BASIC OPERATION GUIDE

This guide provides basic operational instructions pertaining to the components, devices, or equipment that may be installed on your motorhome. Please refer to the component manufacturer owner's manual for safety, troubleshooting, maintenance, and more detailed operating information.

THOR MOTOR COACH

Made to fit.

Towing With Your Motorhome

BASIC OPERATION

Towing a trailer or vehicle behind your motorhome can be done safely when a few important rules are followed.

⚠ WARNING

- **An auxiliary braking system may be required for control of a towed vehicle behind the motorhome. Do not assume the braking capabilities of the motorhome can also adequately stop the combined weight of the motorhome and towed vehicle.**
- **The designated hitch rating may exceed the GCWR or other towing capacity limits of the motorhome. It is your responsibility to properly load the motorhome, while staying within the tow ratings, GCWR, GVWR, and GAWR of the motorhome.**
- **Do not tow loads that cause the motorhome to exceed the Gross Combined Vehicle Weight Rating (GCWR).**
- **Do not exceed the vertical hitch load rating (tongue weight) as listed on the hitch label.**
- **Consult your owner's manual for additional information regarding towing guidelines for this motorhome.**

Failure to comply can result in loss of vehicle control resulting in death or serious injury.

⚠ WARNING

DO NOT USE WEIGHT DISTRIBUTING HITCHES OR WEIGHT DISTRIBUTING TOWING DEVICES WITH THIS MOTORHOME.

Applies to Class A and Class C motorhomes.

⚠ WARNING

THE FULLY LOADED MOTORHOME AND THE TRAILER, OR TOWED VEHICLE, MUST NOT EXCEED THE MOTORHOME'S GROSS COMBINED WEIGHT RATING (GCWR).

Do not exceed the motorhome gross combined weight rating (GCWR), the hitch rating (in pounds), or the maximum tongue weight rating of the hitch (note: tongue weight is the weight in pounds pushing down on the hitch).

Consult with your selling dealer to determine the GCWR of the motorhome and the towing capacity of the motorhome.

⚠ WARNING

A SEPARATE FUNCTIONING BRAKE SYSTEM IS REQUIRED FOR ANY TOWED VEHICLES OR TRAILERS WEIGHING MORE THAN 1500 LBS WHEN FULLY LOADED. NEVER EXCEED THE GVWR, OR THE GAWR SPECIFIED ON THE MOTORHOME'S CERTIFICATION LABEL.

Never exceed the weight ratings of the trailer hitch installed on the motorhome. Failure to heed any part of this warning could result in loss of control of the motorhome and towed vehicle or trailer and may cause an accident and serious injury.

For specific towed vehicle braking requirements, consult your chassis owner's manual.

⚠ WARNING

Do not exceed any applicable motorhome weight ratings. Doing so could damage your motorhome or affect handling and braking characteristics.

Your motorhome's braking system is designed and rated for operation at the gross vehicle weight rating (GVWR) listed on the unit's weight labels, not the gross combined weight rating (GCWR).

THOR MOTOR COACH

Introduction

Towing a trailer or pull-behind vehicle with your motorhome can be safely accomplished by observing a few basic loading and towing rules. Proper loading of the vehicle is one of the most important considerations when traveling in a motorhome. Your motorhome is designed to carry a certain safe maximum load. This is the Gross Vehicle Weight Rating, or GVWR. When towing a trailer or vehicle, the added weight calculates towards the total weight of your motorhome. Staying within the weight limits of your motorhome will help to ensure your motorhome performs and operates safely for your journeys.

Both the chassis manufacturer and Thor Motor Coach provide weight ratings and recommendations for loading your motorhome. Read and follow the information provided by the chassis manufacturer in the chassis manufacturer's owner's manual as well as information provided by Thor Motor Coach in your TMC Owner's Manual. Important weight ratings are listed on labels affixed to your motorhome. Do not remove these important safety labels. For safe operation, **NEVER OVERLOAD YOUR MOTORHOME OR TOW A TRAILER OR VEHICLE THAT IS BEYOND THE SAFE TOWING WEIGHT RESTRICTIONS OF YOUR TOWING HITCH AND MOTORHOME.**

Important Towing and Weight Terminology

Listed here are several important terms that you need to become familiar with in order to safely load and use your motorhome as a towing vehicle. Please consult your owner's manuals for additional information.

CURB WEIGHT

The weight of an unloaded motorhome plus the weight of a full tank of fuel. Does not include propane, water, passengers, cargo, or aftermarket add-ons.

UNLOADED VEHICLE WEIGHT (UVW)

The curb weight of the unloaded motorhome plus a full propane tank.

CARGO WEIGHT

The total weight of all cargo added to your motorhome, including food, clothing, camping gear, pots and pans, tools, water (fresh and waste), propane, and all aftermarket equipment added to the motorhome. Also includes trailer tongue weight. Keep in mind, carrying unnecessary water quantities (fresh or waste) adds significantly to the total cargo weight:

- 1 gallon of water = 8.3 pounds
- 1 gallon of propane = 4.2 pounds
- 1 gallon of gasoline = 6 pounds
- 1 gallon of diesel fuel = 7 pounds

OCCUPANT AND CARGO CARRYING CAPACITY (OCCC)

The maximum weight of all cargo and occupants that can be safely carried by the motorhome. The tongue weight of your towed trailer or vehicle must be included in the total cargo weight. **DO NOT EXCEED THE OCCC RATING OF YOUR MOTORHOME.**

OCCC is determined by subtracting the UVW of the motorhome from the GVWR of the chassis, plus the weight of any carried LP fuel. The OCCC of your motorhome is listed on the yellow OCCC label, affixed to the forward, right-side entry or passenger door.

OCCC Label is affixed to the most forward right-side entry door of the motorhome (Left: Class A, Right: Class C).

GROSS VEHICLE WEIGHT RATING (GVWR)

The maximum permissible weight of a fully-loaded motorhome. GVWR is determined by the chassis manufacturer and takes into consideration the design of the frame, suspension components, axles, and tires. This rating can be found on the Incomplete Vehicle Identification Data Label affixed to the driver's door jamb (Class C and B) or near the driver's seat (Class A).

GROSS VEHICLE WEIGHT (GVW)

The Gross Vehicle Weight = Curb Weight + Total Cargo Weight + Total Passenger Weight). **THE MEASURED GVW MUST NEVER EXCEED THE GVWR OF THE MOTORHOME.**

GROSS COMBINED WEIGHT RATING (GCWR)

The maximum allowable loaded weight of this recreation vehicle, including the weight of its towed trailer or towed vehicle. This rating is determined by the chassis manufacturer and takes into consideration the design of the chassis, suspension components, tires, engine torque and horsepower, and drivetrain components.

NOTE: The motorhome's braking system is rated for operation at the GVWR, not the GCWR. A supplementary braking system should be used for safe control of towed vehicles and for trailers weighing more than 1,500 pounds when loaded. Supplemental braking systems are required by transportation laws.

GROSS COMBINED WEIGHT (GCW)

The actual combined weight of your loaded motorhome plus the weight of your loaded trailer or towed vehicle. This weight measurement is found by weighing the motorhome with its towed vehicle on a commercial vehicle scale. **THE MEASURED GCW MUST NEVER EXCEED THE GCWR OF THE MOTORHOME.**

GROSS AXLE WEIGHT RATING (GAWR)

The value specified as the load carrying capacity of a single axle system, as measured at the tire ground interfaces. This rating is determined by the manufacturer of the chassis. This rating can be found on the Federal Weight Label, affixed to the driver's door jamb (Class C and B) or near the driver's seat (Class A).

GROSS AXLE WEIGHT (GAW)

Gross axle weight is the total weight of the fully loaded motorhome on each axle. This weight figure is determined by actually weighing the fully loaded motorhome with a loaded trailer or towed vehicle. See your owner's manual for instructions on weighing your motorhome.

TONGUE WEIGHT

Weight directly transferred to the hitch of the motorhome by a loaded trailer. The maximum tongue weight is listed on the motorhome's hitch label. Be sure that tongue weight never exceeds the GAWR of the rear axle of the motorhome. **DO NOT EXCEED THE TONGUE WEIGHT RATING OF THE HITCH.**

When loading a trailer, remember to place heavy cargo over the axle(s) of the trailer, however the trailer must have some tongue weight to help stabilize the trailer while being towed.

MAXIMUM LOADED TRAILER WEIGHT

The highest possible weight of a fully loaded trailer or towed vehicle the motorhome can tow based on a minimally loaded motorhome (GVW).

TOWING CAPACITY

Towing capacity is determined by subtracting the measured Gross Vehicle Weight (GVW) from the Gross Combined Weight Rating (GCWR). **DO NOT EXCEED THE TOWING CAPACITY RATING OF THE HITCH.**

Hitch ratings are printed on labels affixed to the tow hitch

TOAD OR DINGHY

Slang term for a pull-behind car or vehicle. Tongue weight us usually very minimal because the weight of the towed vehicle is not transferred to the motorhome through the hitch.

NOTICE

For safe towing a trailer or vehicle with your motorhome, always stay within the limits of your motorhome's GVWR, GCWR, GAWR and weight ratings of the hitch.

TMC Motorhomes are factory equipped with a towing hitch and wiring harness. However, TMC motorhomes are not factory equipped with supplemental trailer braking systems. Always have trailer braking systems professionally installed and routinely inspected by a qualified technician.

If you are unsure of any aspect of safe towing, seek professional advice from a reputable hitch installer, trailer or RV dealer.

Towing Methods

There are three basic methods of towing a vehicle with your motorhome; all have advantages and disadvantages.

1. Flat towing with a tow-bar. With this method, a vehicle-specific tow bar is attached to front of the towed vehicle and the tow-hitch is attached to the motorhome. All four wheels of the towed vehicle remain on the ground. This method does not add tongue weight to the motorhome, which is an advantage. However, it is not recommended to back-up with a tow-bar due to the likely-hood of jack-knifing the towed vehicle. Flat towing is not advised for all vehicles. It can cause extra wear on transmission and drive-train components. Consult your towed vehicle's owner's manual for its suitability for flat towing.

2. Towing with a tow dolly. A tow dolly is designed to tow a variety of vehicles, therefore, the advantage is that it is not a vehicle-specific piece of equipment. It also presents minimal tongue weight to the motorhome; another advantage. However, like the tow-bar, it is not recommended to back-up with a tow-dolly, due again, to the likely-hood of jack-knifing the towed vehicle.

NOTE: Be sure to consult your towed vehicle's owner's manual for it's suitability and special considerations for being towed with either a flat tow-bar or tow dolly.

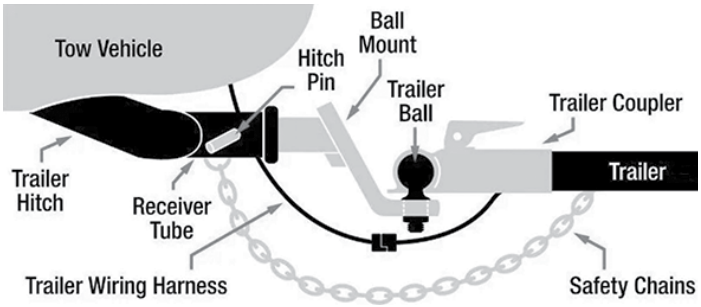
3. Towing a vehicle using a full vehicle trailer, either open or enclosed. A vehicle trailer presents the advantage of backing-up and since the towed vehicle is not in direct contact with the road surface, there is no additional wear to the vehicle while it is being towed. However, like all trailers, a vehicle trailer adds tongue weight to the motorhome.

If you are considering towing a vehicle behind your motorhome, consult with your dealer or qualified towing expert about the towing equipment options appropriate for your motorhome and travel needs.

Flat towing with a tow bar

Towing a vehicle with a tow dolly

Towing a trailer with a standard trailer coupler



Components of a typical tow coupling

Towing Hitch

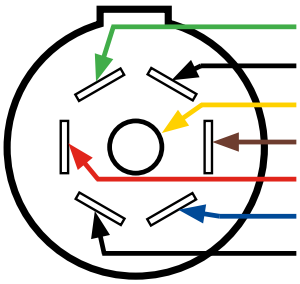
Your motorhome is equipped with a Class III towing hitch receiver and trailer wiring receptacle. Depending on the weight rating of your motorhome's chassis, hitch ratings range from 3,500 (Class B), to 5,000 (typical Class C), to 10,000 or more pounds (Class A Gas and Class A Diesel). Please refer to the chassis manufacturer's owner's manual for towing recommendations and towing limitations for this vehicle.

Electrical Connections for Towing

A 4-way or 7-way trailer plug, supplied by the chassis manufacturer, is pre-wired to the chassis electrical system. This plug provides electrical power for running lights, turn signals, stop lights, and electric trailer brakes. Before connecting your motorhome to any towed vehicle, verify that the wiring of the towed vehicle plug conforms to your motorhome connector wiring. Refer to your Chassis Packet for additional information regarding vehicle towing.

NOTE: Thor Motor Coach accepts no responsibility for damage to the chassis, property, and other components resulting from towing with your motorhome or towing loads greater than its designated specifications.

7-WAY CONNECTOR WIRING



Signal	Wire Color
Tail & Running Lights	Green
12V Power	Black
Reverse Lights	Yellow
Right Turn & Stop	Brown
Left Turn & Stop	Red
Brake Controller Output	Blue
Ground	White

4-WAY CONNECTOR WIRING

Signal	Wire Color
Right Turn and Brake	Green
Left Turn and Brake	Yellow
Running Lights	Brown
Ground	White

Safe Towing Tips

- Never exceed the hitch tow rating, the hitch tongue weight rating and the towing capacity of your motorhome. Exceeding the maximum towing capacity can result in dangerous handling, insufficient braking performance, or serious damage to the vehicle's suspension, engine and drive-train. Make sure your trailer hitch is capable of handling your trailer's loaded weight. **DO NOT USE WEIGHT DISTRIBUTING HITCH SYSTEM WITH YOUR CLASS A OR CLASS C MOTORHOME.**
- Do not exceed the GVWR and GCWR of your motorhome.
- Always pack your trailer so that most of the weight is over the axles, yet allowing sufficient tongue weight for safe control of the trailer.

  Not only do you want roughly 60% of the trailer's load placed over the front half of the trailer, you also should load it in a way that results in a tongue weight that is between 10-15% of the total weight of the loaded trailer. Ensure weight is evenly distributed on the left and right sides of the trailer. Once the load is properly distributed and an ideal tongue weight is achieved, all cargo should be secured to prevent the load from shifting.
- There are several sizes of trailer balls available. **BE SURE THE TRAILER BALL MATCHES THE SIZE OF THE TRAILER COUPLER!**
- Always ensure the trailer coupler is properly seated and locked onto the trailer ball (see illustration).
- Always ensure the hitch pin is properly installed, securing the ball mount to the receiver tube (see illustration).
- Always use safety chains between your motorhome and the towed trailer or vehicle. Cross the chains under the trailer tongue and allow slack for turning corners. Connect the safety chains to the trailer or vehicle frame or hook retainers. Never attach safety chains to the bumper of a vehicle (see illustration).
- Always check brake lights, running lights, emergency flashers, and turn signals of the motorhome and trailer (or towed vehicle) at the start of the trip and often during the trip.

  The tail lights and marker lamps on your trailer may seem superfluous, but they're quite important. Large trailers or loads may obscure the tail lights on your tow vehicle. If the lights on your trailer aren't illuminated, other drivers may not see your vehicle, especially at night. Accidents can occur if the tail lights are not working or are improperly connected. Have a partner stand behind the vehicle while it is in park to check the turn signals, tail lights and brake lights function properly.
- Check both **TRAILER AND MOTORHOME** tires daily for proper inflation and for any unusual wear (check tire pressure with cold tires). Don't forget the inner tires of the dual tire/wheel set-up and spare tires for both the motorhome and trailer.

  Tires that are not properly inflated can negatively affect handling. Further, under-inflated tires can create more rolling resistance, which not only forces the engine to work harder and consume more fuel, but also increases tire temperatures and may contribute to a blow-out. Additionally, check the speed rating on the tires for both your motorhome and trailer, and ensure you never exceed that speed while on the road.
- Check your trailer's hub bearings before starting your trip, and often during your travels. Ensure bearings are in good order and properly greased
- Check trailer brakes at the start of each trip and daily.

  Smaller, lighter trailers may not need trailer brakes of any kind, but heavier trailers, or those designed to carry heavier loads, will usually incorporate a trailer brake system. Whether your trailer is equipped with hydraulic surge brakes or electric brakes, make sure the emergency "breakaway" cable is properly attached to your tow vehicle. In case your trailer somehow disconnects from the hitch, this cable is designed to trigger the brakes on the trailer and quickly bring it to a halt.
- Adjust your mirrors. Before taking off, make sure your side view mirrors are adjusted to create a clear view that extends to the end of the trailer.
- Ensure your back-up cameras are in proper working order. Some cameras may be able to be placed in monitor mode, so that the towed vehicle can be observed while traveling.
- Tow bars or car dollies generally are made to travel in a forward direction only. Most towing equipment of this type is not designed for backing. Never attempt back-up maneuvers with a tow bar or tow dolly; doing so could result in damage to the motorhome, towed vehicle or towing device.
- Be mindful of the extra length a trailer or towed vehicle adds to your motorhome. Your motorhome is a long vehicle, and with the added length of a trailer, it can be very long. Be extra careful when merging into traffic or making lane changes. Allow extra time to make these maneuvers. **ALWAYS SIGNAL YOUR INTENTIONS WITH PROPER USE OF TURN SIGNALS.**
- Allow for extra braking distance caused by the added weight of a trailer or towed vehicle.
- Be extra cautious when making turns. Allow for the extra length and large turning radius caused by the added length of the trailer or towed vehicle.
- Use the aid of a spotter when backing the trailer. Be sure the spotter is always in view of your rear view mirrors. **STOP THE VEHICLE IF YOU CANNOT SEE YOUR SPOTTER.**
- Always chock trailer or towed vehicle wheels when disconnected from the towing vehicle (motorhome).

Reference: GMC
https://www.gmc.com/gmc-life/trucks/tips-for-safe-trailering-and-towing