

Arming the transportation industry with safety solutions

## Jackknife Prevention



**L**osing control of any vehicle is scary. When it's a large truck, it can be deadly. In heavy traffic it can be fatal if the trailer slides out of control and hits other vehicles on the road. Drivers must understand the various conditions that cause jackknifing and how to avoid it.

### HOW IT HAPPENS

According to the National Highway Traffic Safety Administration (NHTSA), 10 percent of all fatal truck accidents involve jackknifing. Trucks can jackknife if a driver loses control of the angle between the tractor and the trailer. This can happen when the tractor skids sideways or when the trailer swings out of line with the tractor. Over-braking or skidding trailer tandems can cause the trailer to swing out of line. The tractor typically skids sideways due to the drive wheels spinning from too much power, the drive wheels locking from over-braking during deceleration, or the truck going into a turn too fast and the tires being unable to hold the tractor on course.

More than 90 percent of jackknife accidents involve a tractor pulling a single trailer, with the rest generally involving tractors with multiple trailers, according to the NHTSA. Longer trucks are more likely to jackknife but heavier trucks are less likely. Jackknife accidents are much more likely to occur when the speed limit for trucks is 55 mph or more, when roads are slippery and when trucks have to navigate tight curves. Other causes of jackknives include unbalanced brake systems, unbalanced and light loads, applying only the trailer brakes, drivers misusing engine retarders when the road is slick, and dirt, oil and grease buildup on roads after long periods without rain.

### DRIVER PREVENTION

Luckily, even in dangerous conditions, jackknifing isn't inevitable. Preventing jackknife situations takes a few safe driving tips:

- The first step in preventing a jackknife situation is to frequently check your mirrors for trailer swing. You should also do this every time you have to brake hard. If you notice that you're already starting to jackknife, it might not be too late to prevent your caravan from bending into an angle of no return. In this situation, experts recommend letting go of the

brake which lets the wheel resume rolling and regain the traction of static friction.

With a trailer jackknife (the trailer wheels lose traction), you can increase your speed to allow the trailer to fall back in line. However, if you are experiencing a tractor jackknife (the tractor wheels lose traction), and you think sudden acceleration could have caused it, let up on the gas pedal until the vehicle regains traction, then steer out.

- In many traffic reports of jackknifing, the trailers are empty. This is no coincidence...the heavier a trailer is, the more it bears down on the road, meaning the more friction it has with the road and the better the traction. Compound this with the fact that over-braking is easier on light loads (because the brakes of a tractor-trailer are made for fully-loaded trucks), and it turns out that empty trailers are more prone to jackknifing. So, although it might seem counterintuitive, you should watch mirrors for trailer swing, particularly when driving an empty trailer.
- Proper braking is another essential. Instead of braking during turns, decelerate slowly on the long stretch before the bend or curve. Avoid slamming on the brakes, which could cause them to lock and will often result in a jackknife situation. Although, at times, there may be no alternative to hard braking, you can do your best to stay out of these situations. One way is to keep a safe distance from other vehicles on the road. When an emergency situation occurs, do your best to avoid braking and swerving at the same time. This might mean braking, letting go of the brake, swerving and then braking again.

### TECHNOLOGY ASSISTANCE

Fortunately, we can take a little comfort in the development of sophisticated anti-jackknife technology. Engineers have attacked the jackknifing problem from a few different angles. Some technologies involve adjusting the design of brakes, while others involve devices that physically prevent the trailer from veering too far. Either way, anything that will help combat driver error will benefit all drivers on the road.

November, 2013  
*The Shield*  
Jackknife Prevention  
Quiz



Driver Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Please Print

Driver Signature: \_\_\_\_\_

Please circle one correct answer for each question.

1. Trucks can jackknife if a driver loses control of \_\_\_\_\_ between the tractor and the trailer.
  - a. the wiring
  - b. the angle
  - c. the air
  - d. all of the above
2. Which of the following could cause a truck to jackknife?
  - a. Unbalanced brake systems
  - b. Applying only the trailer brakes
  - c. Drivers misusing engine retarders when the road is slick
  - d. All of the above
3. Shorter trucks are less likely to jackknife but lighter trucks are more likely.
  - a. True
  - b. False
4. What is the first step in preventing a jackknife situation?
  - a. Frequently checking mirrors
  - b. Increasing speed
  - c. Slamming on the brakes
  - d. none of the above
5. When an emergency situation occurs on the road, do your best to avoid \_\_\_\_\_ at the same time.
  - a. braking and using your rear view mirror
  - b. braking and listening
  - c. braking and swerving
  - d. none of the above



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Quiz Answer Key



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