck or truck tractor pulling a trailer or semitrailer designed, used, or maintained for the transportation of more than 10 persons, including the driver. (VC §636)

**Trailer coach**—vehicle, other than a motor vehicle, designed for human habitation or human occupancy for industrial, professional, or commercial purposes, for carrying property on its own structure, and for being drawn by a motor vehicle. Includes “park” trailer. (VC §635)

**Payload**—the discretionary weight, measured by subtracting the curb weight from the GVWR to determine the amount of cargo and passengers that you can safely carry. (Example: If your RV’s curb weight is 10,500 lbs., and its GVWR is 12,500 lbs., the payload limit is 2,000 lbs.)

**Unladen weight**—weight of a vehicle equipped and ready for operation on the road including five gallons of fuel, required equipment and permanent attachments to the vehicle. Does not include any load. (VC §660)

**VC §**—California Vehicle Code Section.

## **Disclaimer**

When using this handbook, please remember that it is only a summary of the laws and regulations. DMV, law enforcement, and courts follow the full and exact language of the law contained in the *California Vehicle Code*. You may buy a copy of the *Vehicle Code* at any DMV office or visit our website at [dmv.ca.gov](http://dmv.ca.gov).



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