Gmail Robert Wohlers <wohlersbob1@gmail.com>

#48_2024_February_Newsletter #2

Off-Road Safety Academy <bob.wohlers@discoveroffroading.com> Thu, Feb 1, 2024 at 2:53 PM
To: wohlersbob1@gmail.com

Thank you for signing up to receive my newsletters. I hope you've found the previous editions informative and helpful for your vehicle- supported adventures. I trust you will enjoy this month's newsletter. If you have comments, please email me: Bob.Wohlers@discoveroffroading.com. You can access, download, and read previous newsletters on my website by clicking HERE. Look through the

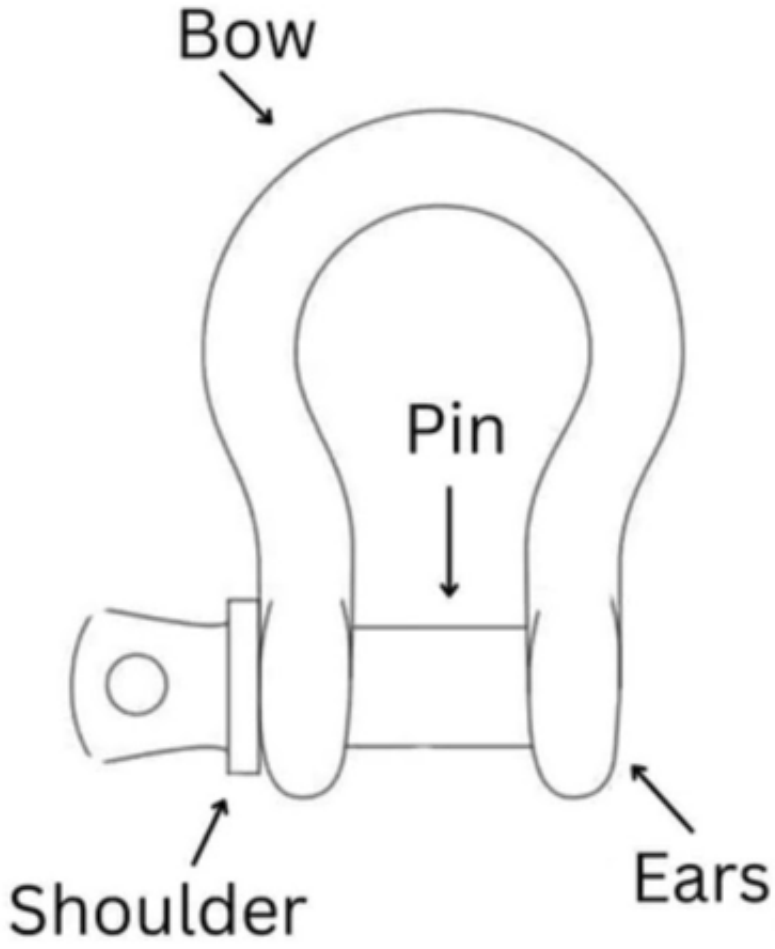
Newsletter Reference for a topic that may interest you, or download them all!

Screw Pin Tightening on Anchor Shackles... Best Practices, Personal Observations, Testing, and Being an Informed Thinker

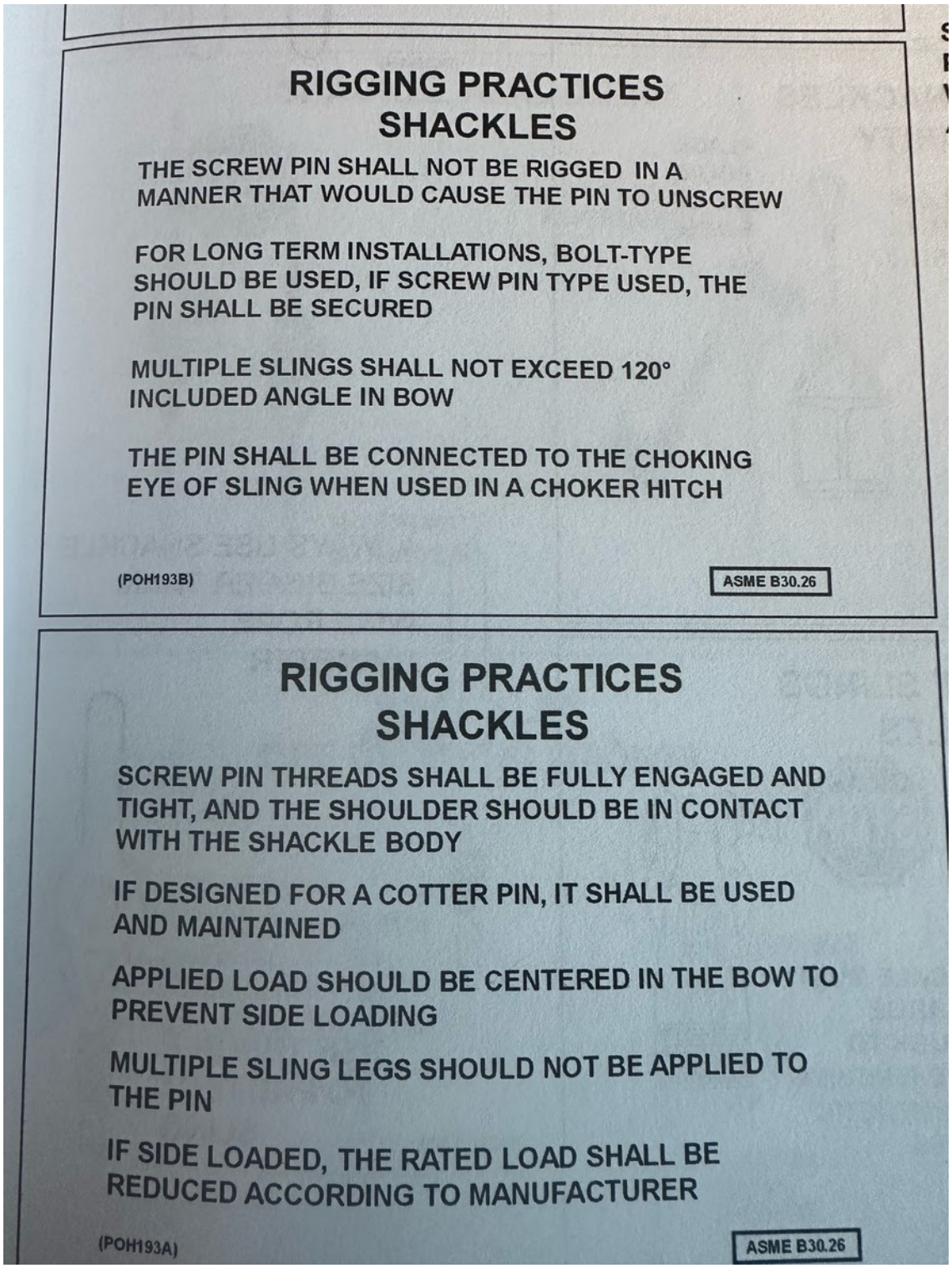
Recently there were several social media postings proclaiming that if you use a Screw Pin Anchor Shackle when rigging an off-road recovery, its pin MUST be screwed in tight. This is in contrast with the historical practice of screwing the pin all the way tight, then turning it a quarter turn backward to loosen. Let's examine both practices carefully. Some of what I'm about to write are facts and some are my personal observations.

Let's begin with the "best practice" of always screwing the pin's "shoulder" against

the shackle's "ear." (See the diagram below for terminology.)



To support this best practice, pictured here is a tag from document B30.26 produced by the American Society of Mechanical Engineers (ASME).



From the tag, note these best practices by ASME for shackle use in rigging:

• Screw pin threads shall be fully engaged and tight, and the shoulder should be in contact with the shackle body (ear).

• The screw pin shall not be rigged in a manner that would cause the pin to unscrew.

Like those that recently posted on social media, I also believe that off-roaders should screw the pin in tight when rigging for an off-road recovery. Now you're waiting for the famous "but…." Read on.

Let's examine the historical off-road rigging practice of screwing the pin all the way tight to touch the shackle's ear, then turning it a quarter turn backward to loosen. What's the rationale for such a practice? For anyone that has used a screw pin anchor shackle, the answer is obvious. If you screw the pin all the way in so it's shoulder mates with the shackle's ear, then put a load on the shackle, the pin often becomes impossible to remove without a tool such as a Phillips screwdriver or multitool. Putting a load on a shackle with a hand tightened pin causes the pin to tighten even more.

Is having to use a tool to loosen a pin after a load pull an inconvenience? Yes. So much of an inconvenience that it overrides the best practice of tightening the pin during rigging rather than a quarter of a turn back? No. Not in my opinion. **I encourage all that read this newsletter to follow best practices when securing anchor shackles in off-road recovery riggings.** Those that posted on social media that you should always tighten an anchor shackle's pin prior to a pull are giving you good information. However, from a practical standpoint, is the historical practice of backing off the pin a quarter of a turn prior to a pull WRONG or DANGEROUS? Let's explore.

What can happen if you use the historical practice of a quarter turn back on the pin when rigging an anchor shackle for off-road recoveries? There are two possible concerns. 1. The pin may fall out. Okay, that's a very legitimate concern. No one would want that to happen. 2. The strength of the shackle might be dangerously reduced because the pin is not screwed in all the way. Again, this would also be a very legitimate concern. If there are more concerns, I don't know of them. Email me additional concerns as you might see them.

Allow me to reflect on both stated concerns.

Admittedly I've been using the historical method of backing the pin out a quarter of a turn for over 30 years of off-road recoveries. I even wrote about using shackles in this manner in my book "The Total Approach to Getting Unstuck Off-Road" on page 104. Now, rest assured I'm not trying to validate my past actions with the publishing of this newsletter. I'm only trying to explore the topic more completely and by doing so to inform you my reader.

To be honest I've never had a pin even begin to look like it was going to fall out of my shackles during or after a recovery. In fact, sometimes the pin that's backed off a quarter of a turn while rigging still needs a very firm hand twist to release it from the shackle after a pull. When the pin was backed off a quarter of a turn when rigging, is there anyone of you that has seen a pin fall out of a shackle while performing an off-road recovery pull? I've never seen it, yet I stand to be corrected. Please share with me by email your experiences to the contrary on this point. I have the philosophy that "I'm in school everyday," so you won't hurt my feelings by politely telling me that I'm off my rocker.

The other concern when not screwing the pin in all the way during rigging is that the shackle would be somewhat weaker and be potentially dangerous, even when used at or below the shackle's working load limit. Well, there's only one way to prove or disprove this potential concern – destructive testing of a quality shackle at a professional facility. Here's what we did.

We took three Crosby screw pin anchor shackles that were the same size and with the same WLL and pulled each to total destruction. One shackle had its pin seated and secured, so its shoulder was tight against the shackle's ear. The second shackle's pin was backed off a quarter of a turn, while the third shackle's pin was backed off one-half of a turn. In progression, this means that less and less threads of the pin were available to secure the pin in the shackle.

We even took videos of the three tests. If you are interested in how destructive testing is done, click HERE.

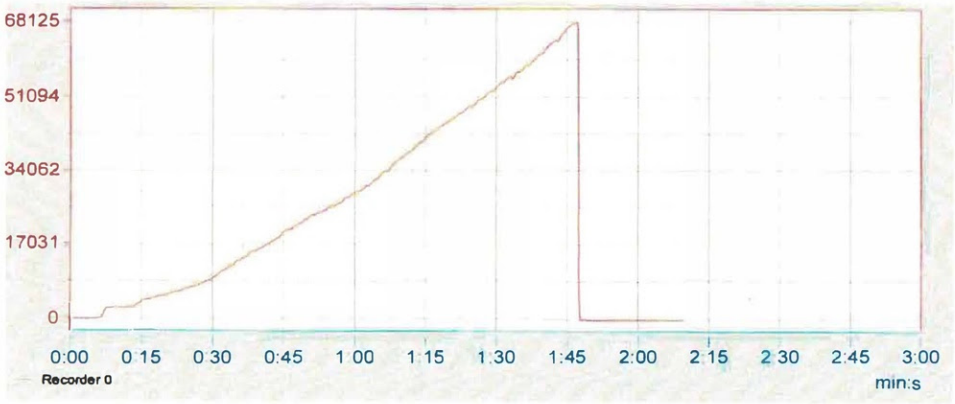
Below are the official test results.

Certificate Of Test

Performed By:

[redacted]

HHI #	H-1140439-1-1P			
Customer	[redacted]	WLL	62800	Lbf
Description	3/4" CROSBY SCREW PIN SHACKLE	Factor (*)	1.00	
Description2	SHACKLE PIN SEATED AND SECURED	Test Load	62800	Lbf
Test Type	BREAK TEST	Max Load	68125	Lbf
Serial #	1140439-1-1	Hold Time	0.06	Minutes
Part #	N/A			
P.O. #	TESTING			
Dwg #	N/A			



This certifies the item(s) described has been loaded to the specified test load. Load measuring instruments are accurate +/- 1% of reading as specified by ASTM E4. Certificates on file. Upon conclusion of testing no obvious defects were noted.

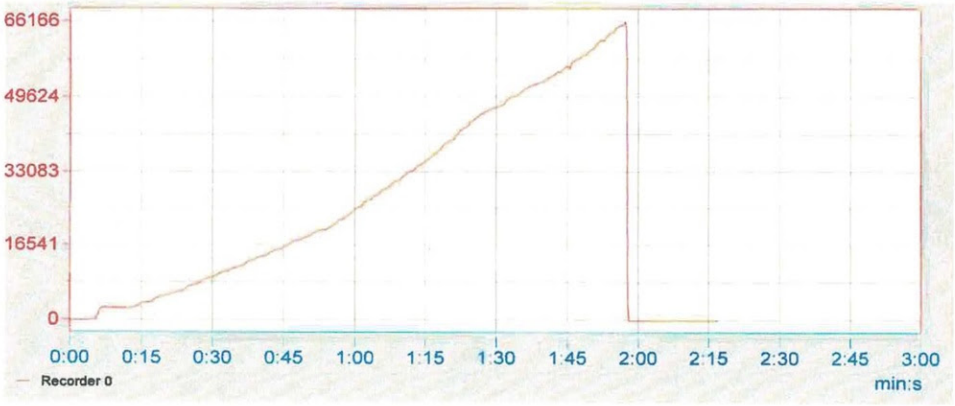
Disclaimer: No other tests, inspections, or certifications have been made or implied on this document. The owner and/or end-user is responsible for the use and suitability for any task.

Certificate Of Test

Performed By:

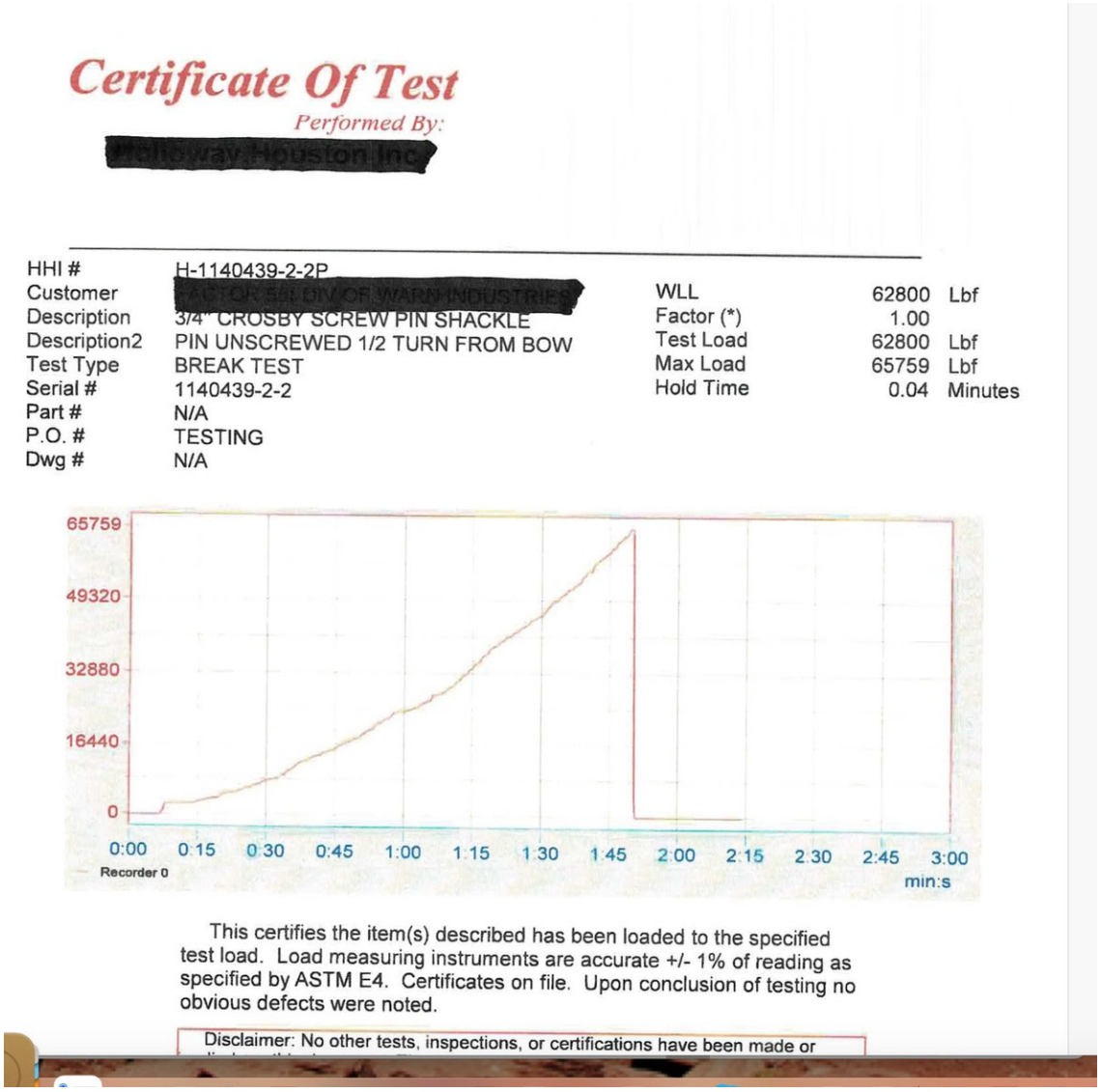
[redacted]

HHI #	H-1140439-2-1P	WLL	62800	Lbf
Customer	[redacted]	Factor (*)	1.00	
Description	3/4" CROSBY SCREW PIN SHACKLE	Test Load	62800	Lbf
Description2	PIN UNSCREWED 1/4 TURN FROM BOW	Max Load	66166	Lbf
Test Type	BREAK TEST	Hold Time	0.04	Minutes
Serial #	1140439-2-1			
Part #	N/A			
P.O. #	TESTING			
Dwg #	N/A			



This certifies the item(s) described has been loaded to the specified test load. Load measuring instruments are accurate +/- 1% of reading as specified by ASTM E4. Certificates on file. Upon conclusion of testing no obvious defects were noted.

Disclaimer: No other tests, inspections, or certifications have been made or implied on this document. The owner and/or end-user is responsible for the use and suitability for any task.



Certificate Of Test

Performed By:

[redacted]

HHI #	H-1140439-2-2P			
Customer	[redacted]	WLL	62800	Lbf
Description	3/4" CROSBY SCREW PIN SHACKLE	Factor (*)	1.00	
Description2	PIN UNSCREWED 1/2 TURN FROM BOW	Test Load	62800	Lbf
Test Type	BREAK TEST	Max Load	65759	Lbf
Serial #	1140439-2-2	Hold Time	0.04	Minutes
Part #	N/A			
P.O. #	TESTING			
Dwg #	N/A			

This certifies the item(s) described has been loaded to the specified test load. Load measuring instruments are accurate +/- 1% of reading as specified by ASTM E4. Certificates on file. Upon conclusion of testing no obvious defects were noted.

Disclaimer: No other tests, inspections, or certifications have been made or

Testing Conclusions

Test One - Shackle with Pin Seated and Secured Broke at 68,125 Lbf (pounds of force).

Test Two - Shackle with Pin Unscrewed One-Quarter Turn Broke at 66,166 Lbf

Test Three - Shackle with Pin Unscrewed One-Half Turn Broke at 65,759 Lbf

1. The shackle that broke at the highest max load was the shackle that had the pin screwed in tight. The next strongest shackle was the one that had its pin backed off a quarter turn, and the weakest shackle was the one with the pin backed off one-half turn.
2. Backing the pin off by a quarter and one-half turn on an anchor shackle DOES make these shackles "weaker" than the shackle that had its pin tightened prior to the pull. However, the difference between the fully screwed in pin and the one-half turn loosened pin was only 2,366 Lbf. This

is only 3.5 percent less than what the fully screwed in pin broke at.

3. HERE'S THE IMPORTANT CONCLUSION FOR RECREATIONAL OFF-ROADERS: All the tested shackles broke OVER Crosby's working load limit of 9,500 pounds for a 3/4 inch shackle. Regardless of whether you use these shackles with the pin tightened or backed off to a quarter to one-half turns, it will NOT break when properly used.

With these test results we can throw out the concern that a properly used shackle will be dangerous if you back off the pin one-quarter or one-half a turn when rigging for an off-road recovery.

Final Thoughts

I believe in using "best practices" when conducting in-the-field recoveries. You should follow a manufacturer's stated best practices when rigging and conducting off-road recoveries. That said, don't be a groupie non-thinker. Be an informed thinker. Choose your actions based on maturity, data, and safety.

Based on my personal experience and the destructive test data presented here, I'm not overly concern with backing off an anchor shackle's pin a quarter of a turn in most off-road recovery riggings. However, as I've done in the past, I will continue to fully tighten pins on anchor shackles when used for kinetic energy recoveries or when I believe a winch recovery my cause shock loading.

Regarding anchor shackle use for recreational off-roading, you should:
* Purchase only quality, forged-steel shackles from a manufacturer such as Crosby, Van Beast, Skookum, ARB, Black Rat, Icon, Ox Bow, and CM.
* Always inspect them prior to use. Make sure they are not damaged, cracked, or deformed and you can read all the markings on the shackle.
* When making a sling, attach multiple loops to the bow, not the pin.
* Avoid side-loading an anchor shackle. Side loading does cause a reduction of the shackle's working load limit.
* Screw pins DOWN into the anchor shackle when rigging for use.

In my opinion these are the important best practices related to recreational anchor shackle use when conducting off-road recoveries. If you wish to add to the above best practices list that the pin must be fully tightened when rigging, then do please so. You would not be wrong.

Off-Road Safety Academy's 2024 4WD Adventure Courses

Education is Adventure's First Acquisition!

Want to learn more about your 4WD vehicle? Want to improve your off-road driving skills? Interested in keeping you and your loved ones safe while off roading? Do you know how to safely drive your vehicle over all types of terrain? Compression terrain (sand, snow, mud), hills, side slopes, rocks? Want to have a ton of fun learning the art of safe off-roading? Off-Road Safety Academy will safely teach you in one weekend what it takes most people years to learn on their own.

Off-Road Safety Academy's courses are for beginners as well as experienced off-roaders. Take the Discovery and Recovery Courses from Off-Road Safety Academy at NO RISK to you. If after completing these courses you do not feel more confident and relaxed with your off-road driving ability, your total course fee will be refunded.

Your safety through professional services is the only goal. Completing these courses will help you with the three P's:
Protect People. Protect the Environment. Protect Vehicles.

Consumer 4WD Courses

As of now, there are only two scheduled consumer 4WD Adventure Courses in 2024:

Discovery Course – Introduction to 4WD
June 15-16
Cost: $720
Where: Prairie City State Vehicular Recreational Area (Near Sacramento California)

The Total Approach to Getting Unstuck Off-Road – Recovery Course
June 22-23
Cost: $720
Prerequisite: Read and Complete Quizzes in the book: The Total Approach to Getting Unstuck Off Road (Click HERE to purchase on Amazon)
Where: Prairie City State Vehicular Recreational Area (Near Sacramento California)

For more information, details, and to purchase your spot in one of these two courses, click HERE.

Off-Road Training Association

Professional 4WD Courses – New for 2024

Trail Guide Outfitter Course (TGOC)
Interested in becoming a professional trail guide, capable of leading remote backcountry adventure tours for pay? This is your first step in becoming a professional off-road 4WD leader. During this course you will learn the many responsibilities of a 4WD outfitter.

Prerequisites: Completion of Discovery Course and Recovery Course.
Post Course Requisites: Certified as a Wilderness First Aid Responder. Assist with an actual off-road tour.
November 11-12
Cost: $1000
Where: Prairie City State Vehicular Recreational Area (Near Sacramento California)

4WD Instructor Development Course (IDC)
Upon successful completion of the Trail Guide Outfitter course, you may enroll in the 4WD Instructor Development Course. This three day course will teach you how to become a professional 4WD educator. During the IDC there are no knowledge exams or skill evaluations – only developmental learning. This training methodology is substantiated by professional instructional design and proven by adult educational principles. The pressure of "testing" should not be a part of developmental learning. This course is crafted using the tenets of objective-based learning.

Once you complete the IDC, you may enroll in the 4WD Instructor Examination (IE). The 4WD IE is a two-day evaluation of your educator abilities. You must pass a lengthy written exam and off-road skill evaluations. During the IE you will be assigned several speaking presentations on various topics to demonstrate your teaching ability both in the classroom and in the field.

Prerequisite: Completion of Trail Guide & Outfitter Course.
Post Course Requisites: Assist with one Discovery or Recovery Course. Wilderness

First Aid Instructor Certification
November 13-15
Cost: $2000
Where: Prairie City State Vehicular Recreational Area (Near Sacramento California)

Do you have questions about the Trail Guide Outfitter Course and 4WD Instructor Development Course? Happy to answer them. Feel free to call or email:
909.844.2583
bob.wohlers@discoveroffroading.com

Can You Say Zoom Call?

Want More Information on Tours and 4WD Courses for 2024?

Catch me live on a Zoom Call! If you have questions for me and Off-Road Safety Academy's scheduled offerings for 2024, join me on a Zoom Call:

This Friday, February 2 at 6:30 PM (PST).

We'll make the call fun and informative.

My Zoom subscription allows up to 100 participants. First come, first admitted. I hope to see you on this call!

Five minutes prior to the start of the call, click HERE to attend.

Or, use this link to cut and paste in your web browser:
https://us06web.zoom.us/j/89879196803?pwd=LB4AAd92y1kDyKwkBTrqOfDp7Uqav0.1