

# Trailer Manual

# BIG DOG Trailers

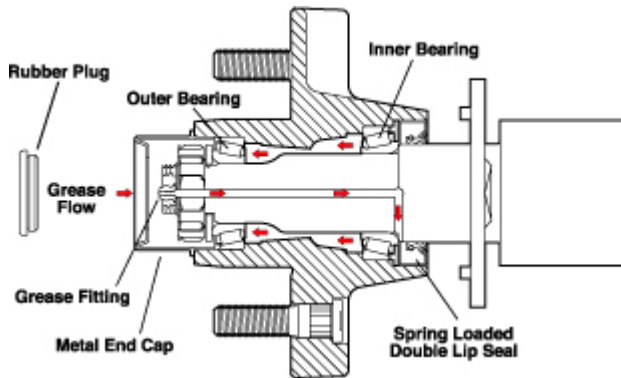
Maintenance  
Safety  
Checklist  
Glossary  
Electrical  
Warranty



Rapid Power Mfg., 4777 Sturgis Rd., Rapid City, SD 57702  
605-341-9000 fax 605-343-0480 Website: [www.bigdogn.com](http://www.bigdogn.com)



# Trailer Maintenance



- Lubrication that's simple to maintain and completely submersible
  - Allows grease to easily flow to both outer and inner bearings for a complete repack
  - No disassembly required, just attach a grease gun at the end and inject the grease
  - Lube cap allows for easy access, extra protection, and virtually no mess
  - Easily purges contaminated grease without removing the hub
1. Lube Hubs, Two pumps of grease every 10,000 miles or Yearly.
  2. Tire, Inspect at each trip. Use recommended air pressure from tire manufacture. Pressure amount is on side wall of tire.
  3. Wheels, Inspect at each trip. Torque wheel nuts at 95 foot pounds first 50 miles. Overheated Wheels or Brakes may cause stretching of lugs or wheel nuts to loosen, torque wheel nuts as needed.
  4. Couplers, Inspect for cracks and lube with light oil yearly.
  5. Parking Jacks, Two pumps grease yearly.
  6. Lighting, Inspect at each trip. Replace light if not working properly.
  7. Brakes, Test breaks at each trip for proper operation. Have a professional inspect brakes yearly for wear & cracks, replace as needed. Use brakes in conjunction with tow unit.
  8. Emergency Breakaway Brake System, Test at each trip, pull cable or line out of control box, brakes will then lock. Reinstall cable to control box. Check battery yearly for 12 volts, charge if necessary. Replace battery if needed.
  9. Tilt Beds, Inspect hinge for cracks, two pumps grease yearly at hinge.
  10. Hydraulic Dump Bed, Grease Monthly at hinge. Add oil at reservoir as needed.
  11. Hydraulic system, Inspect for leaks (a few drops is normal). Add Oil (aw46) if system becomes low or if you have loss of control. To add oil remove ends of hoses at control valve & place both hose ends in oil container, lift & lower bed repeatedly to purge new oil into the system. The hydraulic cylinders will suction oil back into the system as the bed is tilted up & down, reinstall hoses to control valve and test system.
  12. Frame, Check frame for cracks and wear. Welding should only be done by a professional.



Rapid Power Mfg. PO Box 9520 Rapid City, SD 57709

## TRAILER SAFETY MANUAL

### Disclaimer

When using this manual, please remember that it is only a summary of basic safety and laws and regulations. DMV, law enforcement, and courts follow the full and exact language of the law contained in your local *Vehicle Code*.

### Towing Your Trailer Safely

#### Towed Equipment

1. Towed equipment which blocks visibility of the towing vehicle's tail lights, stop lights, and directional signals shall have tail-lights, stop lights and directional signals in working condition.
2. In addition to the regular hitch, safety chains shall be properly fastened between the towing vehicle and the towed equipment.
3. Towed equipment must be in compliance with all state and federal laws.

### Perform a safety inspection before each trip.

#### CHECKLIST

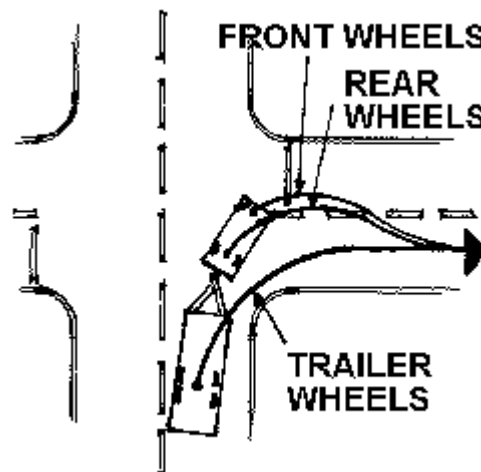
- 1 Check for proper ball and coupler sizing
- 2 Coupler is locked and secured with safety clip
- 3 Inspect safety chains
- 4 Inspect brake wiring and harness, clean if necessary
- 5 Inspect and/or clean lighting plug and receptacle
- 6 Inspect all hitch components for cracking or broken welds
- 7 Test breakaway switch
- 8 Check tire pressures, inspect each for wear
- 9 Check wheel nut torque
- 10 Check exterior lighting, brake lights and turn signals
- 11 Lubricate coupler and latch
- 12 Tongue Jack is raised fully
- 13 Dolly wheel removed (if appropriate)
- 14 Trailer is about level
- 15 Trailer bed is latched down & secure (if a tilt bed trailer)
- 16 Cargo is secured and tied down

**\*\*WARNING\*\* If your trailer bed tilts, stay clear of pinch points when loading bed, it could cause serious injury.**

## TURNING WITH A TRAILER

Allow enough room for your trailer tires to stay flat on the ground when turning a corner. A tow vehicle and a trailer form an articulated (hinged) vehicle which presents an additional set of concerns. The tow vehicle must swing wide enough so the trailer does not cut the corner short and cause damage to the trailer or other. 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.

See diagram below.



## Trailer Tires

Check tire inflation and tread wear often. Fill the tires to match manufacturer's guidelines, for tires with too much or too little air pressure can cause the trailer to sway.

## Trailer Loading

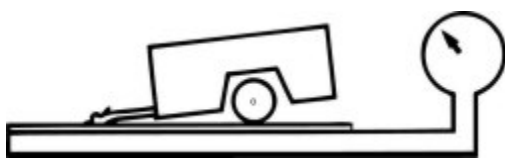
**\*\*WARNING\*\* If your trailer bed tilts, stay clear of pinch points when loading bed, it could cause serious injury.**

One of the main causes of trailer sway is not having a large enough percentage of trailer tongue weight compared to gross trailer weight. Usually tongue weight is 10 to 15 percent of the trailer's gross weight. To help prevent the trailer from swaying back and forth, a few things can be done. Try placing heavier cargo in the front of the trailer, ahead of the trailer's axle. Also center the cargo left-to-right and use tie-downs to keep the load from sliding. Trailer Sway can lead to a loss of vehicle control. When starting out with a new load on a trailer, make sure it will not sway by gradually increasing your speed in intervals until highway speed is reached. If the trailer does begin to sway, try adjusting the cargo and equipment accordingly and then repeat the test. If repositioning the load and equipment did not help reduce the sway, a sway control may be needed.



## Weighing a Trailer

You can find a public scale by looking in the yellow pages of your local telephone directory.



**GROSS TRAILER WEIGHT (GTW)** - the weight of the loaded trailer.

To determine GTW, weigh the loaded trailer on a vehicle scale.

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:

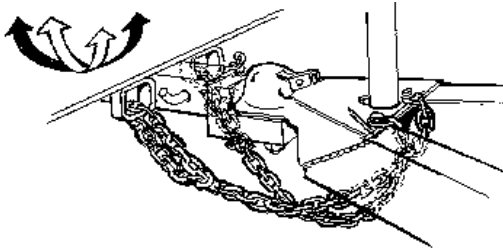
1. The tow vehicle pulling the trailer and
2. The hitching system that connects the two.

Both the tow vehicle and the hitching system have weight capacities which affect the safe handling of the vehicle. 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 to the maximum weight limits and to avoid over-steering 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

## Safety Chains

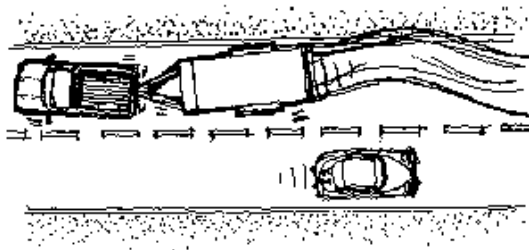
ALWAYS connect the trailer's safety chains securely to the trailer hitch or tow vehicle by crossing them underneath the coupler. The safety chains should only be long enough to allow for tight turns. Anything longer may weaken the safety feature of the chains if the other connections fail. Also make sure the chains cannot wiggle or bounce free and do not let them drag on the ground. Safety chains are required for 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.



## 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 allow the trailer to follow the tow vehicle.



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## **Trailer Brakes**

In South Dakota, brakes are required on any trailer having a gross weight of 3000lbs. 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 re-stabilize a trailer that is likely to sway

## **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.

## Driving

The addition of a trailer adds weight and length to the tow vehicle. More weight means more time to speed up and more importantly, slow down. Overall handling is also affected. When towing, allow for extra time when switching lanes, stopping and passing other vehicles. To assist in slowing down, many people use an electric trailer brake controller. The extra length can cause problems on turns. Because the trailer does not follow the exact path as the vehicle on turns, remember to swing out wider when traveling around bends and corners.

To conserve fuel when towing, travel at moderate speeds. Faster speeds increase wind resistance, reduce gas mileage, and place added strain on the vehicle and trailer. When traveling over large hills or down gravel roads, use a lower gear to ease transmission and engine operation. Shifting out of overdrive and into a lower gear may also improve vehicle gas mileage.

If for some reason (a gust of wind, a downgrade, a pass by a larger vehicle, etc.) the trailer does begin to sway, the driver needs to assess the situation to determine the proper course of action. Here is a list of Do's and Don'ts to think about.

### DO

- Gradually Reduce Speed
- Steady the Steering Wheel - Sudden Turns can Worsen Sway
- Apply only the trailer brakes (if applicable)

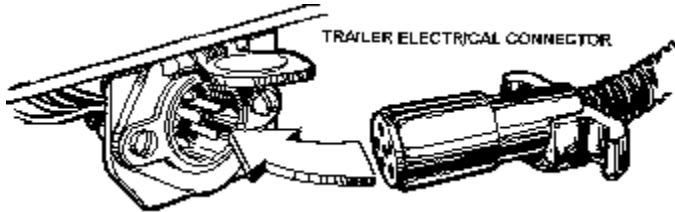
### DON'T

- Do Not Slam on the Brakes - Jackknifing Could Occur
- Do Not Attempt to Steer Out of a Sway Situation
- Do Not Increase Speed - Sway Increases in Faster Speeds
- Do Not Tow a Trailer that Continues to Sway

Also, be extra cautious of potholes and other large bumps. Riding over one can damage the tow vehicle, trailer hitch and/or trailer. When pulling a trailer take your time and be careful.

## Trailer Lights

Trailers in SD are required to have, tail lights, brake, and license plate lights. 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.



## Electric Trailer Brake Controls

For use with trailers that have electric brakes, electric brake controllers send the signal that applies the trailer's brakes

## Trailer Wiring

ALWAYS make sure the turn signals, brake lights, tail lights, electric brakes, and breakaway switches are working on the trailer prior to each use

**Breakaway switches** are also required for any trailer having a gross weight of 3000lbs (SD Regulations) it may be different in your state. 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. 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.

**\*\*WARNING\*\* If your trailer bed tilts, stay clear of pinch points when loading bed, it could cause serious injury.**

## Conclusion

This manual gives you some important information about trailer safety. A good understanding of 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

**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.

**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.

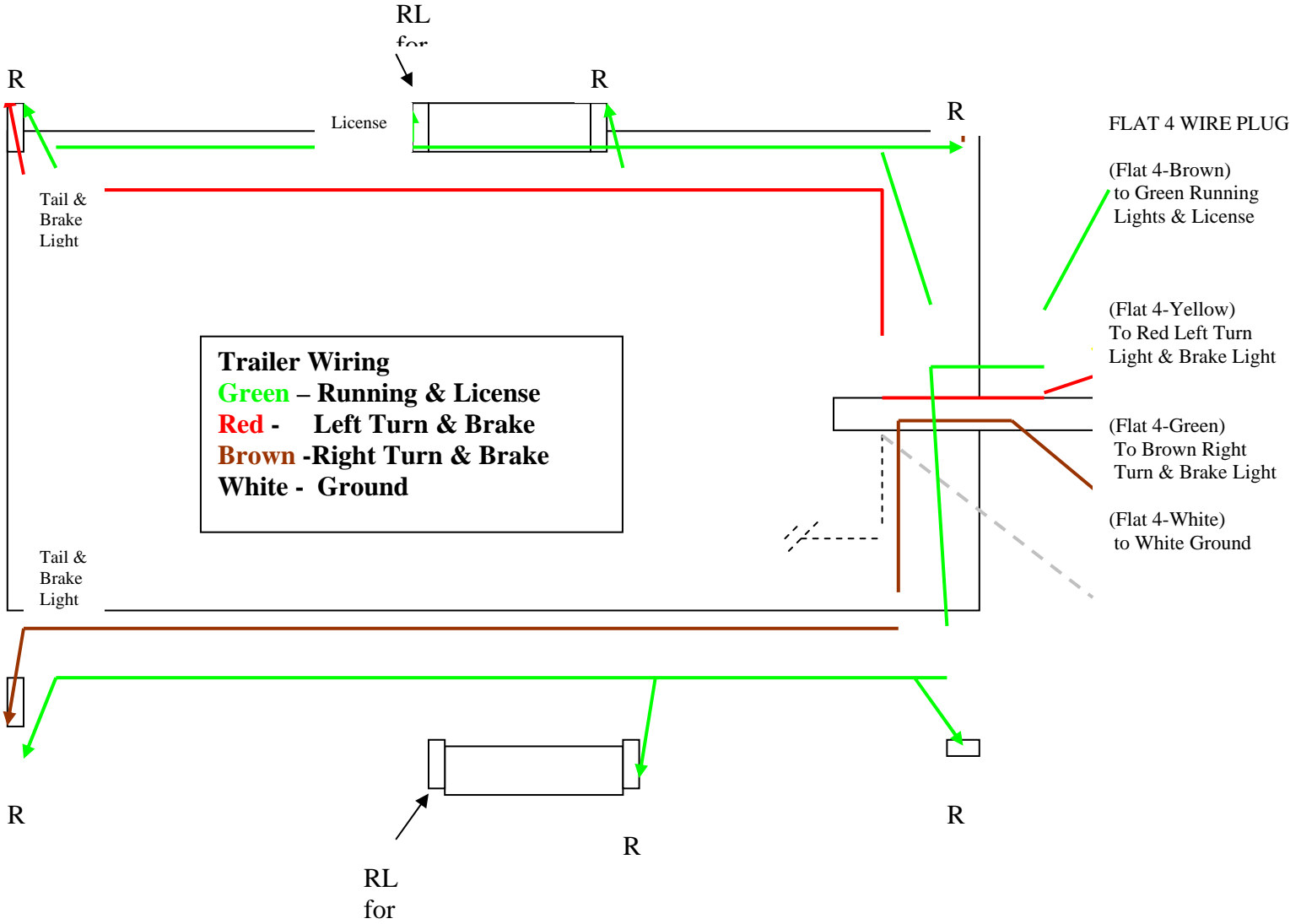
**GVWR**—Gross vehicle weight rating—the maximum weight that your trailer can carry.

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

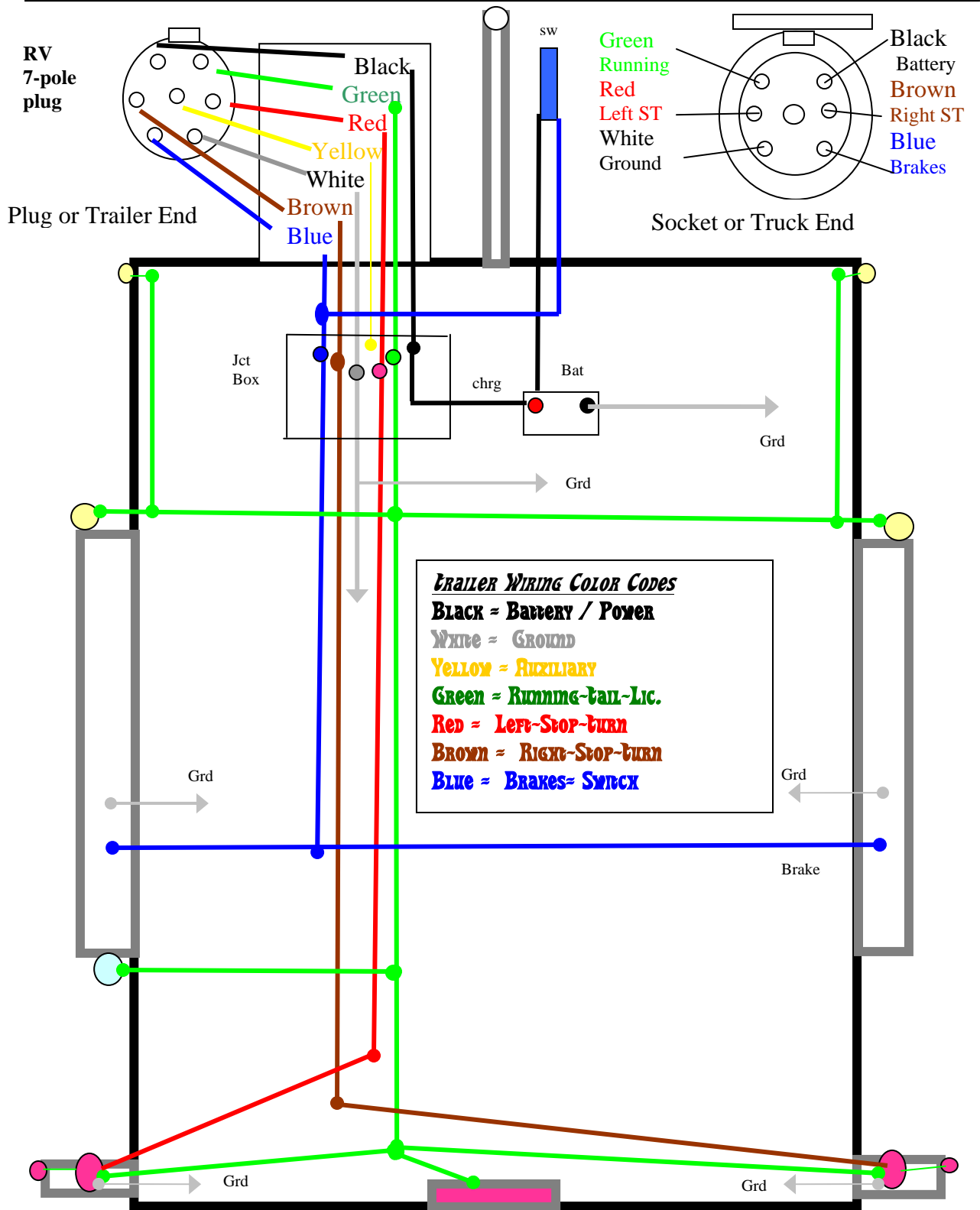
**Landing gear**—equipment designed to support the weight of a vehicle and its load on the ground.

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

After 10/07 Wiring Schematic RPM, Big Dog Trailers with Flat 4 Plug



after 10/07, Wiring Schematic, RPM, Series: Big Dog Trailers With RV 7 pole plug



## **Limited Warranty Big Dog Trailers**

*Rapid Power Mfg., PO Box 9520, Rapid City, SD 57709 [www.bigdogtr.com](http://www.bigdogtr.com)*

*Manufacturer warranties each new product manufactured by us to be free from defects in material and workmanship for a period of one year from date of delivery to the original purchaser.*

*Our obligation under this warranty is to replace free of charge, at our factory (4777 Sturgis Rd, Rapid City, South Dakota 57702), any part proven defective within the time of this warranty.*

*This warranty does not cover used products sold by our dealers or by the factory. This warranty does not cover new products which have been operated in excess of rated capacities. This warranty does not cover misuse or accidents. This warranty does not cover vehicles which have been altered, modified or repaired in any manner not authorized by our company. This warranty does not cover secondhand or used vehicle. This warranty does not cover consequential damages, vehicles, profit losses and commercial losses etc. This warranty does not cover wearing items such as brake pads, drums, rotors and disks. This warranty does not guarantee that your local laws and rules are being satisfied with the purchased vehicle or trailer.*

*Other Products under warranty by their respective manufacturers are not under warranty by us. We will handle the disposition of warranties on all other purchased products, components such as axles, suspensions, wheels, tires, lights, couplers and other purchased parts in conjunction with their respective manufacturers, and under the terms of their respective warranty policies.*

*We must receive immediate notification of a defect and no allowance will be made for repairs without our consent or approval.*

*This warranty is in lieu of all other warranties, expressed or implied by law or otherwise, and there is no other warranty.*

*Federal regulations require motor vehicle manufactures to maintain a record of original owners of their equipment. Our warranty registration fulfills this requirement. Please make every effort to complete the registration document. If registration is not sent in, warranty will automatically be assessed from the ship date of the trailer or vehicle.*

*Manufacturer reserves the right to modify, without notice, specific design and specifications as deemed advisable on the trailers described herein without obligation in regard to trailers previously sold. Written warranty covers each trailer. No other warranty expressed or implied is made. Brake lines and brakes are under warranty through original manufacturer. All literature dimensions & weights are approximate.*

*Customer registration is required. Customer is required to know and follow all federal, department of transportation, federal motor carrier safety regulations, state enforcements and local regulations, prior to using a trailer, prior to operating, towing and securing a load. Contact your local law enforcement or D.O.T. before Towing. Maintenance & Safety Manual recommendations must be followed to execute warranty. Please understand the capabilities & limitations of your newly purchased product.*

*\* Please enjoy our manufactured products. We appreciate your business. Thank You! \**