Tactical Response Academy
3850 Portland Road NE. Salem, OR 97303
503-588-8076

Volume 2, Issue 1

Winter2007

Tactical Responses

The Next Level In Driver Training

Tactical Response Academy
3850 Portland Road
Salem, OR 97303

In This Issue

Special points of interest:

- TRA provides professional driver training.
- TRA has certified EVOC instructors.
- TRA has a nationally accredited crash Reconstructionist.
- TRA is committed to your agency or organization and can accommodate any level of training.

What Exactly Is Following Too Closely?

By Gary G. Miller

Editor's note: As you read through this article remember that the values in most cases have been calculated using a 1.5 second unanticipated perception/reaction time and a 1.5 feet per second conversion factor (the precise conversion value is 1.467). Based on those values and rounding the speeds, distances, and times, listed values may vary slightly from standard engineering text.

In our last newsletter we discussed "How Fast Are You Really Going?" We broke down the speed of vehicles from miles per hour (mph) to feet per second (fps) to give us a better sense of how fast we were going in relation to seconds. We also talked about perception/reaction times, road surface friction, and braking and stopping abilities.

Now it is time to discuss "What Exactly Is Following Too Closely (FTC)?'

First of all let's clear up one issue. There is "following too closely" and then there is "running into the back of a stopped vehicle", otherwise known as "careless driving." They are not necessarily the same thing, yet educators, law enforcement personnel and judges have differing perspectives on the issue.

From my perspective, following too closely is where one driver is actually following another vehicle and both vehicles are moving in the same direction. The driver of the lead vehicle slows or stops and the other driver is so close that they're potentially unable to avoid a collision. In the other case the lead driver is

The Next Level In Driver Training

Tactical Response Academy
3850 Portland Road
Salem, OR 97303

Don Crites, President
Paula Crites, Vice President
Stephen Buckley, Instructor
Bruce Hoffman, Instructor
Bryan Bowe, Instructor
Gary Workman, Instructor
Gary G. Miller, Training Consultant, Crash Reconstructionist

Phone: 503-588-8076
Fax: 503-362-6371
E-mail:
gary@tacticalresponseacademy.com

The Oregon Driver's Manual recommends a 2-4 second following distance

stopped at an intersection or on a roadway preparing to make a turn and is rear-ended by a vehicle where the driver had plenty of time to stop if they would have been paying attention. This is careless driving.

Again, "What Exactly Is Following Too Closely?"

We all have a good idea of what it is, but are we right? First of all, every one of us has followed someone too closely at one time or another. Whether it be that another driver cuts in front of us on a pass and creates an uncomfortable moment or two, or we are not paying attention, or we are just unaware that we are too close because we don't know any better.

Oregon Revised Statute 811.485 defines following too closely as follows:

(1) A person commits the offense of following too closely if the person does any of the following:
(a) Drives a **motor** vehicle so as to follow another vehicle more closely than is reasonable and prudent, having due regard for the speed of the vehicles and the traffic upon, and condition of, the highway.
(b) Drives a truck, commercial bus or motor vehicle drawing another vehicle when traveling upon a roadway outside of a business or residence district or upon a freeway within the corporate limits of a city and follows another truck, commercial bus or motor vehicle drawing another vehicle without, when conditions permit, leaving sufficient space so that an overtaking vehicle may enter and occupy the space without danger. This paragraph does not prevent a truck, commercial bus or motor vehicle drawing another vehicle from overtaking and passing a vehicle or combination of vehicles.
(c) Drives a **motor** vehicle when traveling upon a roadway outside of a business or residence district or upon a freeway within the corporate limits of a city in a caravan or motorcade whether or not towing another vehicle without operating the vehicle so as to leave sufficient space between vehicles to enable a vehicle to enter and occupy the space without danger. (2) This section does not apply in the case of a funeral procession. Except for the funeral lead vehicle, vehicles participating in a funeral procession shall follow the preceding vehicle as closely as is reasonable and safe.
(3) The offense described in this section, following too closely, is a Class B traffic violation.
[1983 c.338 §654; 1991 c.482 §20]

"**motor**" was added by the 2007 legislative session which exempts bicycles.

The Oregon Driver's Manual recommends a 2-4 second following distance (2005-2007 manual, page 31). The National Safety Council recommends a 4-second following distance. Most other literature suggests a 2-second rule or even more when conditions warrant it. Hopefully, by the time you are done reading this article you will understand why 2 seconds may be adequate in good conditions and 3 seconds will cover most conditions.

While the following photograph is an exaggeration of following too closely since the lead vehicle is in the center lane and the following vehicle is in the left lane, nonetheless it still gives a good representation of what a car-length of following distance is. One car-length at 60 mph is following someone at about two-tenths of a second. Even four car-lengths at 60 mph is about a three-quarters of a second following distance which is still well beyond the ability of most people to perceive and react to an incident.

Let's digress back and remember that 85% of the population has 1.5 second perception/reaction time on a good day, and that we can calculate fps by multiplying our speedometer by 1.5. In this article we will compute two following distance scenarios - 30 mph and 70 mph.

30 Mph…….

Let's start out with a residential area and a posted speed limit of 25 mph with most people driving 30 mph. The road is your standard asphalt roadway that has a frictional value (slipperiness value) of about .70. This value is typical of dry asphalt. For wet pavement we will use a value of .60 which also is pretty standard. A little wetter means a little more slippery, hence the lower .60 value. For an Antilock Braking System (ABS) vehicle we will increase these numbers by about 10%, although they could be more or less depending on the vehicle and the road surface. For commercial vehicles you would decrease the values about 10-15%.

*******TRA Offers Defensive Driver Training*******

(See OSHA Compliance Update at www.tacticalresponseacademy.com)

TRA offers a comprehensive 4-hour classroom presentation that consists of defensive, dynamic, and evasive driving procedures. It is known as "The TRAined Driving System."

This course is custom designed for your specific profession and includes such Topics as:

"Knowing Your Vehicle" - Tips and advice on how and why you want to know the vehicle you are driving and proper vehicle maintenance.

"Safe Operating Practices" - What professionals recommend that you do in your course of driving .

"When Things Go Wrong" - What to do when the unexpected occurs.

"The Technical Aspects Of Driving" - Provides mathematical components explaining appropriate driving behavior.

Courses are custom designed for emergency responders (i.e., police, fire, and EMS), General Service employees, utility companies, and fleets.

TRA provides on-site simulator and classroom training

- Reduces down time
- Reduces travel expenses
- Keeps resources local and available
- Expert Instructors
- $125 per training hour

Provides a realistic and customized driving experience without the worry of damage

Following Too Closely (Continued)

Remember that 30 mph is about 45 fps. At 45 fps it will take you about 67 feet to perceive and react to an unexpected stimulus. At this speed on dry asphalt it will also take you about 43 feet to stop with a conventional braking system. A little less with ABS. So you are looking at it taking about 110 feet to see something and brake to avoid it. You can also swerve as well, but the narrowness of the road and parked cars make that a less attractive option. Generally speaking if you are going 30 mph or faster you can avoid an object by swerving better than by braking, but there will always be mitigating factors that may make one safer or more preferable than the other. And if you have ABS you get the best of both worlds – you can do both at the same time. Many car manufacturers now offer electronic stability control (ESC) as an option (standard on luxury models) to assist with swerve control. ABS assists in controlling the longitudinal stability and braking of a vehicle while ESC regulates the lateral control and stability of a vehicle.

So, if you want to be able to see, react, and avoid an object or person by braking on dry asphalt you have a 110 foot window in the best of situations. In time it would be 1.5 seconds plus the stopping time, which is about 2.0 seconds, or 3.5 seconds of total stopping or evasive maneuver time. More is needed if your reaction time is slower an/or you are operating a vehicle that has longer stopping distances (RV's, Air-braked vehicles, commercial vehicles)

But this is not necessarily the distance, nor time, that you should follow someone at. When you follow a vehicle that vehicle cannot stop instantaneously. In many cases the vehicle you are following will have a braking distance similar to your vehicle. So, theoretically, as long as you are on top of your game, paying attention, and following by at least your perception/reaction time distance (typically 1.5 seconds for many drivers) you may be able to avoid rear-ending a vehicle in front of you should the driver slam on their brakes. Remember we are not concerned with the perception/reaction time of the lead vehicle only its braking distance. However, an alert driver will always try to scan 8-10 seconds ahead to be better prepared for such an event and be positioned back enough distance to see around the vehicle. For car-length taught folks that 67 feet would break down into a little over 4 car lengths of distance instead of the previously taught 3 car-lengths (One car-length per 10 mph). So in this case, theoretically speaking, we would need a distance of 110 feet to avoid a non-mobile object and a distance of 67 feet or about 4 car-lengths when following a vehicle at 30mph.

Theory is great, but realism or practicality is better. We know that most of us are not on top of our game when we drive. Our minds are elsewhere and not always on our driving. We know that some vehicles stop faster than others, adverse weather or wet roads take longer to stop on, some of us can't see as well as others and so on. So what we want to do….as the old saying goes…is plan for the worst, and hope for the best.

Under these guidelines of planning for the worst is where FTC changes and increases the times and distances of following vehicles. Taking the above scenario and adding ½ second to the P/R time (making it 2.0 seconds) and reducing the stopping ability of a vehicle for wet pavement (.60) the distances would be increased for the same 30 mph speed to 90 feet (5 ½ car-lengths), 50 feet of braking distance, for a total of 140 feet in stopping distance.

The Next Level In Driver Training

Tactical Response Academy
3850 Portland Road
Salem, OR 97303

Don Crites, President
Paula Crites, Vice President
Stephen Buckley, Instructor
Bruce Hoffman, Instructor
Bryan Bowe, Instructor
Gary Workman, Instructor
Gary G. Miller, Training Consultant, Crash Reconstructionist

Phone: 503-588-8076
Fax: 503-362-6371
E-mail: gary@tacticalresponseacademy.com

..accounting for the unknowns of driving one should not be following closer than 90 feet or nearly 5 ½ car lengths or 2 seconds at 30 mph...

So in reality and accounting for the unknowns of driving one should not be following closer than 90 feet or nearly 5 ½ car lengths or 2 seconds at 30 mph. To perceive, react, and stop to avoid a stationary object you would need the 140 feet of total stopping distance or about 4 seconds. Two seconds is the time needed for following a vehicle and four seconds is the time needed to perceive, react, and completely avoid an object or person. These times would be for clear situations where you are reasonably alert and focused on your driving…….(read the article in it's entirely at www.tacticalresponseacademy.com).

Conclusions

What is the one common denominator in each scenario? ***A following distance of at least 2.0 seconds.***

Clearly, car lengths are not an appropriate way to judge following distances with the exception that if you are ever within 3 car-lengths of the vehicle in front of you, regardless of the speed, you could easily be stopped by police for following too closely. For freeway driving 3 car-lengths is following someone at a distance of less than ½ second which is clearly dangerous. A few jurisdictions are now using laser technology to determine speed, following distances, and following time. Some officers feel this is more scientific and will yield a greater conviction rate since it is based on objective rather than subjective data However, the officer is still required to demonstrate what time and/or following distance constitutes following too closely. It is this author's opinion that any following distance of 3/4 second or less would easily merit a violation of law, anytime and anyplace.

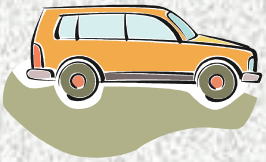
Bottom Line:

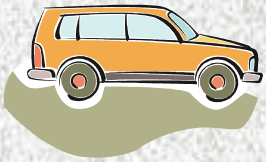
- Use time as the increment when following vehicles not car-lengths.
- Following a vehicle at less than 3/4 second of time is clearly dangerous.
- Following a vehicle by 1-1.99 seconds is a bit risky in certain conditions, but if you are very attentive and drive a vehicle that is equipped with very good ABS brakes you can probably avoid rear-ending a vehicle.
- Following a vehicle by 2 seconds or more will most likely keep you from rear-ending a vehicle.
- Following a vehicle by 3 seconds or more will most likely keep you from rear-ending a vehicle no matter what kind of vehicle you drive and the braking system it has. This is the distance that TRA recommends.

To read this article in it's entirety and see what happens at 70 mph just give us a call at 503-588-8076 and we will email it to you or review it online at……..

www.tacticalresponseacademy.com.

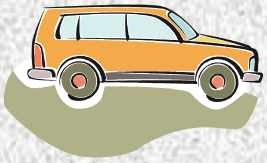
Safe distance for following vehicles with good conditions





2.0 Seconds

Safe Distance for following vehicles with extenuating circumstances



3.0 Seconds

(TRA Recommended Distance)

THE 4 MOST COMMON FACTORS THAT KEEP EMERGENCY RESPONDERS FROM REACHING THEIR DESTINATIONS SAFELY.

By Bruce Hoffman

Editor's Note: Bruce Hoffman is a training consultant for the Tactical Response Academy. He retired after serving 27 years with the Oregon State Police. Bruce was a DPSST certified instructor for Emergency Vehicle Operations Training, Tactical Vehicle Intervention, Patrol Tactics, Use of Force, Verbal Judo, and Field Training and Evaluation Programs.

Okay, I admit it. The title may be a bit misleading, as they all really boil down to this: **Poor decision-making**. Police officers may remember the slide in the DPSST EVOC presentation that reads: "We can't teach you not to be stupid." Although some might choose to take offense at that, the point is this: In a relatively short time, on a closed course, in a simulator or in behind-the-wheel training, we can learn all the proper skills and techniques to improve our driving, whatever our present skill level is. But one can use proper cornering lines, shuffle steering and trail braking; enter a curve or intersection too fast and crash. Crashes have much more to do with decision-making than with a lack of skills.

The premise behind Oregon's Emergency Vehicle Operation program is: **It's not how fast you drive, but how efficient and consistent you are in your driving.** The philosophy calls for 100% vehicle control, 100% of the time**.** When is it justifiable to exceed your ability or your vehicle's ability?

Having said all this, let's zero in on some of those tendencies that lead to crashes.

1) Driving too fast for conditions. Rule #1 is to arrive safely. As we all know, if you don't arrive safely at the scene, not only can you not help, but you've added to the problem by diverting resources to your crash. All emergency driving is a question of risk vs. benefit.[1] *I recall attempting to locate a drunk driver early one morning; clearing lights, busting through intersections all the way through downtown Grants Pass. When I reached the south end of town, I looked in the mirror and saw the cars I'd started out with about a half block behind me. I learned something that day about risk & benefit. In this particular case, I risked disobeying traffic signals all the way through town for the benefit of gaining a half-block, maybe ten seconds, on normal traffic.* Oregon's Basic Rule[2] states that "a driver shall not drive a vehicle at a speed that is greater than reasonable and prudent, having due regard for traffic, roadway, weather, [etc., etc]…or any other conditions then existing." Nothing excuses emergency responders from this rule. In fact, the section allowing emergency operators to disregard certain traffic laws specifically states that nothing relieves the operator of an emergency vehicle of the duty to drive with due regard for the safety of others.[3]

Some situations call for extra caution. Because signs and road markers are reflective, it gives us the illusion that we can see much better at night than we actually can. The important thing to remember when driving at night is: **The things we see are artificially illuminated. The things we run into are not.** Therefore, you must slow down. During inclement weather you also must slow down. Everything you do must be done smoothly. The earlier you begin braking, steering or accelerating; the less brake, wheel or gas you have to use. That makes you smoother and reduces weight shift. Under normal circumstances this is not that critical. But during inclement weather or emergency responses, small mistakes can become big problems.

2) **Reliance of emergency equipment.** When we activate the lights and siren, we assume everyone will notice and yield appropriately. Experience shows us this is not the case. *At DPSST EVOC training, police trainees are loaded into a car driving at normal speed and are overtaken by another car running with the siren on. The students are always surprised that the overtaking vehicle is almost on top of them before they hear the siren. A booming stereo only adds to the problem.* Buildings muffle and obscure sirens and lights. Also lights and sirens can bounce off buildings, particularly at night, making it difficult to determine the direction they are coming from. Speaking of directions, sirens are very directional. At 90 degrees, sirens are less than 50% effective. These factors make clearing intersections particularly dangerous.

3) **Impatience.** Impatience encourages drivers to take unnecessary risks that manifests in diverse ways. When drivers are slow to yield, impatience will cause an emergency responder to pass on the right. Impatience will cause a responder to go the wrong way on a one way or drive into an oncoming lane. Instead, take a deep breath and remember to weigh the risk vs. benefit.

4) **Distraction/Inattention/Divided attention.** Backing crashes, pedestrian crashes and rear-enders are examples of a driver's lack of concentration. Emergency vehicle operation requires multi-tasking. In addition to driving and watching out for the other guy, you're listening and talking on the radio, coordinating with other responding units, determining the fastest route, and planning your actions on arrival. The amazing thing to me is that there aren't more police, fire and ambulance crashes. *After Recruit School, Oregon State Police recruits spend 3-5 months working with an experienced Trooper. Typically a couple recruits will be lost during this period. In the overwhelming number of cases the cause is the inability to multi-task; such as the inability to drive, observe violations and operate the radio simultaneously.*

[1] Biscoe v. Arlington County, 1984. This case established that police officers involved in a pursuit must continually evaluate the risk to the public with the value of immediate apprehension.

[2] ORS 811.100(1)

[3] ORS 820.300(2)(a)

The Next Level In Driver Training

Tactical Response Academy
3850 Portland Road
Salem, OR 97303

Don Crites, President
Paula Crites, Vice President
Stephen Buckley, Instructor
Bruce Hoffman, Instructor
Bryan Bowe, Instructor
Gary Workman, Instructor
Gary G. Miller, Training Consultant, Crash Reconstructionist

Phone: 503-588-8076
Fax: 503-362-6371
E-mail:
gary@tacticalresponseacademy.com

Future Training /Dates

TRA continues to provide on and off site driver training to both public and private entities. We are currently scheduling though December of 2008

If you are interested in setting up future training dates please call us.

Future Issues/Articles

Next Issue:
Tire Talk

We're on the web at www.tacticalresponseacademy.com

Tactical Responses is a public service newsletter that is freely available by including yourself on the TRA email newsletter list

Published by Tactical Response Academy.
Editor: Gary G. Miller
Comments to gary@tacticalresponseacademy.com