

FOURWHEELING ACADEMY

Low Pressure Revolution

EDITOR'S NOTE: *The Ol' Coyote is pretty slow on social things. For years I've been doing these articles with the help of friends, but seldom have provided proper credit. "From the Coyote" on page 2 thanks the players. They deserve recognition.*

By Harry Lewellyn

Staun Products' Internal BeadLock™ is creating a low tire pressure revolution. Words alone don't do this product justice. Even if you don't read the entire article, take a look at the pictures. They are very impressive!

If you play in the dirt long enough, you'll eventually encounter rim-, tire-, bead-related problems. Popping the beads off the rims is relatively commonplace. While playing and learning about driving sand years ago, I actually popped four beads at one time while side-hilling. I lost the two outside beads on the downside, and the two inside beads on the uphill side of the 4X.

Another problem is actually spinning the tires on the rims. That results from too much traction and torque, and not enough friction between the tire bead and rim due to low tire pressure. These annoyances are expected by the folks who regularly playing on the Black Diamonds. Until now, they countered these rim/tire/bead predicaments in several ways; however, Staun BeadLocks may make these problems a thing of the past.

The Black Diamond guys may: (1) install conventional bolt on bead locks or (2) sacrifice performance by running higher "low" pressure than they really want. They may also (3) choose to accept rim/tire spin and get the wheels rebalanced every so often. For intermittent air "burping," they usually just (4) add air along the trail and get used to reseating the beads when they knock 'em completely off. By the way, in the Trail Tip on



Figure 1 Staun's Internal, pneumatic BeadLock™ was awarded "Best Product Under \$250" in 2004 by Australia's *4WD Monthly* magazine.

FOURWHEELING ACADEMY

RANCHO RS99700

NEW REMOTE CONTROL PANEL AND FITTINGS FOR RANCHO RS9000X SERIES SHOCKS

By Harry Lewellyn

If you have been on many of my tours, you'll know that you regularly get the Rancho 9000X cab adjustment pitch when we hit the washboard. I typically let you know that via the remote control, I can significantly smooth out the annoying ride by adjusting my shocks to maximum soft from within the cab, while moving. The annoying "brrrit" (trill your tongue) all but goes away. What's new is that Rancho has changed the control panel, pump and tubing, and gone to easier, more secure snap fittings.

I'll start in the cab, run you through the firewall and out to the pump, and finally, to the shocks.

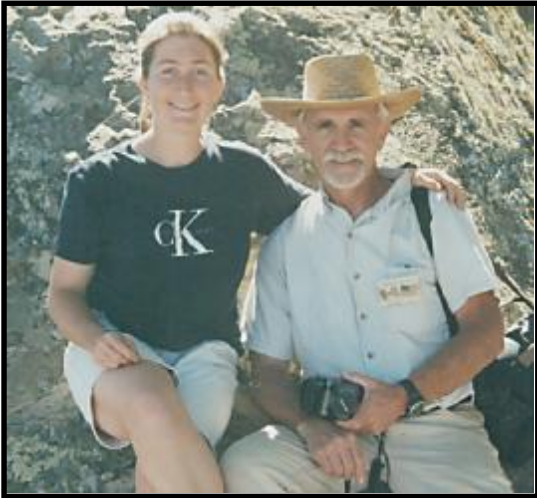
RS99700 KIT

The kit has everything including new shock adapter O-rings, tube and tube cutter, wiring, fuse and holder, and all necessary fittings. The instructions are surprisingly well written contrary to my normally critical attitude toward this aspect of most installation kits.

CONTROL PANEL

First, the control panel angle bracket is significantly stronger than its sheet metal predecessor. It's made from 1/8" aluminum and sports a pleasing recessed design. All of the controls are now labeled, so you no longer have to guess which bleed valve is for the front versus the rear. What I like best is subtle, but important to me. When driving at night, I could not see the meter needles on the old design even when

From the Silver Coyote



WORKING TOGETHER

As I mentioned in the Editor's Note on page 1, that article drove home how a few friends can team up and produce some pretty viable information. We don't look as "slick" as the popular publications, but our information is complete and accurate. We provide performance, results-oriented, physical reality-based information that is not constrained by advertising dollars and marketing hype, so we might not always be "politically correct."

For the BeadLock™ article, the players were many, and many go uncredited, particularly Blaine Johnson's friends at Means Dry Lake, CA. Thank you Roger Smith, of Beadlock Australia P/L for providing 10 test units. Gary Zingler (Four Wheeler Supply, Huntington Beach, CA) supplied the wheel used for the burst test and Darren Bradley (Spectrum Gas Products, Costa Mesa, CA) let us use his 10,000 PSI hydrostatic test machine for that. George Carousos of Extreme Outback Products (Vacaville, CA) donated the Tyrepliers® way back in 2001. Brian Jensen volunteered his '97 TJ's

wheels, while master fabrication genius, Blaine Johnson's tools and garage were the installation stage. Ken Obenski, a registered professional engineer, and owner of a forensic, accident reconstruction firm is my ever-present technical sounding board. Also, in the very short time I've come to know Chris Johnson, Public Affairs Officer of the California Highway Patrol, Santa Ana, CA office he's becoming a friend, too. He did a terrifically creative job of researching the legality of bead locks, a question that I believe to be answered. Thank you all for your generous help and support to make my job so rewarding. I can't do it without you.

SUGGESTIONS WELCOME

So, here's my open invitation to everyone. I welcome your suggestions about what to test and all that goes with it. Even if you have a burning question, but know nothing of how to test or answer it, fire away. Better yet, know more or less exactly what you want to do, but don't have the resources, fire away. We want to write about what you out there want to read, and the only way for us to know is for you to tell us. Tell us.

ABOUT ECO4WD

If you're new to ECO4WD, here's what we are about. We have led ecologically compatible 4WD tours since 1984. We also conduct 4WD trainings for both consumers and corporate clients, publish this newsletter and offer a few unique products. If you have a latent sense of adventure or seek to improve your 4WD skills, learn about an area or enjoy traveling with others, we're the folks to see.

Most tours are easy to moderate. They focus on the appreciation of local flora, fauna, geology and history with 4WD driving hints and suggestions inter-

jected throughout our informative tours. We also offer the Rubicon Trail black diamond skills seminar for those who wish to take it a little further.

ECO4WD TEAM

Jenna Kane, my wife, and I operate ECO4WD and lead tours throughout Southern California, Baja and mainland Mexico. Our "clean and easy" style reassures our clients we have their best interest at heart. To us, the 4WD is a means to an end and not the end itself.

Roger and Cecile Vargo, and Don Carter, our black diamond specialist also lead ECO4WD tours. Learn more about them on pages 4 and 5.

OUT OF STATE TOURS

I've been asked more times than you can count for out of state tours. We're listening and have plans afoot to hire local, experienced guides for Arizona, Colorado, Utah and other states to conduct ECO4WD-style tours. To stay abreast of breaking news, check our website or subscribe to our free newsletter.

FREE NEWSLETTER

The easy way to stay abreast is to sign up for our free newsletter on our website. We don't like being spammed either, so we neither sell nor share your email address when you do that. Once every other month, you'll receive a brief email stating what's new on the site. Why miss anything? Sign up and stay abreast.

MOJAVE DESERT TRAILS

We missed getting our review of Lorine Lawlor's *Mojave Desert Trails* book into this newsletter. Sorry, Wynne Benti of Spotted Dog press. It will be published in the January-February ECO4WD newsletter. Find a preview in the Spotted Dog Press ad on page 5.



Managing Editor: Harry Lewellyn
Copy Editor: Jenna Kane
Contributor: Roger Vargo

ECO4WD is committed to passive appreciation of Mother Nature and ecological backcountry travel on unpaved roads.

The ECO4WD newsletter is published every other month. Subscriptions are \$14 for six issues. January

through September features the Coyote's technical articles and are 10 pages. The 40-page November-December *Bonus Issue* is the only issue that contains advertising. Contact ECO4WD for advertising rates or to receive a free Bonus Issue. Bulk copies are also available. For Newsletter Reprints on selected topics and back issue orders, see the order page or our website. Back issues are \$3.00 each.

We encourage the submission of articles and photographs for publication and reserve the right to edit them. Submissions are only returned when accompanied by a stamped, self-addressed envelope.

The ECO4WD newsletter is a copyright © of Harry Lewellyn, 2004. Reproduction, in whole or in part, in any manner, or use on the Internet is expressly forbidden without the prior written consent of Harry Lewellyn.

ECO4WD • P.O. Box 12137 • Costa Mesa, CA 92627 • (949) 645-7733 • FAX 645-7738 • www.eco4wd.com • info@eco4wd.com

QUALITY

RELIABILITY

DESIGN

VALUE



INTEGRATED *Suspension*

Vehicle suspension, especially when referring to 4WDs, is complex to say the least. Determining the right solution for each vehicle requires special attention to **many factors**, with **weight** being the **most critical**.

A single suspension system designed to suit a multitude of users simply isn't practical, as each user's **preferences** will dictate how the vehicle is **outfitted** and **used**.

Despite these differences, most aftermarket suspension systems are only available in a single configuration, with lift height often being your only option.

Old Man Emu is different. Instead of offering a compilation of parts that have been chosen primarily to increase the vehicle's ride height, OME offers a range of **tuned** and **matched, integrated systems** each offering varying degrees of **comfort**, **load carrying** ability and **control** characteristics.

Anything else is a compromise!



4X4 ACCESSORIES

Nothing rides better,
handles better or tows better
**than a vehicle equipped
with Old Man Emu.**

Call **866-209-9334** for a **Free Brochure**
or log on to **arbusa.com**

ARB USA • Seattle, WA • 206-264-1669 • sales@arbusa.com

4WD PRODUCTS

AIR COMPRESSORS TIRE DEFLATORS JEEP ACCESSORIES



MaxAIR 4.0

100%
DUTY!

- 4 CFM
- 150 PSI
- 12 Volt DC



\$359⁰⁰

14" X 9" X 6"

QUICK DEFLATORS

Non-presettable

\$10⁹⁹



Complete your on-board air system!
AIR TANKS Starting at \$45.00

- Steel or Aluminum
- 1 or 3 Gallon



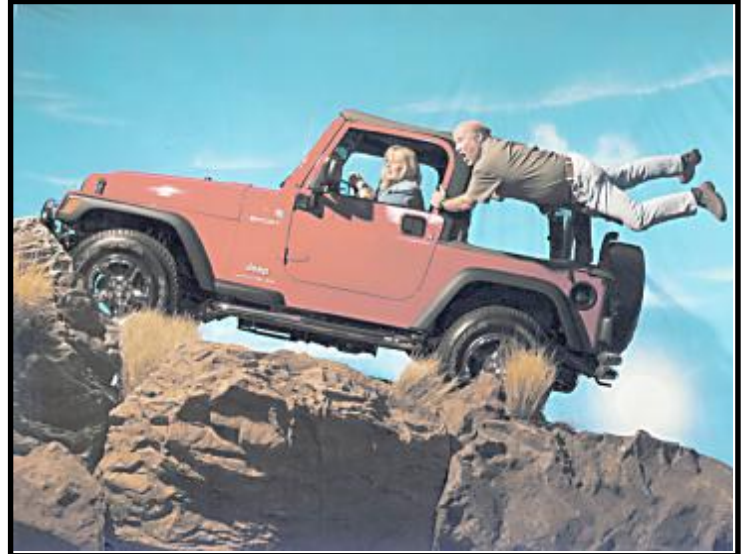
WE ALSO MANUFACTURE FUNCTIONAL ACCESSORIES FOR YOUR **Jeep**[®]

(714) 556-5661

Check our website for more information.

www.4wdproducts.com

Exploring the Backroads of History with Roger and Cecile Vargo



"It's more fun to drive on a dirt road knowing how and why it got there in the first place. Most roads weren't created just for the fun of conquering the wilderness," says ECO4WD guide Roger Vargo. "Exploring the why and wherefore of a road can be as much adventure as actually driving the road."

Roger's first experiences with backroad driving were riding his Yamaha CT-1 and exploring with friends Dave Casler and Arlo Jones in Arlo's VW truck, and later at the wheel of Dave's 1946 Jeep CJ2A near Lucerne Valley in the late 1960's. The acquisition of a 1985 S-10 Blazer led to Harry's community college classes.

Roger's professional background is in photography and journalism. He works as a picture editor for a Los Angeles area newspaper and teaches photojournalism in the Los Angeles Community College District. With an understanding and appreciation of both backroads and the history that connects them to the present, Roger leaves no stone unturned in planning a trip. His passion for early California mining history and geology plus his background in professional photography combine to help Roger create backcountry experiences that appeal to a wide cross section of interests.

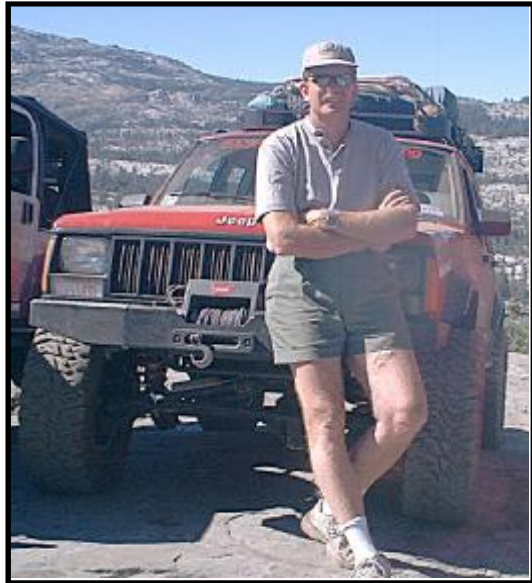
In addition to being able to guide you through the dirt roads of California and into the stories of the past, Roger is noted for his camp cooking skills and perverse humor.

Cecile, Roger's wife of more than 30 years, researches and writes about historical events. The fruits of her efforts are presented on the trips and on her website and online magazine, www.explorehistoricalif.com.

Along with Cecile and long time friend and "sweep," Marty Cole, Roger leads a diverse selection of trips in the Western Mojave, Southern Sierra, Owens Valley, and Mammoth Lakes areas.

CONTACT THE VARGOS AT:
roger@eco4wd.com or (818) 352-9489

Big Red Rambles about the Rubicon



Take one look at Don Carter and you'll understand why he is known as Big Red. Is there a more appropriate handle for a 6'-8" tall redhead? The 46-year-old San Clemente resident is a Project Manager building apartments throughout Southern California.

Big Red cut his back roading teeth in his youth while hunting and fishing with his Dad and brother in Washington State. In 1984 a friend invited him to ride shotgun on a hard-core 4X4 event (TDS Desert Safari). He was so amazed at what a 4WD vehicle could do that he went out and bought his first Toyota 4X4 two weeks later. The hook was set and he slowly started to build the little red Toy into the truck that could. Driving skills developed along with truck building skills as he learned about tires, gears, suspension and locking differentials. Red's current truck is a red '98 Cherokee with a long list of improvements that include tires, suspension, air-lockers, winch and an ultra-low range transfer case. Don has transformed the former grocery getter into a very capable rock crawling vehicle hindered only by his reluctance to damage it.

Don leads our most difficult Rubicon Rendezvous trip. His favorite trip, it offers mountains, lakes, rivers, trees, and rocks...lots and lots of rocks. He met his fiancé and partner, Tracey Wegmann, when she signed up for the Rubicon trip in her Cherokee. They make a great team. They also enjoy the full spectrum of 4-wheeling, from tagging along on ECO4WD college trips to looking for tough challenges with their 4Xing friends.

If you and your (non-full-sized) vehicle are up to the challenge, contact Don about the next Rubicon trip scheduled for August 18-21, 2005; see page 26.

This trip fills up early!

CONTACT DON CARTER AT:
akabigred@aol.com, (949) 492-5415
or fax (949) 492-5014

WWW.SPOTTEDDOGPRESS.COM

NEW BOOK FROM FLORINE LAWLOR BASED ON HER POPULAR COLUMN
ADVENTURES A DAY AWAY!

FROM AREA 51 TO MOJAVE GOLD!

**HAVE FUN WITH
OUR BEST-SELLING
DESERT GUIDES!!**

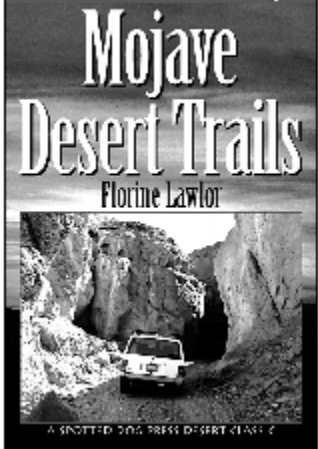
MOJAVE DESERT TRAILS ALL-NEW!!

Our newest book, **Mojave Desert Trails**, takes you to the most interesting historic and geological sites in the Mojave Desert encompassing a dramatic and enchanting landscape of ancient volcanic cinder cones, Joshua tree forests, sand dunes and rugged mountains.

Award winning, third generation Las Vegas and veteran Las Vegas Sun/Review Journal columnist, Florine Lawlor is your guide. Granddaughter of a Nevada railroad man, daughter of a gold miner, guide and storyteller, Lawlor has taken students, politicians, historical researchers and scientists to the Mojave. You'll enjoy reading her stories as you follow the best **Mojave Desert Trails!**

Limited number of signed copies available!
\$11.95/128 pp. ISBN 1-893343-03-0

From the Author of *Out from Las Vegas*



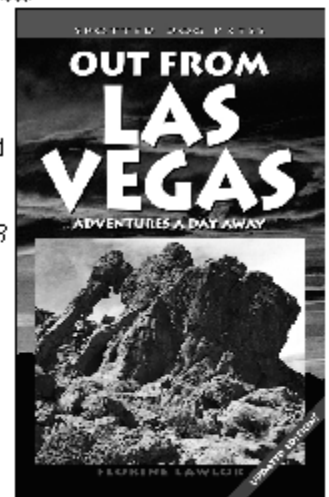
OUT FROM LAS VEGAS Updated Edition!

"It's hot!" Take a look at this gem of a book and begin planning at least a year's worth of day or weekend trips in and around Nevada. I can guarantee you'll be pleasantly surprised!

- Nancy Gott, adjunct professor,
University of Nevada, Las Vegas

"...Lorela put her lifelong love of the desert to work ... to give Nevadans a greater appreciation of the beauty and history that exists here."

- Las Vegas Review Herald
\$16.05/268 pp. ISBN 1-893343-07-3



**SPOTTED
DOG PRESS**
800-417-2790
BISHOP, CA 93514

ONLINE AT WWW.SPOTTEDDOGPRESS.COM

RECOVERY VIDEOS

By Harry Lewellyn

All sorts of How-To DVDs are popping up everywhere. I see these two 4WD recovery disks going into the 4X, with built-in DVD player of course, and gathering dust until really needed. That's the way I'd use them.

With one author from South Africa and the other an American, you get two different styles and cross sections of equipment. Andrew St. Pierre White of *4X4 Recovery* was born and raised in the African bush. Bill Burke of *Getting UNStuck* was trained for recovery by the U. S. Army and an ex Camel trophy participant. Both have impeccable credentials and deliver the same underlying message: It's not as bad as you may think to get unstuck...when prepared.

BASICS

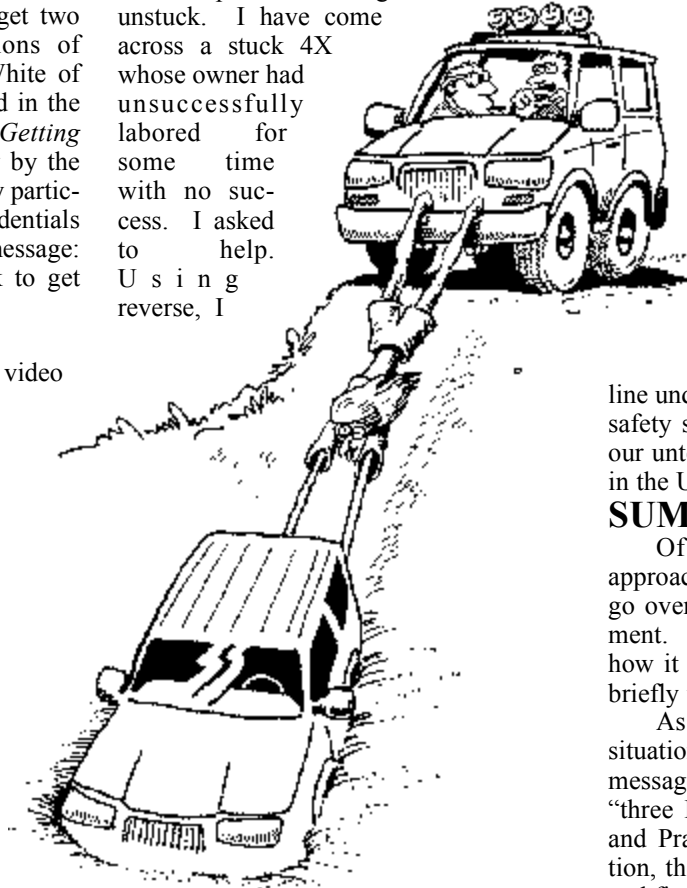
The difficulty with making a video of this sort is to determine your audience. I believe neither is designed for the complete neophyte, but nothing on the sleeve lets you know that.

In my opinion, this "recovery is easy" message comes from too much experience. That experience breeds a kind of "familiarity forgetfulness." They have just plain forgotten what beginners don't know and, as a result, most information seems better suited for those with experience rather than a beginner.

Neither spends any time on how to avoid getting stuck or assessing being stuck, while both refer in words to different "kinds" of being stuck. I would like to have seen a couple of shots from under a stuck 4X pointing out the specifics of being firmly hung up on the frame, high centered in the dirt, a vertical rise in front of a couple of tires, a dangling wheel and so on. Experience allows you to immediately access the severity of a particular "stuck," and how to remedy it, but for the uninitiated, that is not always obvious or easy.

They also lead me to believe that every stuck situation requires equipment and there are no alternatives. I know that just driver skill and knowledge alone, or a simple hand maneuver or two, may sometimes work just as effectively as the most exotic winching operation. For example, I

teach two basics that come into play with or without recovery equipment. One is downhill and the other has to do with straight versus turning. Do you know that it is 40% easier to go down a 10° slope rather than up? Ten degrees is not even remotely significant to most 4WD situations, but when you're stuck, it makes a big difference whether you choose up or down to get unstuck. I have come across a stuck 4X whose owner had unsuccessfully labored for some time with no success. I asked to help. Using reverse, I



I thought you brought the towline!

drove the 4X out of "stuck" downhill with no other assistance whatsoever. Straight is always an advantage over "curving" your way out of sticky situations, too. Other things like digging the tiny "sand hills," as I refer to them, out from in front of your tires (all 4), filling in holes, or simple rolling a big rock out of the way also work wonders. A simple technique for that is to take advantage of gravity. Start above the hole you want to fill in and simply kick rocks and dirt into the abyss from above. You don't even get your hands dirty.

SAFETY

Safety was not addressed perfectly, either. I saw Bill get into his 4X several

times and not use his seatbelt. That came to my attention right at the start as he gave a, "Let's head 'em out" command, and I heard the seat belt not on "warning ding-ding" away as he drove off.

And maybe there are new safety practices for recovery lines that I don't know about, but Bill never raised his hood or added what I call a parachute to any recovery line, particularly while winching. You were warned to get back, but without experience, how far and where is that? Bill also preached the hand over hand method for feeding a winch line in and out, but yet he slid his hands along same in another scene. Along that line, Andrew introduced me to a product used in both Africa and other countries that is a safety tether on the recovery line. If the line under load breaks, it is retained by the safety strap. I suspect that is better than our untested and antiquated methods used in the US.

SUMMARY

Of the two, I like Bill Burke's approach best. The first thing Bill does is go over various kinds of recovery equipment. He clearly addresses each piece, how it can be used with other items, and briefly touches on general usage.

As he moves from stuck situation to situation, he patiently repeats important messages that he's already given. His "three Ps" is a good one: Patience, Plan and Practice. Patiently assess the situation, then plan what you are going to do, and finally, put it into practice.

He also had some experienced-based suggestions that I will adopt. For example he puts a small rope on the bottom of his jack base and his Pull-Pal®. These things sometimes get buried pretty deep, and without a rope at the surface, you have to dig to recover your recovery equipment. The little ropes make it easy to pull them to the surface. Great idea, Bill.

What both Bill and Andrew miss are basic basics, and maybe I'm being too critical since I, too, teach recovery. I'll reserve recommending either until I see the second generations.





Series 4WD Equipment

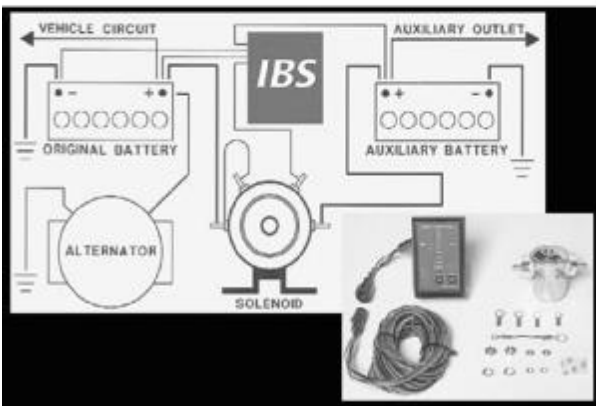


The T16 Grille Guard is a great balance between styling and protection. This bar simply bolts on over your factory bumper and requires no modifications to the vehicle.

Shown on a Jeep Liberty PN A16C37D

The T15 Bull Bar is the ultimate in vehicle protection and styling. This bar replaces the factory bumper and offers bars for the protection of the headlight and grill areas. This bar also offers mounting points for a winch and auxiliary lighting (optional winch frame may be needed for winch fitment).

Shown on a Land Rover Discovery II PN S1539U



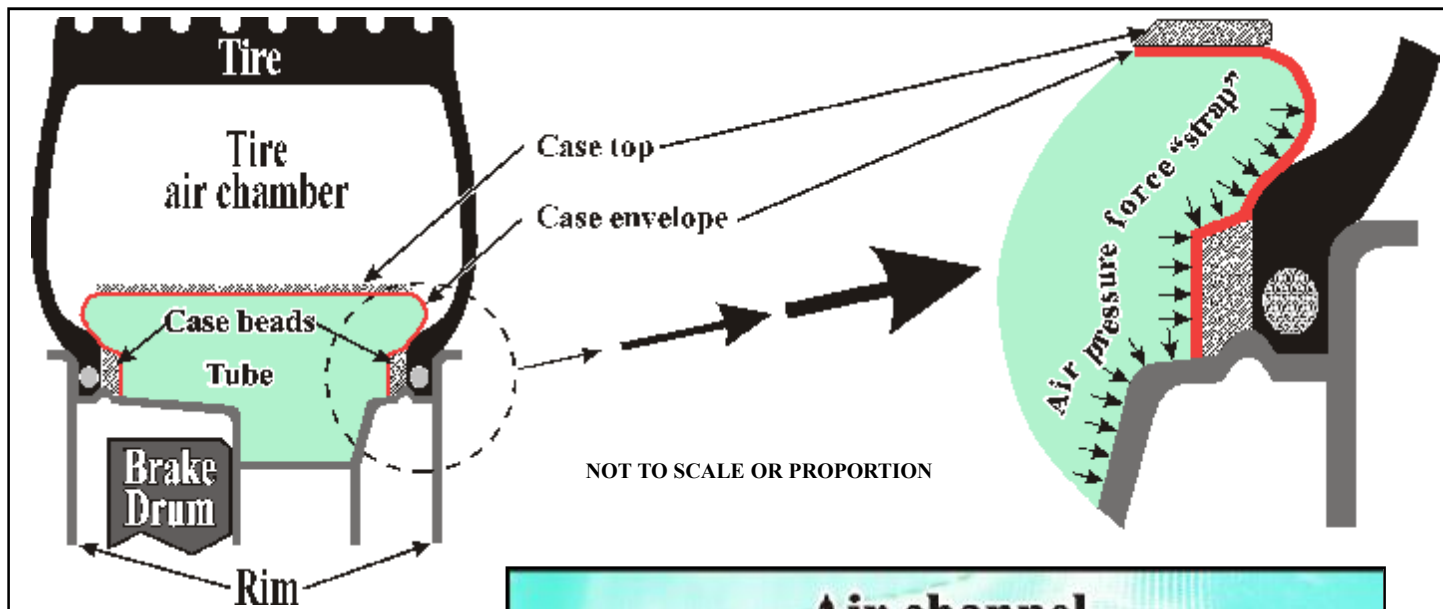
The IBS Dual Battery Management System is the ideal accessory for those who run a lot of electrical accessories. The system allows you to run 2 batteries and has a electronic control unit that automatically links and disconnects the batteries. The systems also allows you to manually link the 2 batteries and monitor the output voltage and charging voltage of both batteries. This unit is designed to work with any 12 volt automotive electrical system.

For additional products and applications, please visit our website at:

www.tjmbullbars.com

Staun Internal BeadLock™ –

HOW IT WORKS

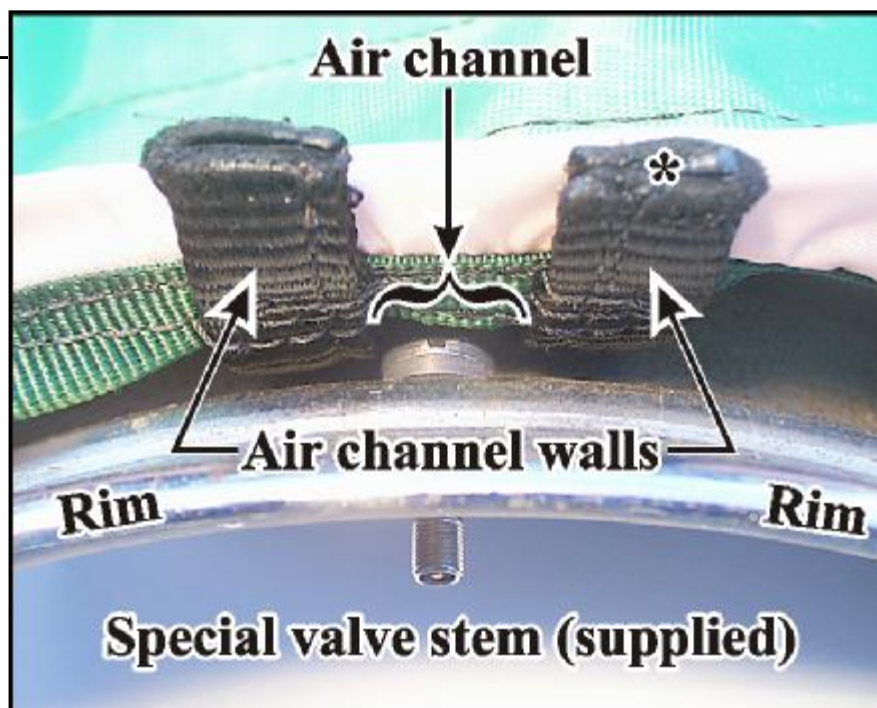


By Harry Lewellyn

As the BeadLock's *tube* (above) inflates through its own valve stem, (shown right), it expands until it reaches the limits of the polyester reinforcing case assembly (shown above, left). The hefty polyester *case top* keeps the tube down thereby dictating a very low profile. This in turn leaves the remainder of the tire (*tire air chamber*) to be inflated to your desired pressure. This space accommodates low pressure flex as needed.

Note the *air pressure force* arrows (above right). There is an equal and opposite force at the rim. These two forces pinch the tire beads to the rim, both inside and outside.

A conventional tubeless tire secures the beads to the rim in the same way, but surprisingly enough, BeadLock™ does better. In conjunction with the *tube* and case assembly, it adds additional holding force *below* the bead, not just at and above the bead. All of these forces act like a strap. This provides additional bead holding force. This is exactly why one tire expert recommends that you run tubes in tubeless tires if you air down. Without the BeadLock™ tube, as with a conventional



tubeless tire, the lower portion of this "strap" is missing. The top part of the strap is there by virtue of the tire, but there is nothing beneath the bead to complete the "strap" effect.

If you are wondering how the air gets in and out of the *tire air chamber*, you're very sharp! Without what's shown just above, the tube would cap shut the regular valve stem shown. This picture shows how an air channel is created by the air

channel walls and another piece, the air channel floor, not seen. Also be aware that the tire (bead) is not shown for clarity. The "*" makes reference to Figures 8 and 9 in the main article, Low Pressure Revolution starting on page 1.



BLACK RAT HAND WINCH

By Harry Lewellyn

For years, I carried nothing more in the way of winch other than a come-along (hand winch) for recovery. I actually righted my rolled Cherokee with it. The Black Rat Recovery Hoist is a similar product with more refinements. Both are, in essence, portable hand winches (Figure 1).

DESCRIPTION

The Black Rat Recovery Hoist comes in three load ranges: 1,750, 3,500 and 7,700 pounds. With snatch blocks, they are rated to triple that. They all come with 66 feet of wire rope. The basic difference between the units, besides load rating is size and weight. I tested the 3,500 pound unit.

The primary difference between the Black Rat and an old fashioned come-along has to do with “continuous feed.”

CONTINUOUS FEED

In Figure 2, note that the conventional come-along has a toothy looking thingy. This is the ratcheting lock mechanism that dictates movement increment length. In

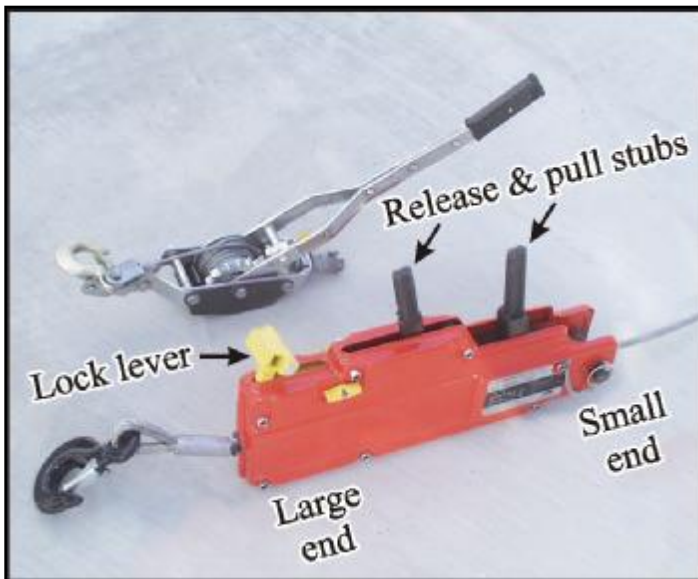


Figure 1 Conventional versus Black Rat hand winches. Black Rat handle not shown.

other words, if I want to take up or let out some slack, you have to move the lever from one ratchet lock position to the next tooth. That’s a fixed distance, so if you wanted just half a tooth movement, you’d have to manually hold it in that position or be saddled with tighter or looser – not exact positioning.

The Black Rat Recovery Hoist does not use a ratchet mechanism. It uses something like a Chinese finger trap to grab the rope. In this type device, the rope can be levered along for any short distance desired, and when you release, it locks in that exact position.

SAFETY!

Immediately understand that with hand winches and high lift jacks, you are in the most dangerous possible position when operating them. You are right next to the rope or extension on the high lift.

This means you must pay extra attention to attach points and rope/leverage device interconnects. Also understand that the operating process stresses these connections in other than a straight (rope) line. See prior newsletters or other sources for safety practices. They are not covered in this product evaluation.

HOW TO USE

First, you tether the small end of the Black Rat to something fixed like another vehicle, rock or tree, using your tree protector, of course. Next you release the lock and then feed the rope in at the large end. All that’s left is to reset the lock and crank away.

My frustration with both devices has to do with tough pulls. Picture that when real tight, the rope and (either) hand winch are in the air. You must now move the “floating” lever against the very unstable air. I’ve found it easiest to move the handle sideways, parallel to the ground, versus from up to down as would be the case, naturally.

The Black Rat has a shear pin (extras supplied) in the “pull” lever stub. If you exceed 125% of the load rating, you shear the pin and can no longer take in rope. However, the “release” stub is not pinned, so you can always let out slack. Good, conscientious design.

COMPARISON

Both the old and new designs have advantages and disadvantages. For example, the continuous feed is an advantage over the old ratcheting design for precise pulls. This would be the case where you



Figure 2 Close-up of the ratchet mechanism lock tooth wheel

are trying to align two holes on something you have broken like a suspension part. That’s rare, but I’ve been in that exact position trying to improvise a broken leaf spring fix.

The old design is limited in pull length by the rope on the drum. That means if you have a 30’ pull, with my old come-along, you’d have to make two setups since it only has 15’ of rope. With the Black Rat, it would only require one setup since the supplied rope is 66’ long.

The newer design also provides the same mechanical advantage throughout the full length of the rope. In the old design, since the rope spools on a drum, as you get closer and closer to fully in, you are losing mechanical advantage by virtue of the diameter increase on the layered rope on the spool.

The Black Rat has an extension lever bar handle 43” long (not shown), as opposed to only 18” for the conventional come-along. That amounts to more than twice as much leverage.

If you want to make, say, a 5’ pull, you must feed 51’ of rope through the Black Rat before you can start the pull. In other words, it starts at the longest pull when the rope is first fed into the device, and if you want a shorter pull, you have to manually feed the rope through until you

See **BLACK RAT** /p17

TRAIL TIP SAFE BEAD MOUNTING

Here's one that was planned for the 2nd edition of "SHIFTING Into 4WD" but never published. I run and hide when I hear someone is going to explode gasoline or ether to mount a tire!

By Harry Lewellyn

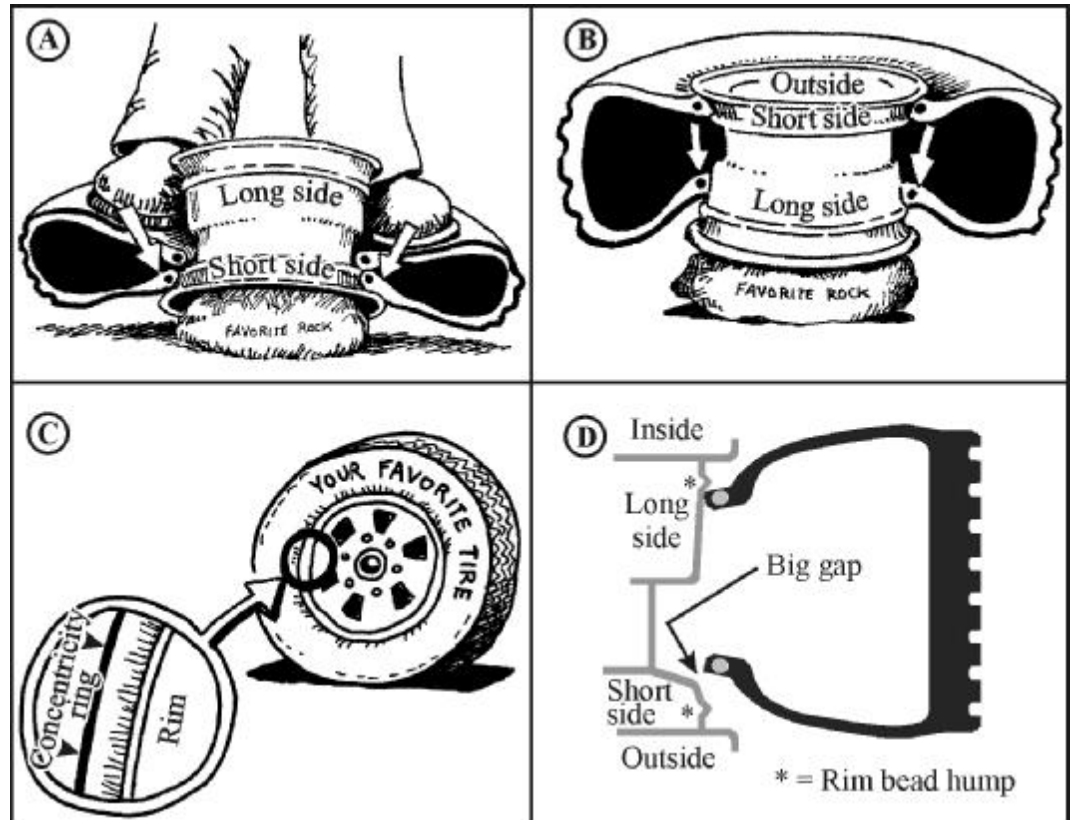
When I hear of guys popping a tire bead onto a rim by exploding gasoline or ether within, I run and hide! This is dangerous and unnecessary. Exploding a perfect gasoline/air mixture in a little (by most hard core guys standards) 31x10.5 tire is roughly equivalent to exploding six to eight sticks of dynamite. Tires and rims are not strong enough to withstand this force, period! The only thing that saves their reckless behinds is that the mixture is not a perfect 15:1 combination. Typically, it is very, very rich – too much gasoline. Fact: Rich mixtures burn slower than perfect mixtures. Slower means less explosive force. Regardless, I want to totally discourage all "explosion" tire mounting methods. Here's how to safely mount a tire with literally any air compressor or air source.

Tubeless tires present an apparent reinflation problem when the bead has popped off. It appears difficult to reseal the bead because professionals use high volume air compressors and special tools for bead sealing. The big compressors can get ahead of temporary bead leaks. The special tools either pinch the tire tread in such a way to bring the tire bead and rim into intimate contact, or shower the open bead with air 360°. This leads us to believe, that lacking these tools, it can't be done, but nothing is further from the truth. The trick is to take advantage of Mother Nature's gravity and some minor rim construction differences.

After getting both tire beads on the rim, you support the rim, upside down (outside down), so the tire drops freely down to the outside of the rim at the rim's bead hump, but does not touch the ground (A). You now seat the "short side" bead as best you can by walking entirely around the tire, forcing the outside bead onto the outside part of the rim as much as possible. Placing the rim (only) on an "elevator" block or rock, as illustrated, makes this possible.

Now, handling only the rim, carefully flip the rim-tire assembly 180°, maintaining full contact of the outside bead against the rim (B). This allows the inside bead to hang down toward the "long side" of the rim.

The reason it has to be done this way is that there is a longer approach to the rim's bead hump on the inside (long side) than on the outside (short side). D shows what happens



when you do it backwards. There is a giant air-leaking gap between the tire and the rim. In the proper direction, the inside bead naturally hangs down toward the longer "extension" that leads to the inside bead hump. It typically seals very easily and allows you to continue inflating and "snapping" the beads on. By the way, A, B and C are from the never published second edition of *SHIFTING INTO 4WD*. Thank you Harry Martin for the great graphics.

As you try to inflate, you may have to gently "adjust" the tire position to stop any leaks you hear or feel. I've yet to have this not work. Be sure to listen and/or inspect for the characteristic bead lock "snap," and keep your fingers out of the gap! It's bone-crushing powerful! The tire should be tight and flush to the wheel, 360° around, on both the inside and the outside. Now deflate or finish inflating to your desired pressure.

After the beads are seated, you should check what I call the tire's concentricity mounting ring. These are the rings that are cast in the rubber just outside the bead to show if the tire is concentric with the rim (see C).

Many times, with only one bead off and the other securely on, it is possible to reseal the "off" bead without even taking the tire off the vehicle. It takes a little gentle adjustment as above, but 99+% of the time, I'm successful.



Southern California SUV Trails, The Western Mojave Desert

By Roger Vargo

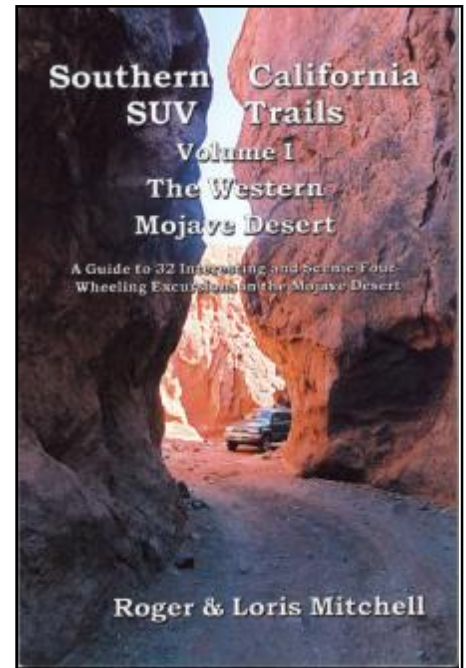
Southern California SUV Trails, Volume I, the Western Mojave Desert by Roger and Lorin Mitchell is the latest addition to Roger Mitchell's Trails series. Like the previous five guidebooks for Track and Trail Publications and numerous booklets for La Siesta Press, the Mitchells combine backroad adventure with history and geology. The trails listed in this book were scouted between 2002 and 2004. The book is dedicated to the memory of Tonie Seger, the "grand dame of the El Paso Mountains." Tonie, and her late husband, owned Burro Schmidt's Tunnel

from 1963 until her death in 2003.

The book's 32 excursions, not all of them requiring a four wheel drive vehicle, are divided into six chapters covering starting areas from Ridgecrest to Barstow. A promised *Volume II* will cover the eastern Mojave area.

Along with driving directions, maps and mileages, the book now offers GPS coordinates "...in deference to the younger generation brought up on high tech gadgetry..." The coordinates are of limited usefulness, however, because the book fails to denote what map datum (NAD 27 or WGS 84) the coordinates are based on. A datum, as

See MOJAVE/p34



**FAMILY
OWNED!**

A-Z Tech Automotive **Import & Domestic Auto Repair**



The Coyote says,

"I've used and warmly endorse A-Z Tech. With over 28 years experience, Doug and Nancy Long offer a full spectrum of automotive service. "We don't do that here," doesn't apply. From routine maintenance and brake jobs to installation of aftermarket 4WD equipment, no job is too large or small! Their staff of 17 skilled mechanics, paint and autobody employees is ready to serve. They're right at home with your 2WD, RV and boat, too. They go the extra mile by road-testing your car with you to verify the problems as you hear or feel them. Try that at a new car dealership!"

- State-of-the-art equipment and facilities
- Centrally located in south Orange County
- 8 a.m. to 6 p.m. Monday through Friday
- By appointment, 7 a.m. weekdays and Saturdays
- We can take care of all your automotive needs from A-Z!

**SE HABLA
ESPAÑOL!**

(949) 472-8111

23672 Via Fabricante • Mission Viejo, CA 92691

Located about five short blocks off Interstate 5 at Alicia.





Figure 2 *Demonstrating properly inflated bead, load capacity. Upper right shows tire sidewall distortion. Vehicle is pretty much in balance. We lifted the highside wheels with a board (shadow obvious) to simulate ground with Norm Clow (out of sight) driving his "Big Bertha" fork lift, and me "balancing" with my shoulder. Note safety tethers (top of 4X) and Rancho-furnished strain gauges under lowside wheels. Carefully study the angle of the rim independent of the tire. This reveals a lesser angle than first apparent. I surmise that the apparently "okay" sidewall is significantly "sideshifted" by ground contact. That's with the vehicle balanced at about 50+°.*

page 10, shows the easy way to reseal beads without using the dangerous and foolhardy "explode" method that makes such entertaining campfire talk.

STAUN INTERNAL BEADLOCK

Staun Products' pneumatic internal BeadLocks keep the beads in place and tightly secure the tires to the rims. This means that you can run exactly the low pressure you want, and as our tests proved, with no fear of popping a bead or spinning the tire on the rim. Isn't that worthy of being called a "low pressure revolution"? And not to beat it to death, are you aware that there are very light weight competition rock crawlers that run zero, repeat, zero PSI in their tires? They, along with every guy who owns 16.5" wheels, need a low pressure revolution!

SUMMARY

Staun BeadLocks provide a way to lock both the inside and outside tire beads to the rim. No special rims are required. Staun has sizes to fit everything from 9 inch ATV/Quad rims to behemoth 19 inchers!

I recommend that you seriously consider Staun BeadLocks if you regularly run the Black Diamonds or if you are not capable of reseating a tire bead with what you carry into the backcountry.

DESCRIPTION

A fully LOAD RATED inflated tire stands a 99% chance of having none of the problems just described. Period! In other words, when properly inflated, the tires do their job perfectly. That is because high (street) pressure securely locks the tire bead against the rim and eliminates air loss and tire/rim spin. Bead/tire integrity appears to be borne out by the roll tests I've conducted. I've side tilted 5,000 pound 4Xs to greater than 45° with fully inflated tires, and never unseated a tire bead or lost any air (see Figure 2 and close-up).

Wouldn't it be perfect if we could apply high pressure right at the tire's beads, independent of the pressure in the balance of the tire? Staun's BeadLock™ does exactly that. It is literally a specially reinforced mini-tube right next to the tire bead. The sidebar on page 8 is a peek inside the wheel to see how BeadLock™ works. By the way, I use "wheel" to mean the tire (rubber part) mounted on the rim (metal part).

DESIGN PRINCIPLE

Very simply put, a Staun BeadLock™ divides the innards of a tubeless tire into two air chambers. The one nearest the beads holds rubber to metal. This means the remainder of the tire's air space can confidently be inflated or deflated to any pressure you desire barring blowing it up. Once again, see page 8 for construction details.

So how does a conventional bead lock differ?

CONVENTIONAL VERSUS STAUN'S BEAD LOCK

Conventional bead locks mechanically clamp the outside tire bead to the rim, and rarely, the inside. They do a 100% perfect job at that. Staun Internal BeadLocks lock both the inside and the outside tire beads to the rim. Although it is less common to lose the inside bead, it nevertheless happens. Proof in point: Prior to installing Staun BeadLocks, Blaine Johnson regularly and undesirably burped air out of a rear, conventionally bead locked wheel. With the Stauns, the problem vanished.

Conventional bead locks can be difficult to balance. As Figure 3 shows, the conventional bead lock put all of



Figure 3 *In a blur, the conventional bead lock ring and 24 cap screws became one with the wheel.*



Figure 4 The conventionally bead locked tire on the left has to endure more stress than the Staun BeadLocked tire on the right when flat. The Staun-protected tire and rim are raised by the internal tube thus reducing stress.

the weight on the outside of the wheel only. That's typically a ring plus 24 cap screws and washers. This could make for balancing problems. But on the plus side, this ring protects the vulnerable valve stems.

Staun BeadLocks are light weight (about 5 pounds for fifteen inchers) and the weight is evenly distributed from the inside to the outside of the rim. Further, since some of the weight is nearer the center of the rim, it minimizes imbalance effects. There are no balancing problems with Staun BeadLocks.

If you drive on a conventionally bead locked flat tire, you stand a good chance of damaging the rim, tire or both. The Staun BeadLock tube and case add height to the flat as if it were not flat and, in fact, that is actually what is happening. The Staun BeadLock™ portion of the tubeless cavity still contains air and keeps the rim up off the ground. This does not allow the ground and rim to pinch the tire (see Figure 4).

BEAD LOCK LEGALITY

Regarding the legality of conventional bead locks in California, I contacted very helpful California Highway patrol Public Affairs Officer, Chris Johnson. Now, understanding that the California Vehicle Code book is very big (over 1,600 pages!), and has many changes every year, Officer Johnson did his best, with the help of "Commercial" officers, NITSA, NTHSB and DOT to answer my question: "Are conventional bead locks against the law?" His qualified answer is, "As best I know, no, conventional bead locks are not illegal."

Officer Johnson and I are both interested in learning more from you. Please call him (714, 567-6000) or me, if you have been cited specifically for bead locks or know the exact facts for someone who has. In defense of both of us, rumors are

unacceptable. We want the facts, ma'am, just the facts.

Staun Internal BeadLocks are literally invisible with the exception of the second valve stem, and that also appears to be legal. They use conventional, but smaller innertubes, so as of this writing, neither



Figure 5 Make the gap as "workably large" as practical.

Officer Johnson nor I see any "street legal" problems with the Staun Internal BeadLock™ system.

BEADLOCKS SAFER

From what's been reported from Down Under, they may even make controlling highway blowouts more manageable. One mate with BeadLocks reports that he unknowingly drove 20 km (~12 miles) at 100 kph (~66 mph) on an unnoticed front flat. The tire was thrashed, but the rim survived. What's really amazing to

me is that the driver was unaware of his problem until it was flagged by a friend on the highway. That appears to make a flat pretty controllable.

The inflated BeadLock™ adds a pneumatic two or three inches between the rim and the ground, as above, thereby making it easier and safer to pull to the side of the road or trail (Figure 4). This should save your rims, if not the tires, too. More experience will confirm or deny that.

MOUNTING PREPARATION

At first, I had installation reservations. It looked to me to be a bit "fiddly," as Matt Nolte from Down Under called it, but by the second wheel, my concerns had completely disappeared. Blaine also helped with that clever little hoist system shown in Figure 5. If you are going to mount the BeadLocks yourself, make one, or improvise a "gap" with blocks of something, for sure. Your primary objective is to eliminate the skin tearing, bone crushing, muscle straining lack of gap that exists without special "stacking."

If you've changed a tire in the field, you know exactly what I mean. It's common practice to carefully run your hand over 100% of the inside of the tire to check for "intruders." If you haven't, ask someone who has! It's a painful, heavy, labor-intensive, sweaty, dirty task. Even with gloves!

Now let me tell you that I actually think larger tires are easier by virtue of the hoist approach. Not having to hassle the weight and size of the big black O is one plus, but the real advantage is that bigger also means more internal workspace. Brian Jensen was actually able to vacuum drill chips from inside the entire tire. What's interesting is that Blaine's tire weight suspension thing uses the same principle as my *Safe Bead Mounting* Trail Tip on page 10 – differential tire and rim elevation.

We installed a total of six BeadLocks, so the other thing we had going for us was repetition and practice. By the last two wheels, we were averaging about ½ hour per, with no tire store power tools whatsoever! For this, we used another great Australian product, Tyrepliers®, to dismount and mount the tires. Chris Watson's unique tire irons (spoons) are a dream. See the March-April 2001 ECO4WD newsletter for more on this superb field, bead breaking tool and see page 35 for product details.



Figure 6 Measure twice, hold your breath, then drill the hole precisely where you want it. For inside stems, remember to inspect for brake drum, caliper and other items that may interfere with free rotation.

DRILL VALVE HOLE

First, carefully determine exactly where you want to drill the BeadLock™ tube's valve stem hole. Remember to debur both sides, too. Although logic and the symmetry mother would dictate that it go 180° across from the standard filler stem to balance and look proper, don't put it there. Drill this hole about 6 inches to either side of the existing valve stem (Figure 6). This will make getting the final tire bead over the rim significantly easier.

The BeadLock™ valve stem can go on either the outside (normal) or inside of the rim. For the latter, pay particular attention to the brake drums, rotors, calipers and other potential "inside" obstructions. Thank you Land Rover racer Gerry Barragan of Anaheim Hills Land Rover for flagging this at the Pomona Off-Road Expo.

You want the wheel to rotate freely and touch nothing! Don't take a chance with miniscule, "Oh, it'll do!" spacing. And just for the record, I find things that shouldn't move, do. I always, well, almost always, leave more clearance that I feel is needed. We chose to put Brian's BeadLocks on the inside and had 3/8" or so clearance. That seemed fair. Besides, the inside valve stems are now better protected than when on the outside. Time will tell.

BEADLOCK INSTALLATION

This is where Blaine's "tire hoist" made it easy. Use the hoist (or blocks) to make a comfortable hand-sized space between the top of the rim and the yet-to-be mounted outside tire bead (see Figure 5 again). You want the rim on the ground and the tire slightly elevated to make this "working gap." Through the gap, you will install and patiently make sure the BeadLock™ components are not folded, wrinkled or stressed in any way, that the case is evenly distributed around the tube, and that the tube will not be pinched when airing up either the tire or BeadLock™.



Figure 7 The BeadLock™ tube valve makes it easy to introduce and exhaust air while adjusting the position of the tube in the case.

The tube, case and case beads must all be aligned properly to work perfectly (see *How BeadLock™ Works*, page 8). Pay attention to detail throughout.

Mounting the BeadLock™ is almost the same as installing a tube. First, put the tire half on the rim (leaving the "gap" per above), then also put the BeadLock™ polyester case half on. Now put the tube

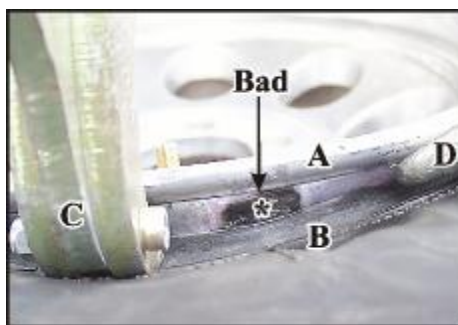


Figure 8 From left to right, between the rim (A) and tire (B): Tyrepliers® (C), trapped air wall (*) and tire spoon (D). * shown for reference to Figure 9.

inside the case. Push the tube's valve stem through the freshly drilled hole and tighten the nut. Partially inflate and deflate the tube to center everything up just right. The clever tube valve stem (Figure 7) makes this easy. Without giving details, it's kinda like being able to remove and replace the valve core without tools – neat!

This time the symmetry mother must be pleased. If you skip this one, be it through lack of knowledge, skill or choice, she will punish you with a leaky or dysfunctional installation. Figure 8 shows how she taught us about trapping the tip of an air channel wall in the bead gap – bad!

And before struggling with aligning everything, if you have done many tubes, you'll remember what powder does for you. It makes the normally sticky components slide easily around inside each other for "fine tuning." Use the enclosed powder on 100% of the tube, case, and as Blaine figured out, the inside of the rim, too.

Next, set the final (outside) BeadLock™ bead. Now, feel everything and make sure: 1) it will finally seat properly when inflated, and 2) the air channel walls are centered on the special valve stem (Figure 9). Don't hesitate to make a

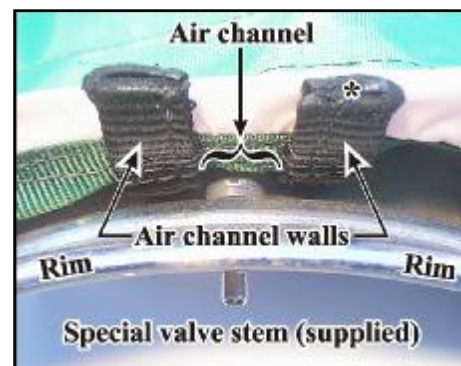


Figure 9 If the air channel is not centered on the supplied valve stem, you will not be able to inflate and deflate the tubeless tire air chamber. Tire not shown. * shown for reference to Figure 8.

"test run" and do it twice, or more, as I did while learning. Wrong won't work, so make it functionally correct!

Your final step at this point is to set the second tire bead on the rim taking care not to trap, pinch or otherwise displace any part of the BeadLock™. The tire is now fully mounted on the rim.

SEAT THE BEADS

Per the instructions, we aired up the BeadLocks first, trying to pop the tire beads into place. This worked on all but one without a little lube. And regarding



Figure 10 Side tilt test setup prior to making steeper. Master-Pull safety tether to TJ on right almost invisible.

lube, I do not like lubes that do not dry (like grease or oil) or that may potentially "reactivate" themselves. Soap is a good example. When it dries it may act like a glue of a sort, but let it get wet again and you can bet it will return to slippery. Slippery is not a good thing, particularly if you run the Black Diamonds.

After the beads are seated, and with air also in the tire, you should check what I call the tire's concentricity mounting rings (see Trail Tip, page 10). Concentricity ring misalignment was how we discovered the trapped air channel wall mentioned above.

Further, the air pressure in the BeadLock™ should always be a minimum of 2 PSI higher than in the tire. This will ensure that the BeadLock™ is not "crushed" and loosened by the tire pressure, which would begin to negate the bead locking effect and probably allow things to undesirably shift out of place.

Obviously, both air chambers should hold air perfectly. Now is also a good time to tighten the tube's valve nut. The air pressure forces the tube tightly against the rim making this easier. Now you're done!

TEST METHODS

Test objectives were obvious: Try, in the worst possible ways, to spin the tires on the rims, make them leak air, or pop them off the rim.

These hard core guys have ingenious ways of doing things. You want to break the bead off a rim? How about deflating the tire and winching the 4X sideways until the bead releases its hold? We tried that on four deflated tires at one time with the pull force concentrated at one tire.

How about driving a Hammer Trail where you've had tire/rim spin problems before? We did that!

How about hammering the 4Xs on the Hammers where you know you've had

prior inside bead air burp problems on your conventionally bead locked wheels? We did that!

How about burst testing a mounted BeadLock™? We did that and determined that the burst pressure, at least for the one and only unit I blew up, is well in excess of what most of our compressors are capable of delivering. See page 18 for the details.

How about deflating all four tires, then putting the 4X through unbelievable maneuvers? We did that, too.

We tortured the Staun Internal BeadLocks in every 4WD application way imaginable.



Figure 11 Note: 1) side stress on deflated tires; 2) 7 PSI tire for reference and 3) Safety Seal® effectiveness.

TEST RESULTS

Since I was leading a Saturday tour, Blaine took over mothering the Hammer trail tests. The results were as follows.

His conventionally bead locked rear that always lost air, prior to installing the Staun Internal BeadLocks, didn't. What more can I say – problem solved!

Brian's wheels were referenced-marked to detect tire spin. At the lunch break, half way through Sledge, one showed signs of spin. The BeadLock pressure was then raised from 35 PSI to the advertised maximum of 48 PSI. No additional tire spin was detected – problem solved.

Brian also lost – ripped off – two of the regular valve stems. That's nothing new, but does occur more often without conventional bead locks. As already mentioned, conventional bead locks do protect valve stems very well.

As a result, Blaine got to try a new tool that allows you to insert a rubber valve stem into a rim from the outside, without removing the tire. That worked great after they remembered to deflate the

BeadLock tube before inserting the new valve stem.

I moved in early Sunday morning to orchestrate the balance of the tests. Figure 10 shows the start of the sidehill setup, and Figure 11, the winch bead breaking operation. Another test was to drive the TJ on four flats. This test was so impressive, that I am recommending to Staun that it produce a video for its website. Insane to drive on four flats, huh? And even more so, isn't this a tremendous testimonial for the Goodyear MT/Rs on Brian's TJ? What's more, I saw no other tire represented in Blaine's camp.

We made the sidehill tests safe by tethering Brian's TJ to Blaine's. For those in the know, there is no safety blanket on the almost invisible winch line because he uses a Master-Pull synthetic winch line. It has no recoil. It drops absolutely flat when it breaks. That's been observed and is unbelievable fact.

We chose sand (slightly moist from recent rains) for easy hill "adjustment," as shown in Figure 12. From a break-the-bead viewpoint, there is no difference between various terrains. So don't quibble about sand versus rock, or whatever. Once the bead breaking side force is achieved, it does not matter what delivers it. I'm convinced of that by my past experience with four simultaneous bead breaks at once in dry sand shared at the start of this article.

We soon discovered, as traditional physics predicts, we could not drive as severe an angle as needed. At about 45°, Mother Nature dictates you will almost



Figure 12 We dug the holes three times to achieve maximum tilt



Figure 13 *With maximum side tilt achieved, note that the highside tires look a little "light."*

always begin to slip downhill sideways. We remedied that by digging holes to drive the downside tires into, thereby increasing the tilt angle. We finally got to the point of being able to push the 4X easily over (Figure 13). However, that is an undrivable situation because the slightest, tiniest, most miniscule bump would put the 4X over. But now, another problem cropped up.

Brian runs 8 PSI. Without a whole lot of words and detailed photo enhancement, it is not be easy to show how well the Staun BeadLocks were performing (Figure 14, top). We then deflated the right front tire to see if we could make it pop the bead. When finally fully deflated, we took the Figure 14 middle and bottom pictures. What they show is that the tire held fast to the rim at zero PSI when subjected to a 50° side tilt angle. Pretty impressive!

Next, I wanted to test the traction at ridiculously low pressure. This started with three tires at 8 and one fully deflated. With this, Brian could not make it up our test hill. And you must remember we were in the "slow climb" mode, not the "speed launch" mode. We wanted to see what lower tire pressure traction improvement had to offer and not what we could achieve with momentum. Results: no luck with three up and one flat.

We skipped the in between steps and went directly to four fully deflated tires. With this, it wasn't like Brian easily drove up our test hill without some wheel spin, but he did steadily progress up the hill. What I saw happening as the tires flexed and turned was that they appeared to act somewhat like sand paddle tires. We'd see a little, quarter turn spin, then it would hook up and move the 4X a quarter turn or

so. This repeated itself all the way to the top. When I checked the tracks on flat ground (sand), they looked ever so slightly like a paddle tire track looks. I sincerely believe we are going to learn a lot more about low tire pressure as more and more folks use the Staun Internal BeadLocks. This is my basis for saying this product is going to create a low pressure revolution!

What this also showed was that BeadLock™ in no way inhibits low pressure tire flex. If it can fully flex at zero



Figure 14 *Top: 8 PSI inside tire stress. Middle: Deflated inside tire stress. Bottom: Deflated outside tire stress.*



Figure 15 *To create more severe, instant, bead breaking force, we drove Brian's TJ off a three-foot bank (top) at an angle, forcing the right front tire into the ground (center). Exposed buried tire shows additional weight transfer stress (bottom), but no air or bead loss.*

pressure, then surely it will flex at any PSI above that. The BeadLock™ profile is so low that any low pressure could have taken full advantage of tire flex and not been inhibited by BeadLock™.

After Brian got up the hill, we sent him through a couple of short maneuvers to see if we could get his TJ to break any

of the beads. In the Figure 15 maneuver, we diagonalled him off a three-foot bank to produce a more severe, instant, bead breaking force. It drove the tire into the wet sand (middle), but after digging down to the bottom of the tire, we could see that the bead was still intact. Torturing four deflated tires is what impressed the hard core folk most. To see a four flat tired 4X twisting, turning and dropping off a small bank, without losing so much as one bead, is pretty impressive. So okay, if we can't break a bead off that way, how about using what we know works for sure? Let's winch 'em off!

Figure 11 shows the set-up and Figure 16 is a close-up of the winch pull-stressed tire. We placed the winch line at the back corner to focus the force on this one tire. There appeared to be no way we could break a Staun Internal BeadLock protected tire bead. That's again pretty impressive!



Figure 16 *The deflated, winched tire was pulled until it began to drag sideways. Still no bead pop.*

STRESS ANALYSIS

The most impressive way to view a side-stressed tire would be if our eyes (or the camera's lens) were farther apart than the tread width, but that will never be. Otherwise, we flip our heads back and forth to get the feeling of simultaneous inside and outside viewing. The pictures in Figure 14 help, but they ain't perfect, either. So, I'll discuss these views together.

The middle of Figure 14 is impressive, and the bottom much less so, but they are of the same tire at exactly the same

time. It seems like the bottom should show more significant distortion, but it doesn't.

The important thing to note about the bottom picture is the tire's unsuccessful struggle to separate from the rim. The top arrow is obviously the rim and the bottom arrow is the concentricity mounting circle cast in the tire. See *Safe Bead Mounting* on page 10 for concentricity mounting circle details. The space between the two arrows should be half or less than what you see. Further, that flat, smooth rubber between the two arrows is normally up snug against the rim. It almost appears to not only be pulled away from the rim, but also down.

This is where I believe the BeadLock™ "strap effect" already discussed is the only thing holding the tire to the rim.

In Figure 15, you can clearly see that stress follows force. Now, take another look at Figure 11. Note that the winch is not directly sideways to the 4X. It is to the rear of the rear tire. Then, go back and look at Figure 15, noting that the most stressed part of the tire is to the rear (left), maybe 10° to 15° back from the valve stem. It appears the Staun Internal BeadLock™ is worthy of high respect.

HISTORY

We are not the guinea pigs for Staun Internal Beadlocks. They are marketed in Australia under the name, SecondAir™. Beadlock Australia P/L was formed in 1999 by Roger Smith, a world-class offroad racer. The first product went to market in 2003. Since then, gobs have been sold and tested in every possible corner of the outback.

What Staun Products brings to the USA is its reputation for the best automatic, adjustable tire deflators on the market. Staun not only makes it easy to air down, but will help you keep your tires on the rims with BeadLock™.

Look for the Staun Internal BeadLock™ to be available in the USA by early 2005. I have test marketed them at three off-road shows with enthusiastic reception. Stay abreast by checking the Staun Products website, www.staunproducts.com, or subscribing to the free newsletter on our site, www.eco4wd.com. We plan to send out updates as they become available. Early dealer and racer inquiries encouraged.



OFF-ROAD MAPS BOOKS • VIDEOS

Call for a free catalog (909) 628-7227

www.sidekickoffroad.com

SIDEKICK OFF ROAD EVENT CALENDAR

AVAILABLE NOVEMBER THROUGH MARCH

- full color, 12"x9" photos of four wheeling on popular American trails
- over 200 nationwide events in 30 states
- races and championships
- 4WD association events
- vehicle trail events
- guided 4WD tours
- club and charity events
- stadium/fairground/exhibit events



~ *Calendar includes 2005
ECO4WD tours!* ~

BLACK RAT, from page 9

reach the pull length desired.

As supplied, the Black Rat needs one additional attach mechanism. I used a coyote chain at the small end to attach to one vehicle and the supplied rope hook at the other vehicle. My old come-along came with additional hooks and a snatch block, so no additional part are needed.

The Black Rat 4WD Recovery Winch is fast, simple and safe to operate. The 3,500 pound single line dead lift capacity can be tripled to 10,500 pounds using snatch blocks. It works in horizontal, vertical or angled positions. The unit is easily transferable from vehicle to vehicle and can be used from any position on the 4X.

CONTACT INFO

Extreme Outback Products is your source for the Black Rat hand winch and other recovery products: P. O. Box 3075, Vacaville, CA 95696; (866) 447-7711; www.extremeoutback.com

Staun Internal BeadLock™ —

BURST TEST DETAILS

By Harry Lewellyn

BURST TEST CAUTION

I always strive to conduct safe tests. I encourage you to do the same. Compressed gas of any sort, air for example, makes things go boom! Fluids don't because they do not compress — store energy. So I always do safe, hydrostatic burst tests, but there is always something to learn. Darren Bradley of Spectrum Gas (see ad, p23) provided all the pressure we needed.

WHY BURST TEST?

My mechanical belief system is based on Murphy: What can go wrong, will. How about dropping a tire in a hole while wheeling that crushes the rubber up to the rim? Or what about leaving your lock-chucked compressor running on the tube? Or more practically, you assume that you are filling your 35 incher, not remembering that you are filling the tiny BeadLock™ tube within and then take a big break? I think a burst test is in order.

The burst test was interesting. I gained a high respect for the innertube used in Staun Internal BeadLocks and



learned a couple of things.

After meticulously burping all of the air out of the system, I used my household 100 PSI water pressure to try to burst the test unit. No luck, so went to Spectrum.

Again, I was cautious not to introduce air into the system, but as life may deal to you too, we learned something.

First, the test unit arrived with the 100 PSI max I had read at home. That meant that the two gauges more or less agreed

and there were no leaks in the unit. As we thought we were running the pressure up, the hydrostat machine (left) appeared not to be reporting a pressure change. Darren normally tests more or less non-expandable tanks like SCUBA tanks. Non-expandable things pressurize real fast, but stretchy things, like the tube and polyester case, don't. We learned to patiently watch the pressure creep up as we stopped and made observations in 10 PSI increments (bottom). At 160, we shut it down and headed for the covered outside test unit, where we heard a suspicious thump!

The tube had burst through the polyester case in the back at 160 PSI, but had not burst the tube (above)! Phenomenal! I now believe that should any part of the polyester ever give way in actual use, there is a good chance that the tube would simply fill the tire like a normal innertube and you'd roll happily along, never knowing it happened.

Now the scary part: At home, I had considered filling my air hose with water and using CO₂ to pressurize beyond 100 PSI. My assumption was that there would have been enough water in the 50' hose to satisfy expansion. I suspect I could have been dead wrong and possibly created an explosion. I only pass this along to encourage you to be safer than you can imagine, and then ask someone else to check what you're doing, before you do it!

What we concluded was that the rip started at the weakest point, where the case bead joined with the case envelope. What Ken Obenski suggested was to experiment with the "stretchiness" of the



polyester and ensure that ball-tipped needles were used. Ball tips spread versus tear the material.

CONCLUSION

There appears to be no burst concerns with the Staun Internal BeadLock.



2005 ECO4WD EVENTS



<u>EVENT</u>	<u>DATE</u>	<u>DETAILS</u>
AZ Truck Expo and Off Road Show	Dec. 10 to 12, 2004	Annual expo/Phoenix, AZ St. Frgrds (open to all) arizonatruckexpo.com
<i>Off-Road IMPACT show</i>	<i>Jan. 20 to 22, 2005</i>	<i>Industry show/Las Vegas, NV www.offroadimpact.com</i>
Death Valley (H)	January 28 to 31	4WD mini vacation from Furnace Creek Ranch /p25
CA Assn. of 4WD Clubs (CA4WDC)	February 4 to 6	Convention & expo/Visalia, CA (open to all) www.cal4wheel.com
San Diego Off Road Expo	February 12 and 13	Annual expo/Cajon Speedway, CA (open to all) www.sdorc.org
Carrizo Badlands Expedition (class)	February 19	1-day tour through Santa Ana College* (see www.eco4wd.com)
International Sportsmen's Expo	February 25 to 27	Annual expo/Pleasanton, CA (open to all) www.sportsexpos.com
Tierra del Sol Desert Safari (open to all)	March 5 and 6	Runs, raffles, expo/Truckhaven, CA www.tds4x4.com
Baja Whales and Rock Art (H)	March 11 to 17	Great intro to Baja, Mexico—open to all vehicles! /p24
Easter Jeep Safari (www.rr4w.com)	March 19 to 27	Runs, raffles, expo/Moab, UT (4WD event open to all; vend days 24-25)
Lucerne Sand Session	April 2 and 3	Sand driving skills trip in CA's high desert near Victorville /p28
Mojave Expedition	April 9	Historic tour in El Paso Mountains, CA (also see Bonus Tour) /p28
Bonus Tour with Roger Vargo	April 10	Historic tour in El Paso Mountains, CA /p28
Copper Canyon (H)	April 15 to 26	All hotel 4WD vacation through Mexico's backcountry /p23
Moose Anderson Days (+ R Vargo tour)	April 23 and 24	Clean-up and activity wkend at BLM Jawbone Station, CA /p35
Lunch in Lucerne	May 7	Easy CA high desert tour near Apple Valley/Victorville /p27
Extreme Motor Sports Expo (open to all)	May 13 to 15	Annual expo/Costa Mesa, CA Frgrds outdoorsportsworld.net
San Felipe Sand Blast (H)	May 20 to 23	Get acquainted with Baja and driving sand /p25
Piute Passage (C)	June 4 and 5	Historic California High Sierra tour /p30
Arrowhead Adventure	June 11	Easy back way into CA's San Bernardino mountains /p27
Land of Volcanoes (C or H)	June 18 to 20	Geologic California tour /p31
Fat Hill Fandango (H)	July 16 to 18	Historic California Ghost Town tour /p31
Sierra Trek (www.cal4wheel.com)	August 11 to 14	Runs, raffles, expo/Near Truckee, CA (4WD event open to all)
Meandering Monache (C)	August 13 to 15	Historic California tour /p30
Rubicon Rendezvous (C)	August 18 to 21	Granddaddy of all rough trails /p26
By God, to Bodie! (C/H)	September 10 to 12	Historic California Ghost Town tour /p29
Sand Sports Super Show (open to all)	September 16 to 18	Annual expo/Costa Mesa, CA Frgrds sandsportssupershow.com
Golden Leaves & Golden Trails (C/H)	September 17 to 19	Historic California tour /p29
Arrowhead Adventure	September 24	Easy back way into CA's San Bernardino mountains /p27
Off Road Expo	October 8 and 9	Annual expo/Pomona, CA Fairplex (open to all) www.offroadexpo.com
AZ St. Assn. of 4WD Clubs (ASA4WDC)	October 13 to 16	Annual Jamboree/Phoenix, AZ St. Frgrds (open to all) www.asa4wdc.org
Lunch in Lucerne	October 29	Easy CA high desert tour near Apple Valley /p27
SEMA show	November 1 to 4	Industry show/Las Vegas, NV www.sema.org
Copper Canyon (H)	November 11 to 22	All hotel 4WD vacation through Mexico's backcountry /p23
AZ Truck Expo and Off Road Show	December 9 to 11	Phoenix, AZ St. Frgrds (open to all) www.arizonatruckexpo.com

Baja Adventure ~ New for 2006! ~ March 2006 TBA Baja, Mexico 9 day tour, mostly camping /p26 ~New for 2006!

* = S. A. College (714) 480-7390 (C) = Camp (H) = Hotel (C/H) = Camp or Hotel = Schedule subject to change

CHECK THE LATEST NEWSLETTER OR www.eco4wd.com FOR OUR MOST CURRENT SCHEDULE!

Don't lose track of us!

- Remember to send us your CHANGE OF ADDRESS or miss receiving the annual BONUS ISSUE.
- Subscribe for hard copies of the ECO4WD NEWSLETTER or sign up ONLINE for FREE EMAIL NOTIFICATION every other month when it hits our web site— www.eco4wd.com .
- Contact us for a FREE BONUS ISSUE newsletter or in bulk for an event!
- Bonus Issue is the only issue with advertising. Refer a 4WD-related business that places an ad in this newsletter and receive a FREE set of Staun Tire Deflators!

ECO4WD
 P. O. Box 12137
 Costa Mesa, CA 92627
 (949) 645-7733, FAX 645-7738
 info@eco4wd.com
 www.eco4wd.com



Ecologically Sensi

Committed to Ecologica ly C

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
						1*			1	2	3	4 Trade Show p18	5 Trade Show p19
2	3	4	5	6	7	8	6 Trade Show p19	7	8	9	10	11	12 Trade Show p19
9	10	11	12	13	14	15	13 Trade Show p19	14*	15	16	17	18	19 Rancho Santiago College Car Show
16	17*	18	19	20 Trade Show p18	21 Trade Show p19	22 Trade Show p19	20	21*	22	23	24	25 Trade Show p18	26 Trade Show p19
23	24	25	26	27	28 Death Valley p25	29 Death Valley	27 Trade Show p19	28					
30 Death Valley	31 Death Valley p25												
1	2	3	4	5	6	7 Luncheon Lucerne p27				1	2	3	4 Flute p30
8*	9	10	11	12	13 Trade Show p19	14 Trade Show p19	5 Flute p30	6	7	8	9	10	11 Arrowhead p27
15 Trade Show p19	16	17	18	19	20 San Felipe, Baja p25	21 San Felipe, Baja	12	13	14	15*	16	17	18 Volcanos p31
22 San Felipe, Baja	23 San Felipe, Baja p25	24	25	26	27	28	19* Vacation p31	20 Vacation p31	21	22	23	24	25
29	30*	31					26	27	28	29	30		
				1	2	3							1
4	5*	6	7	8	9	10 Bodie p29	2	3	4	5	6	7	8 Trade Show p19
11 Bodie	12 Bodie p29	13	14	15	16 Trade Show p19	17 Golden Trolls p29 Trade Show p19	9 Trade Show p19	10	11	12	13 Trade Show p19	14 Trade Show p19	15 Trade Show p19
18 Golden Trails Show p19	19 Golden Trails p23	20	21	22	23	24 Arrowhead p27	16 Trade Show p19	17	18	19	20	21	22
25	26	27	28	29	30		23	24	25	26	27	28	29 Luncheon Lucerne p27
							30	31*					

Active 4WD Tours

Since 1984

2005

Compatible Backcountry Travel

* = no day

See reference page numbers for trip descriptions.

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4 Trade Show p18	5 Trade Show p19						1	2 Lucerne Sand Session p28
6 Trade Show p19	7	8	9	10	11 Baja Whales & Rock Art p26	12 Baja Whales & Rock Art	3 Lucerne Sand Session p28	4	5	6	7	8	9 Mojave Expedition p28
13 Baja Whales & Rock Art	14 Baja Whales & Rock Art	15 Baja Whales & Rock Art	16 Baja Whales & Rock Art	17* Baja Whales & Rock Art p26	18	19 Trade Show p19	10 Bonus Tour w/R Vanco p28	11	12	13	14	15 Copper Canyon p23	16 Copper Canyon
20 Trade Show p19	21 Trade Show p19	22 Trade Show p19	23 Trade Show p19	24 Trade Show p19	25 Trade Show p19	26 Trade Show p19	17 Copper Canyon	18 Copper Canyon	19 Copper Canyon	20* Copper Canyon	21 Copper Canyon	22 Copper Canyon	23 Copper Canyon Moose Days @ Lawrence
27* Trade Show p19	28	29	30	31			24 Copper Canyon Moose Days @ Lawrence	25 Copper Canyon	26 Copper Canyon p23	27	28	29	30
					1	2		1	2	3	4	5	6
3	4*	5	6	7	8	9	7	8	9	10	11 Trade Show p19	12 Trade Show p19	13 Trade Show p19 Monache p30
10	11	12	13	14	15	16 Fathill Fandangos p31	14 Trade Show p19 Monache	15 Monache p30	16	17	18 Rubicon p26	19 Rubicon	20 Rubicon
17 Fathill Fandangos	18 Fathill Fandangos p31	19	20	21	22	23	21 Rubicon p26	22	23	24	25	26	27
24	25	26	27	28	29	30	28	29	30	31			
31													
		1 Trade Show p19	2 Trade Show p19	3 Trade Show p19	4 Trade Show p19	5					1	2	3
6	7	8	9	10	11* Copper Canyon p23	12 Copper Canyon	4	5	6	7	8	9 Trade Show p19	10 Trade Show p19
13 Copper Canyon	14 Copper Canyon	15 Copper Canyon	16 Copper Canyon	17 Copper Canyon	18 Copper Canyon	19 Copper Canyon	11 Trade Show p19	12	13	14	15	16	17
20 Copper Canyon	21 Copper Canyon	22 Copper Canyon p23	23	24*	25	26	18	19	20	21	22	23	24
27	28	29	30				25*	26	27	28	29	30	31

Baja Adventure - March 2006! See page 26.

TOUR DIFFICULTY

The most difficult question we have to answer is, "How hard is the trail?" It's relative – to your experience relative to ours – what you drive and how it is equipped – and what Mother Nature has done in the last few days. Following are three general classifications that help bridge this communication gap. See the REQUIREMENTS of each trip description for additional stipulations. Under all circumstances, remember the most powerful thing we teach, preach and practice: Learn to turn around and give up! The driver is always responsible for moving on or turning back. We also recommend you refer to your copy of *Backroad Trips and Tips* for additional trail classification information and the Trip Policy below for more details. See page 38 for more on *Shifting into 4WD*—342 pages of sage Coyote advice on "how to use your 4WD off highway."



EASY TRIPS – (Leader: *Harry Lewellyn, page 2*) – These are introductory-level trips and are comparable to our college classes. They are typically passable in 2WD and good ground clearance, but the Coyote requires 4WD on most tours. Using four-wheel drive makes the trip safer and there will be less environmentally abusive tire spinning. Regardless of trail difficulty, companion vehicles are always recommended on all trips into the backcountry.



MORE DIFFICULT TRIPS – (Leaders: *Harry Lewellyn, page 2 and Roger Vargo, page 4*) – These trips are designed to help improve your 4WD driving skills, but still revolve around using stock 4WD as a means to an end. Four-wheel drive low range, lower tire pressure and some 4WD driving experience is desirable, but not mandatory.



MOST DIFFICULT TRIPS – (Leader: *Don Carter, page 5*) – Most difficult trips focus on driving and are basically thrill-and-skill rides versus "tours." Virgin beginners are discouraged. Four-wheel drive with a closed differential (posi or locker) in the rear is helpful and may be required. Lockers in the front and rear are ideal. Low tire pressure and 4WD driving experience are required.

ECO4WD TRIP POLICY & RESERVATIONS

NONDISCRIMINATION AND RESPECT FOR MOTHER NATURE: ECO4WD is an equal opportunity service provider and permittee for all properties traveled. We only use designated trails and areas, and have the utmost respect for Mother Nature.

RESERVATION PROCEDURE: You may reserve with a deposit (confirmed), or without (unconfirmed). Include your name, address, home and work telephone numbers, e-mail and the name of the trip(s) of interest. A postcard is immediately mailed to confirmed reservations. About 4 to 6 weeks prior to the trip, confirmed reservations receive a trip information packet requesting balance due. Unconfirmed reservations will be notified if space is available. Mail reservations with check made payable to ECO4WD to P.O. Box 12137, Costa Mesa, CA 92627. Reserve online at www.eco4wd.com/tours. Contact us at (949) 645-7733, (949) 645-7733 or info@eco4wd.com.

ITINERARY: Due to the expeditionary nature of all EXPLORING TRIPS, the exact accommodations, meals and itinerary may change. Every effort is made to conduct the trips exactly as presented, but that is not guaranteed. When changes are made that affect trip cost, additional fees may be requested or partial refunds issued for the change in service.

DISCUSSION: Prior college class or tour participation is not required for EXPLORING TRIPS. Legally insured, street-legal, four-wheel drive vehicles with a low-range transfer case and reasonable ground clearance are required, except as noted in the trip descriptions. Stock sport utility vehicles are acceptable and, generally, modifications are not required. All-wheel drive, sedan/van type vehicles and towed trailers, regardless of design, are not accepted unless noted. You should be capable of operating on your own. Required on all trips: Water, CB radio (may be rented from us), spare tire and equipment to change it, working seatbelts and windshield wipers/washers, yank strap, metal top or roll bar, trash bag, toilet paper and shovel, and completed Vehicle Self-Inspection and Exploring Trip Policy forms, plus a separate Registration/Liability form for every participant, regardless of age. Most-difficult (black diamond) trips require front and rear tow hooks, and high-performance tires. Camping trips require self-contained camping equipment plus food and drinks. See the REQUIREMENTS of each trip description for additional stipulations. All furnished accommodations/meals (when included) and guide services are based on double occupancy. Single travelers pay the same rate. Check regarding fees for additional passengers or children if not specified. ECO4WD reserves the right to screen and reject any reservation or participant. For college trips, read their policies, too and contact them directly for registration information.

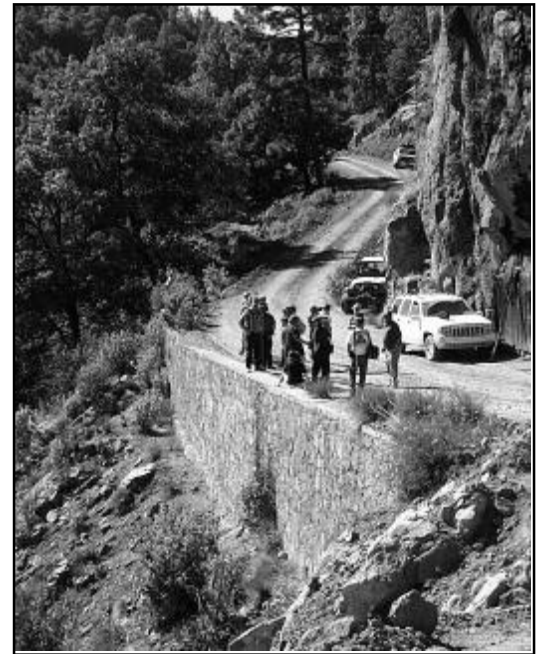
DISCOUNTS, DEPOSITS, REFUNDS and FEES: Book three or more trips and/or 4Xs, directly with us, more than ten weeks in advance and receive a 5 percent total group fee discount. Save money and travel with friends by booking as a group. Deposits and trip fees (specified in the trip descriptions) are NONREFUNDABLE regardless of reason, partial or non-participation. Deposits and trip fees are transferable to other trips, up to six weeks before the first-booked trip, within the same calendar year, but not to future years. Cancellations are only accepted by mail. A partial deposit or trip fee refund may be made, less a \$20 cancellation fee, for trips canceled or transferred by you, in writing, and filled by another. A full refund is made for trips canceled by ECO4WD. A 20% late reservation fee is added for trips booked less than six weeks before the trip. An additional passenger fee of \$17/person/day, regardless of age is always charged for insurance. Other fees are quoted in the trip descriptions. Trip fees are subject to change.

POLICY0411

COPPER CANYON, MEXICO

Trip Leader: Harry Lewellyn

WHAT: Join this (all-hotel) driving vacation into *Barranca del Cobre* (Copper Canyon), Mexico's Grand Canyon. Actually, the Copper Canyon area is a complex of 6-7 canyons, all at least 4 million years older! **Day 1** takes us to Nuevo Casas Grandes and a tour of the famous *Paquimé* (Indian) ruins. **Days 2 and 3** are spent in Creel, an active lumber town that offers trinket shopping and local tours of Indian cave dwellings, "Mushroom Rocks," and more. **Day 4**, our dirt road adventure begins as we head down the cliff to the tropical canyon bottom at Batopilas for one night. This area is historically famous for its silver mines and "lost Mission." **Day 5**, we hit pavement briefly before taking on more dirt to our remote hotel at *Tejaban*. Perched right on the rim, this is the only hotel located on the "real" Copper Canyon. **Day 6** is an easy paved cruise to our next hotel at "*Divisadero*" once we hit the highway. Meaning "overlook," this area offers a spectacular view from yet another canyon rim. The local train station will draw us back after we check into the hotel. We won't want to miss the hubbub of excitement as local vendors and tourists spring into action when the first class train arrives. **Day 7**, we hit the dirt again on the way to rustic Cerocahui for 2 nights at *Paraiso del Oso*. We'll take the scenic route via the "Dragon Cave" and arrive at our hotel in time for lunch. We'll then head into town for a tour of the mission. We'll drop off much needed clothes and supplies at the Oso, where they get distributed to remote villages via horseback. **Day 8**, we'll take a day-trip down for lunch into the deepest canyon, Urique, also the county seat. We'll head out to a suspension bridge at the Urique River for a break before the trek back up the hill. These small, remote towns have truly have "general stores"! **Day 9**, more easy dirt takes us to Temoris a small, prosperous agricultural town. We'll first head out and up to another "divisadero" with views of the train tracks and a commemorative engine below. This town has nearly perfect weather year round! **Day 10**, we ford the Chinipas River and undertake the last and longest leg of 4WD leading to Alamos, a colonial town of 10K residents. There, we'll relax, shop and sightsee before the inevitable trek to Tucson. **Day 12** is a long northward haul on good toll roads.



WHEN: April 15-26A and November 11-22B, 2005

FEE: \$2,300 per vehicle (one or two people); \$2,760 after March 4A and September 30B, 2005 **Deposit: \$300**

REQUIREMENTS: Insured, street legal 4WD with low range transfer case; see TRIP POLICY; SSB CB radio.



VERSATILE CO₂ AIR SOURCE!



Spectrum Gas Products offers the most versatile CO₂ air source available. Our systems have been in use for nearly twenty years in the Off-Road, RV, Towing, Construction, Shop and HVAC industries.

We offer 5lb, 10lb, and 20lb cylinders in black, white, yellow or brushed aluminum with protective carry handles (not shown).

Your choice of our all brass preset (you choose the pressure) regulator or our heavy-duty, adjustable 0-250, stainless regulator with its unique pressure reducing feature.

Our specially designed hoses are the most flexible on the market, with an amazing 600-psi working pressure. Our hoses are equipped with ¼ inch flared "Hand Tight" fittings that eliminate the problems with frozen or sand filled industrial quick couplers.

At Spectrum Gas Products we offer a complete line of accessories, including Mounting Brackets - Tire Inflators - Blow Gun - Bags and more. Custom designed systems are also available.

**Contact our Customer Service Department at
714-444-0477 or fax your order to 714-444-0479.**

Visit our web site at www.spectrumgas.com



FOUR WHEELER SUPPLY, INC.

"Proudly serving you for 26 years."

PARTS, ACCESSORIES, MAINTENANCE & REPAIR

Trucks, Jeep® vehicles and SUVs

- Expert mechanical repair and technical advice
- Highly qualified technicians
- All name brand suspension and accessories
- Factory scheduled maintenance



WE REBUILD WE SERVICE WE INSTALL WE REPAIR

Check out our large inventory of off-road equipment!

Four Wheeler Supply, Inc.
16612 Beach Blvd., Unit G
Huntington Beach, CA 92647

Phone: (714) 842-6064
Fax: (714) 843-9314
Email: fws@gte.net

BAJA WHALES AND ROCK ART

TRIP LEADER: Harry Lewellyn



WHAT: Let Baja introduce herself with an easy (all cars OK), all-hotel tour midway down the mysterious peninsula for one of Mother Nature's most spectacular treats—the Pacific gray whale. Scammon's Lagoon is the winter breeding and calving grounds for these 50-foot wonders, which means newborns, too!

Friday, we'll put Tijuana and Ensenada far behind, as we adjust to the Mexican pace and desert scenery on our trek south to the *La Pinta* hotel at Cataviña. Time allowing, we'll visit the cave paintings nearby. It's only a short jaunt from there to Guerrero Negro and the *Malarrimo*, Enrique Achoy's restaurant and hotel, our home for three nights. Allowing that the seasonal winds can rearrange our schedule, we'll board our 20-foot, 10-passenger whale-watching pangas the next morning for the experience of a lifetime. These gentle and curious wonders may breach (jump out of the water and splash down), spy hop (hover with head and eyes out of the water), court and mate (usually just thrashing in the water and rarely a "real" treat), wave a flipper, or approach the panga. Their skin is leathery-smooth and very thick. They seem to enjoy an occasional scratch (or touch) from human hands, as they regularly approach the boats and linger for minutes as if checking "us" out. We'll primarily see both barnacled

females alone and with newborns. Newborn whales look like giant, smooth, slate gray pickles with huge dimples. This afternoon is free for additional whale watching (with prearrangement) or to relax. We'll lead those who want to follow out to the whale skeleton at the local library and out to the "Old Pier," now in ruins, but once the primary salt loading area for the nearby Mitsubishi salt plant. The slow moving barges loaded with fresh, white salt are an impressive sight. We'll also see evaporation ponds where the salt is concentrated as the seawater evaporates. This night is our seafood group dinner at the Malarrimo Cafe on the Coyote.

The next day, we'll day-trip to a remote, grand mural-style cave painting site. The ancients left spectacular records with bigger-than-life paintings on this giant rock overhang. Our guide, most likely Enrique Achoy from the Malarrimo, will lead us a quarter mile's hike up the hill from our feast of a picnic lunch site for a history lesson with fantastic views of the surrounding desert.

The following day, we'll load up our bags and take a local excursion, most likely to *Mision San Borja*, then head north to Cataviña for the night. At last, it's back to Ensenada, in time to shop or explore and share whale tales at the infamous Hussong's Cantina and other touristy spots. The next day's departure puts most back in to southern California by midday.

WHEN: March 11-17, 2005

FEE: \$835 per vehicle (one or two people); \$1002 after Jan. 29. Includes hotels, whaleboat, cave paintings and group dinner. **Deposit: \$300**

REQUIREMENTS: Any insured, street-legal vehicle is accepted on this trip, 2WD or 4WD; see TRIP POLICY. **4WD NOT REQUIRED.**

DEATH VALLEY



Trip Leader:
Harry Lewellyn

HOTEL: Our rocky approach takes us up the Lippencott Mine Road and reveals the Racetrack, Teakettle Junction and eventually pavement at the spectacular Ubehebe Crater. That evening, we'll settle in for three

nights at Furnace Creek Ranch. Bright and early the next morning, it's off to the Rhyolite ghost town, then Titus Canyon. This dirt trail offers a spectacular perspective of the valley and a majestic vista of California's Sierra Nevada. The afternoon is free, but be sure to mosey on back that evening for a chicken 'n ribs dinner on the Coyote. Throughout the third day we'll explore the unique features of Warm Spring Canyon and (Striped) Butte Valley. Then, it's out via ever-changing Mengel Pass to Pannamint Valley and Ballarat ghost town as we head for the Ranch. The last morning, it's back on the road for home via Dante's View, Zabriskie Point, Shoshone, Baker and I-15 south.

WHEN: January 28-31, 2005

FEE: \$675 per 4WD (one or two people) includes three nights lodging and a chicken 'n ribs dinner for two; \$810 after Dec. 17, '04. Add a second couple in your 4X for \$534. **Deposit: \$250**

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY; snow chains required.

SAN FELIPE, BAJA



Trip Leader:
Harry Lewellyn

WHAT: This trip is a great opportunity to get acquainted with Baja and the ol' Coyote, while making new travel friends. From our hotel base, we'll experience the spectacular Sea of Cortez tides and learn

to master driving the sand! **Day 1:** We'll make a leisurely midday border crossing and arrive in San Felipe with plenty of time to settle into our home for three nights. The highlight will be **Day 2**, as we meander on south via pavement to Puertecitos, then turn our attention and direction back north for the sandy trek to dinner (included) at Laguna Percebu. **Day 3** is open but we'll lead the majority on a local excursion into the backcountry for an inland contrast to the coast. **Day 4** brings on a twist, as we head for the Sierra de Juarez and Laguna Hansen for our lunch break at a tropical storm-fed lake nestled among the pines at 5,000 feet. This route usually affords us a mild Tecate border crossing.

WHEN: May 20-23, 2005

FEE: \$655 per vehicle (one or two people); \$786 after Apr. 8, '05. Includes hotel and Percebu dinner for two. **Deposit: \$250**

REQUIREMENTS: Insured, street-legal 4WD; see TRIP POLICY; tire air compressor. **LOW RANGE NOT REQUIRED!**

DON'T GO TO BAJA WITHOUT THE CLUB

- ✦ GET MEXICAN AUTO INSURANCE FOR AS LOW AS \$74.78/YEAR!
- ✦ SAVE UP TO 30% ON HOTELS, RESTAURANTS, RV PARKS ETC!
- ✦ BUY YOUR PRE-PAID TOURIST VISAS AT OUR OFFICE!
- ✦ GET UP-TO-DATE INFO ON ROADS, GAS, WEATHER, ETC!
- ✦ ENJOY OUR INFORMATION-PACKED NEWSLETTER!

ALL THESE BENEFITS AND MORE WITH YOUR \$39 MEMBERSHIP!

WRITE, CALL, E-MAIL ASK@DISCOVERBAJA.COM
OR VISIT WWW.DISCOVERBAJA.COM FOR MORE INFORMATION.
INSURANCE OFFERED THROUGH GE SECURITIES, ZURICH, AND ACE. CALIF. LICENSE # 0820022

DISCOVER BAJA TRAVEL CLUB
3089 CLAIREMONT DRIVE,
SAN DIEGO, CA 92117

(800) 727-BAJA (619) 275-4225

THE SOLDER JOINT SINCE 1985

Contact the Solder Joint for all your CB radio needs!

808 N Tustin Street • Orange, CA 92687
800-914-4680 • 714-997-8535 • www.thesolderjoint.com

MASTER-PULL RECOVERY EQUIPMENT

masterpull.com

The World Leader In Synthetic Winch lines

M-P SUPERLINE

"The strongest and most advanced" synthetic winch line made worldwide

5/16" 16,500lb. Braking strength
3/8" 26,500lb. Braking strength
7/16" 40,400lb. Braking strength
Length: 50' 85' 90' 100' 125' 150'
CUSTOM ORDERS WELCOME

M-P SUPER-YANKER

THE POWER OF KINETIC ENERGY
Strength: 19,000lb. To 74,000lb.

ATV Accessories / Recovery Gear / Winch Accessories

Toll free: 877-797-0202



The only underhood welding system with proven 25+ year track record.



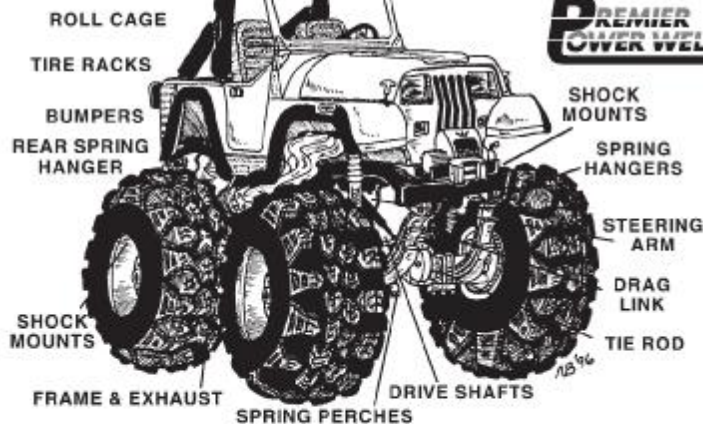
ORDER YOUR PORTABLE WORKSHOP TODAY!

WELD JUST ABOVE IDLE

USED BY THE MILITARY

MURPHY'S LAW: ANYTHING THAT CAN GO WRONG, WILL!

BROKEN: THE SOLUTION:



Don't get stuck without them!



"The Original" Foldable Land Anchor



- * Weld on your own vehicle and save money
- * Built in 115 Volt DC Power for grinders, saws, lights, blender and more
- * Charges batteries from 6-36 Volts in less than 5 minutes.
- * DC Arc Welder is super smooth
- * 100% Duty Cycle

TECH/PHONE LINE: 970-963-8875 • BROCHURE ORDERS 800-541-1817

E-mail: sales@pullpal.com • sales@premierpowerwelder.com
www.premierpowerwelder.com • www.pullpal.com

RUBICON RENDEZVOUS



BAJA ADVENTURE



TRIP LEADER:
Don Carter

WHAT: The world-famous Rubicon Trail has become the standard by which all other 4WD trails are judged. Three words describe this trail that winds from Georgetown (east of Sac.) to Lake Tahoe: Miles of ROCKS!

We rendezvous Thursday night in Georgetown (motel included). Friday, we take a long hard look at the formidable Little Sluice, then either run it or bypass the little devil. We'll camp at Rubicon Springs. Saturday is reserved for R&R. Sunday morning starts with the struggle up Cadillac Hill. We'll be glad to see pavement again near South Lake Tahoe.

WHEN: August 18-21, 2005 (Thursday to Sunday)

FEE: \$370 per 4WD (one or two people). \$444 after Jul. 8, '05. \$51 per additional passenger. **Deposit: \$150**

***REQUIREMENTS:** Insured, street-legal 4X with low-range transfer case; see TRIP POLICY. Some rock crawling experience is required. Vehicles bigger than a Wrangler needs a rear locker; no full-size/long wheelbase. 31" tires with lift and locker are highly recommended.

FRIENDS OF THE RUBICON

Support FOTR in its efforts to protect and keep open this world famous off-highway trail! FOTR performs conservation and construction projects, including maintenance and user education, and works cooperatively with all interested parties who care about the trail. FOR MORE INFO, contact Del Albright at del@delalbright.com, www.delalbright.com or (209) 304-7693.



March 2006!

Trip Leader:
Harry Jewelllyn

From the first time I went down to Baja on a fishing trip with my Dad in 1952, I was hooked. At least for me, the allure of the mysterious peninsula was irresistible. It's like a magnet that continues

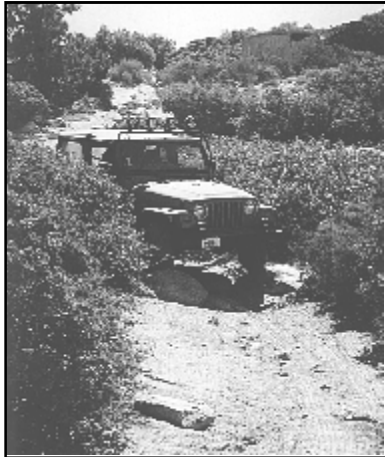
draw me south to this day.

From the pine forest in the north, to Malarrimo Beach mid peninsula, and all points south, the many faces of Baja are all more than we can see in a lifetime. On this week-long adventure, we'll cover Baja Norte, the northern state on the peninsula, and leave Baja Sur (south) for 2007. Here's what we have in mind, and understand it is flexible to adjust to your interests.

The tour will be geared around alternating camping and hotels. We'll camp a couple of days followed by a night in a hotel, etc. The plan is to boogie on down the paved road south to Cataviña for a night at the *La Pinta* hotel. Time allowing, we'll stop at the nearby cave paintings and maybe even the old El Marmol onyx quarry along the way. The following morning, it's off to Malarrimo Beach for one night of camping. This is the hottest beach combing beach on the Pacific Ocean, and *why* will become obvious when we get there.

See BAJA /p36

ARROWHEAD ADVENTURE



Trip Leader:
Harry Lewellyn

WHAT: Are you aware there are alternatives to the paved way up to Lake Arrowhead? Do you know why it's called Arrowhead? This leisurely Saturday brunch tour reveals breathtaking panoramas of Silverwood Lake and the high desert. We'll weave our way through the maze of hills and gullies that lead up to Lake Arrowhead and optionally challenge a short, rough section near Pilot Rock. By noon,

we'll arrive at Lake Arrowhead Village, where brunch is scheduled at Woody's Boathouse Restaurant. We'll vote on allowing an hour after lunch to take a boat ride on the lake (additional) or hit the shops. All in all, it's a pleasant way to spend a Sunday exploring the backroads of our local mountains.

WHEN: June 11(A) and September 24(B), 2005

FEE/Deposit: \$70 per 4WD (one or two people); \$72 after

April 30(A) and July 13(B), '05. \$17 per additional passenger. Brunch is additional.

REQUIREMENTS: Insured, street-legal 4WD; see TRIP POLICY.

LOW RANGE NOT REQUIRED.

LUNCH IN LUCERNE



Trip Leader:
Harry Lewellyn

WHAT: We'll use mild dirt roads through the seasonal bloom and unique attractions of the high desert surrounding Lucerne Valley. We kick off with a tour of history through World War II practice bomb craters in Means Dry Lake.

Next, we'll stop for a peek at "Jackhammer," one of the toughest hardcore trails in California. If we're lucky, we'll find a group there demonstrating the finesse required to negotiate such trails. Then, we'll trek over to a fault uplifting from the Landers earthquake more than ten years ago. The 6-foot vertical by 50-foot horizontal slip is still visible! Lunch (provided at an additional cost) will be at an Indian rock art (petroglyph) site. Time allowing, we'll visit some geoglyphs (rock designs), additional evidence of Indian presence. The last attraction is a cluster of ancient Mojave yucca "clone circles," the largest of which is at least 12 feet in diameter!

WHEN: May 7A and October 29B, 2005

FEE/Deposit: \$70 per 4WD (one or two people); \$84 after Mar. 26 and Sept. 17B, '05. \$17 per additional passenger.

REQUIREMENTS: Insured, street-legal 4WD; see TRIP POLICY.
LOW RANGE NOT REQUIRED.

See LUCERNE SAND SESSION on page 28 for our sand driving seminar in this same area.

All 4



WHEEL DRIVE

Specialists in Performance Gear Ratio Changes

PARTS REPAIR REBUILDING

DIFFERENTIALS

TRANSFERS CASES

For added performance and traction we specialize in the precision installation of Ring and Pinion gears, limited slip differentials, Detroit Lockers and ARB Air Lockers.

Let US take care of your 4 Wheel Drive problems.

One day service in most cases.

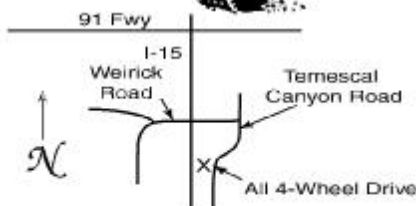
All repairs warranted for 1 year or 12,000 miles.

— Since 1983 —

Trucks & 4x4s are our only business!

(909) 277-1037

**21765 Temescal Canyon Road,
Corona, CA 92883**



WHY JOIN CORVA?

The **California Off-Road Vehicle Association** is a "grass roots" membership organization representing all recreational off-road vehicle users – whether you ride motorcycles, 3- or 4-wheelers, dune buggies, sand rails, 4X4s, SUVs, or off-road racing vehicles.

CORVA is protecting your land-use rights! Since 1968, millions of acres of California's public land have been closed to off-road recreationists. Despite the many closures, CORVA has been successful for over 30 years in keeping California riding areas open and appealing those which have closed.

California's public lands are for the public's use – off-roaders included. When you join CORVA, you are joining thousands of off-roaders who want the same thing – a safe and fun place to ride. We encourage you to join our off-roading family.

CORVA proudly provides its members with:

- Over 30 yrs of continuous promotion of multiple land use objectives!
- Professional lobbyist representation at the State Capitol!
- Continuous appeals of unfair/unjust closure of access to public lands!
- Extensive oversight of the California OHV "Green Sticker" Fund and OHMVR Commission!
- *OFF-ROADERS IN ACTION* subscription to keep you informed of off-road legislative battles affecting your sport!
- California League of Off Road Voters' Voting Guide!

Learn more about CORVA at www.corva.org
or 1-800-42-CORVA

FREE 90 DAY MEMBERSHIP TO PROSPECTIVE MEMBERS



The **ACTION PROGRAM** is a coalition of businesses and OHV organizations dedicated to funding legal action and sound biological opinions to keep public access available on public lands.

Support those who are in the fight to protect your recreation and wildlife! Buy all of your trailers, gear, and equipment from ACTION Heroes who support the Action Program and join your local land access group!

TOGETHER WE ARE MAKING A DIFFERENCE!

For more info, contact 866-215-2565 or www.actionprogram.info

LUCERNE SAND SESSION



Trip Leader:
Harry Lewellyn

WHAT: This one-night camping "session" couples sand driving skill improvement with the local geological, botanical and archaeological

attractions of Lucerne and Johnson Valleys. In the high desert near Victorville, we'll practice the ups and downs of conquering the soft sandy stuff and reveal the ultimate secret to staying afloat! We'll also discuss a variety of airing up and down methods and products. And just to ensure you'll always be capable of pulling out your stuck buddy, we'll throw in a recovery secret or two.

Saturday evening, we'll make camp near the dunes and enjoy a potluck dinner. On Sunday, we'll play on another larger dune and hone our skills. Time allowing, we finish the weekend with a tour of nearby Indian rock art and Yucca clone circles.

WHEN: April 2-3, 2005

FEE/Deposit: \$150 per 4WD (one or two people); \$180 after Feb. 19, '05. \$34 per additional passenger.

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY; tire air compressor.

See **LUNCH IN LUCERNE** on page 27 for an easy daytrip in this area.

MOJAVE EXPEDITION



Trip Leader: Roger Vargo

WHAT: Explore mountains and canyons in the Western Mojave. The legend and lore of Colorado Camp, Burro Schmidt's Tunnel (the result of his 32-year obsession), Painted Canyon, Bonanza Gulch and the Yellow Aster Mine all ignite the imagination. On this one day tour suitable for the entire family, you'll discover a scenic and historic area just beyond your back door.

WHEN: April 9, 2005 -and- see the Apr. 10 Bonus Trip option below.

FEE/Deposit: \$75 per 4WD (one or two people); \$90 after Feb. 26, '05. \$17 per add'l passenger.

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

BONUS TOUR with Roger Vargo

WHAT: Make this a getaway weekend and spend Saturday night in a local B&B or in one of Ridgecrest's upscale motels and join us on this *bonus tour* for only our insurance fee per person. Participation in Saturday's Mojave Expedition (above) is not required. This is our way of introducing our brand of backcountry travel to new guests and a way to say "thanks" to our regular travelers.

WHEN: April 10, 2005

FEE/Deposit: \$17 per person

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

Limited to 10 vehicles! **Advance registration is required.**

BY GOD, TO BODIE!



Trip Leader:
Roger Vargo

WHAT: Discover some of the fascinating geologic and mining history of Eastern California on this mild tour.

Saturday we'll explore the old stage road to Benton and part of the old Bodie Railroad right-of-way from Mono Mills,

where Bodie's lumber was cut in the 1880s.

Sunday, it's on to Masonic, then the rest of the afternoon in Bodie, once one of the most lawless of Western mining towns. Once in Bodie, we'll explore the town and tour the Standard ore processing mill. Bring your camera! Lots of 19th century history and lore! Tour starts and ends in Mammoth Lakes (Mono County, CA) each day. Stay two nights in Mammoth or Bishop.

WHEN: September 10-12, 2005

FEE: \$300 per vehicle (one or two people); \$360 after Jul. 30, '05. \$65 per additional passenger. **Deposit: \$100** Fee includes Bodie admissions. Accommodations/meals not included.

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

GOLDEN LEAVES & GOLDEN TRAILS

Trip Leader: Roger Vargo



WHAT: Early fall is a great time to explore the backcountry of Mono County, CA and Mineral County, NV. Deciduous tree leaves are starting to turn golden along trails once used by nineteenth century gold seekers. This tour takes off where the Bodie tour ends. Tour starts each morning from our base in Mammoth Lakes.

We'll venture back to the 1860s and visit the site of the original seat of Mono County, Aurora, once a major mining center that reached dominance before Bodie, time, sagebrush and brick hunters erased much of the town. We'll search for Aurora and its cemetery while traveling on old wagon and freight routes. On the

second day, we'll explore sites in the general direction of Mono Lake and Bridgeport. One destination will be the Dynamo Pond where hydroelectric power was first generated for Bodie's Standard Mine and Mill. Next, we'll climb high into the mountains to the old mining area of Dunderberg, then head southward to a more modern mining operation.

WHEN: September 17-19, 2005

FEE: \$300 per vehicle (one or two people); \$360 after Aug. 6, '05. \$65 per additional passenger. **Deposit: \$100**

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY. Accommodations/meals not included.

NOW IS THE TIME TO ACTIVELY PROTECT YOUR ACCESS RIGHTS JOIN THE...



Off-Highway Recreation is threatened! We ride safely and courteously, and we care about conservation; yet environmental extremists continue their attacks on our recreation. But there is a voice of reason that speaks for recreationists nationwide. The BlueRibbon Coalition is a unified national alliance of grass-roots organizations, concerned citizens and businesses. Become a part of the solution!

YES! Sign me up for a **BlueRibbon Coalition** Membership*

- Individual Membership \$20/year
- Business/Organization Membership \$100/year

Contribution: \$50 \$100 \$500 \$1000 Other \$ _____

VISA MasterCard American Express Discover Check Enclosed
Card# _____ Exp. Date ____/____/____

Name (include business/org. if applicable) _____

Address _____

City _____ State _____ Zip _____

Phone (____) _____ Email _____

send to: 4555 Burley Dr., Suite A, Pocatello, ID 83202
or Call **1-800-BLUEBIB**

*Membership comes with 1 year (12 issue) free Subscription to
The BlueRibbon Magazine

You Can Make A Difference!



DON'T BE LOCKED OUT!
For more information call **1-800-BLUEBIB (258-3742)**

THE OUTLAW TRAIL - BORDER TO BORDER



FOUR TRIPS FOR 2005

CAMP IN BUTCH CASSIDY HIDEOUTS
INCLUDING HOLE IN THE WALL
DRIVE TO BANK ROBBERY LOCATIONS
VISIT TRAIN ROBBERY LOCATIONS
DRIVE GETAWAY ROUTES & BACK ROADS
BORDER TO BORDER
EASY ROADS FOR YOUR SUV OR 4X4 TRUCK

VISIT OUR WEB SITE OR CALL TODAY
WWW.OUTBACKUSA.COM
303-9 81-4749

ALSO AVAILABLE
COLORADO & UTAH GUIDE BOOKS & VIDEOS

PIUTE PASSAGE



TRIP LEADER:
Roger Vargo

WHAT: Start the summer off with a cool trip through the mountains. The Piute Mountains of Kern County are part of California's Sierra Nevada. This is a mild and scenic weekend camping excursion.

Suitable for stock vehicles, this trip combines sight-seeing and exploration of historic areas. Starting near Mojave, we'll explore some of the area back roads and mining history before climbing into the Piute

Mountains (6,700 feet). Like travelers from the 1800s, we'll set up our primitive camp under the trees of the Sequoia National Forest.

Once we reach civilization Sunday, we'll have the option to take a one-hour "Likety Split" white water raft trip on the Kern River. This will be at an additional cost of about \$20 per person. Tour meets near Mojave and ends in Kernville-Lake Isabella area.

WHEN: June 4-5, 2005

FEE/Deposit: \$140 per 4WD (one or two people); \$168 after April 23, '05. \$35 per additional passenger.

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

MEANDERING MONACHE



TRIP LEADER:
Roger Vargo

WHAT: This tour is named for Monache Meadows, the largest meadows in the Eastern Sierra Nevada Mountains. The meadows, in turn, are named for the Monache Indians, who lived in Inyo and Mono Counties more than a century ago.

Our journey also includes the Sherman Pass 4X4 Trail. From our forest base camp, we'll spend the better part of three days and two nights exploring the high country above the 7,000 foot elevation mark. Prior 4WD experience is recommended but not required. Narrow clearances through the trees restrict this trip to non full size vehicles. Only compact pickups, SUVs and jeep-type vehicles are permitted (stock vehicles encouraged).*

The scenery is spectacular but the camping is primitive for two nights at the same location. Meets near Mojave; ends in Kernville.

WHEN: August 13-15, 2005

FEE: \$200 per vehicle (one or two people); \$242 after Jul. 2, '05. \$65 per additional passenger. **Deposit: \$100**

***REQUIREMENTS:** Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY. No full size/long wheelbase.

LAND OF VOLCANOES



TRIP LEADER:
Roger Vargo

WHAT: Seen the films, "Volcano" or "Dante's Peak"? The real forces of Mother Nature are close at hand in the northern Owens Valley. Long Valley is a collapsed volcanic crater that once erupted with a force 600 times greater than Mount St. Helens!

We'll spend three days exploring this cool high country. Travel from the Chalfant petroglyphs to the geologically active Long Valley Caldera. See geologic forces at work in Hot Creek where hot springs continue to

purge heated water. Tour prehistoric Mono Lake by canoe (additional).

Later, it's off to the pumice mines and Devil's Punchbowl before returning to our overnight digs. Tour starts in Mammoth Lakes. Spend two nights in Mammoth or Bishop.

WHEN: June 18-20, 2005

FEE: \$300 per 4WD (one or two people); \$360 after May 7, '05. \$65 per additional passenger. **Deposit: \$100** Accommodations/meals not included; stay in a motel or camp.

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

FAT HILL FANDANGO



TRIP LEADER: Roger Vargo



WHAT: Mexican miners named the area Cerro Gordo (Fat Hill) for its abundant supply of high-grade silver ore. Silver from Cerro Gordo's mines and related shipping industry awakened a sleepy Los Angeles in the late 1860s to early '70s. L.A.'s thirst later compelled William Mulholland to return to the Owens Valley in search of liquid gold. We'll follow the aqueduct and the old Midland Trail (Highway 395) to Lone Pine, where we'll spend two nights.

Explore southern Owens Valley near Lone Pine and the WW II relocation camp at Manzanar. Learn about the close, though sometimes strained, relationship between the Owens Valley and Los Angeles. Climb the challeng-

ing Swansea Grade and explore an old salt tram operation on the way to the ghost town of Cerro Gordo, the 1860s town that built Los Angeles. Tour meets near Mojave and ends in Lone Pine.

WHEN: July 16-18, 2005

FEE: \$315 per 4WD (one or two people); \$380 after June 4, '05. \$75 per additional passenger. Accommodations/meals not included. **Deposit: \$100**

REQUIREMENTS: Insured, street-legal 4WD with low-range transfer case; see TRIP POLICY.

EXTREMEAIR OUTBACK PORTABLE COMPRESSOR

YOU GET WHAT YOU PAY FOR WITH AN EXTREMEAIR!

- 150 PSI working pressure – FILLS ANY TIRE OR TANK!
- 4 CFM flow rate – RESEATS BEADS EASILY!
- Continuous duty fan cooled motor – NEVER OVERHEATS!
- 10 ft of 4 gauge full size jumper cables
- Heavy duty electrical disconnects independent of battery
- 30 ft of polyurethane coil hose allow 40 FEET OF TOTAL REACH!
- All brass air fittings, chucks and quick disconnects – NEVER RUSTS!
- All metal storage box. Unit measures 20"L x 8"W x 9"H; weighs 34 lbs



ORDER BOTH ON PAGE 39!

PORTABLE EXTREMEAIR JR

COMPACT! GREAT FOR MULTIPLE VEHICLES!

Weight: 15 lbs. • Steel case: 16" x 8" x 8"

150 PSI working pressure • 1.5 CFM flow rate

Uni-Filter system for complete dirt protection

Includes: 20-ft polyurethane coil hose • 10-ft full size jumper cables • brass fittings • flashlight • pressure gauge

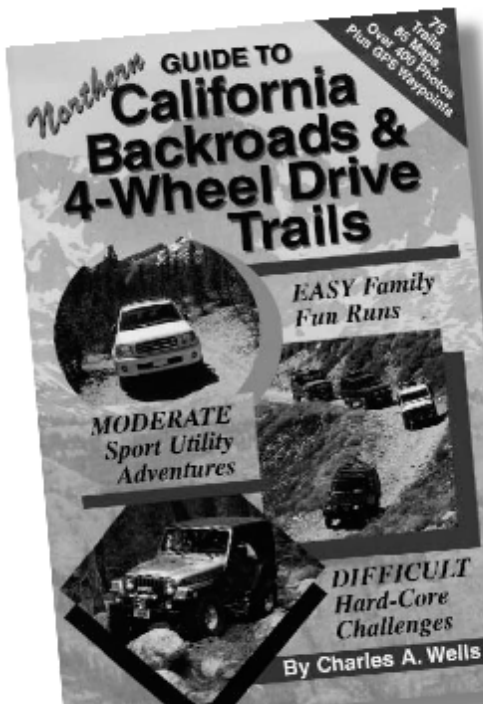
WORLD'S FASTEST 12 VOLT COMPRESSOR!

Designed to fill the largest and highest pressure tires without fear of motor burnout. Runs air tools with ease!

- Permanently lubed with sealed bearings • Stainless steel mounting hardware • Washable oversize Uni-Filter
- Stainless steel flashlight and pressure gauge included

Call (949) for HARD MOUNT compressor pricing.

See www.eco4wd.com/products/product_details/ExtremeAire.pdf



Bored with wimpy trail guides?

"Rockin-fun" SUV runs plus the Rubicon, Fordyce Creek, the "Dusy," Barrett Lake, Niagara Rim, Swamp Lake and more. Clear directions, 75 trails, 85 maps, over 400 photos & GPS waypoints. 6" x 9", 288 pages, \$24.95

Southern California book also available!

See more at www.funtreks.com or call toll-free 877-222-7623

and fittings, you simply replace the old adapter with a new one that accommodates the snap fittings.

OPERATION

When you push the red pump switch, it increases the shock action and makes for a firmer ride. Contrary to what the hard core folks do, I use this stiff setting in the rough. It does not give me any extra lift, but it does reduce what I call "fast wheel drop-off." It makes it harder for the 4X to bottom out by reducing bounce.

Pushing either the front or back bleeder valve softens the ride. I normally run about 2½ or 3 on the street, and will decrease this to zero to accommodate washboard. The system is so fast, I find that even though the newness has worn off after 11 years since my first set of 9000s, I am still playing shock tuner with the slightest variation in terrain.

Short of the dedicated hard core racer or rock crawler, I always recommend Rancho 9000s when asked what kind of shocks to buy.



RANCHO, from page 1

illuminated by its internal lights. That has been remedied with plain white gauge backgrounds and red needles.

With the new fittings came fewer long hoses. This equates to only two versus four coming through the firewall for the old design.

PUMP

The new pump is no longer housed in a case and utilizes of fewer hoses. The old pump and manifolds had a total of nine hoses running to and from. That shrunk to only two hoses for the new pump. The big plumbing advantage comes by using more remote tees in the front/back lines. This allows the front/back lines to splits left and right at another convenient location. By distributing the tees throughout the 4X, it's easier to make the installation a little tidier and there are fewer long tube runs.

SHOCKS

What's neat is that you do not have to change the shocks to take advantage of the new tubing, fittings and control panel. If you remember from last year, you have to replace the shock's manual control knobs with tube adapters. To go to the new tube



The new Rancho RS99700 control panel

THE STAUN
MASSOJET
UNDER BODY BUDDY



**ACCESS
ALL AREAS**

CLEANING UP JUST GOT EASIER!



The Staun Massojet Under Body Buddy is an effective 4WD cleaner. Simply screw the wand onto your backyard hose for a powerful spray that will clean all of those hard to reach areas. Ideal for cleaning chassis rails, between guards, behind engines, under wheel arches or on rooftop guttering and can be safely used on boats, trailers, jet skis, motorbikes, SUV's, ATV's and cars.

The Staun Massojet will minimise water wastage, with the water flow control at your fingertips and as a smaller quantity of water is used to create greater pressure, water is used more efficiently.

STAUN
PRODUCTS

Dealer Inquires Welcome
ECO4WD P. O. Box 12137 Costa Mesa, CA 92627 voice: (949) 645-7733 fax: (949) 645-7738 email: info@eco4wd.com

It's HERE!



The Latest release from your favorite 4x4 trail writers . . .



Track & Trail Publications

Southern California SUV Trails Vol. I The Western Mojave Desert

- Mojave to Barstow and Ridgecrest to Victorville
- Current information on 32 trails
- Mileages and GPS coordinates
- Many maps and photos
- Descriptions of flora, fauna, geology and history to be seen along the way
- Entertaining reading

Check out these other great titles from T&T:

- High Sierra SUV Trails Vol. I - The East Side
- High Sierra SUV Trails Vol. II - The Western Slope
- High Sierra SUV Trails Vol. III - The Far North Country
- Death Valley SUV Trails
- Inyo-Mono SUV Trails

TO ORDER, CONTACT:

Track & Trail Publications • P.O. Box 1247, Oakhurst, CA 93644 • 559-683-6984

www.trackandtrailpublications.com

MOJAVE, from page 11

described in *GPS Made Easy, Third Edition* by Lawrence Letham, is a standard reference point from which all other map points are drawn. Using the incorrect datum will result in position errors. According to Letham, "...the differences between some datum is small, but all the same, it is something you do not want to have happen. Be sure to set the datum correctly before you enter any coordinates."

The Mitchells also do a good job laying a foundation for backcountry exploration. The book's first pages are dedicated to a description of the Mojave Desert, rules of the road (written and otherwise), words of warning, an explanation of frequently encountered acronyms, the previously mentioned GPS coordinates, and the Mitchell Scale for gauging the difficulty of trails.

Southern California SUV Trails reads as much like a history and geology book as it does a trail guide. The Mitchells makes good use of old and new photographs for a "then and now" interpretation of various sites. These are particularly useful for filling in a site's missing pieces. One such series of three photos shows some of the workings of the Old Dutch Cleanser Mine in Last Chance Canyon in the late 1920s, 1963 and 2003.

In typical Mitchell style, the authors make each trip into a self-contained adventure. Trip #7, "Rambling Along EP15-Meeting Its Colorful People and Past," takes adventurers through the El Paso Mountains along BLM Route EP15, also known as the Bonanza Trail. "Perhaps no other mountain range in California's Mojave Desert offers such a wide variety of colorful rock formations and old mines," reads the trip's introduction. Many of the areas visited on our ECO4WD

Mojave Expedition tour, see page 28, are located on or near EP15.

Southern California SUV Trails, Volume I, The Western Mojave Desert is as close to an all in one guidebook as anyone is likely to write. In spite of minor factual and editing errors, the book is a worthy reference for novice and experienced desert explorers. It should provide hours of reading enjoyment and gratifying days of desert discovery.

Southern California SUV Trails, Volume I, The Western Mojave Desert
by Roger and Loris Mitchell
Track and Trail Publications, 2004
ISBN: 0-9707115-6-5
\$19.95.



GOOD GROUPS TO SUPPORT!

FRIENDS OF JAWBONE & MOOSE ANDERSON DAYS

Support the **Friends of Jawbone Canyon** and **Jawbone OHV Open Area** (20 miles north of Mojave on Hwy 14)! \$15 memberships support MULTIPLE USE and PRESERVATION efforts. Books, maps, info and other services are available. Contact (760) 373-1146, P.O. Box 1902 (28111 Jawbone Canyon Rd.), Cantil, CA 93519, jawbone@ccis.com or www.jawbone.org for more information. **Volunteer the last weekend of each April** for the **Moose Anderson Days** clean-up and activity weekend. *See you there!*

Friends of the Mojave Road and the Mojave Desert Heritage & Cultural Assoc.

are two organizations worth joining! Both focus on the people & history of the Mojave Desert. Contact MDH&CA at 37198 Lanfair Rd. G-15, Essex, CA 92332-9799, info@mdhca.org or www.mdhca.org. Subscriptions to the **Mojave Road Report** newsletter are \$20 for 12 issues (pay to Friends of the Mojave Road). Write for a free issue!



ANZA-BORREGO DESERT NATURAL HISTORY ASSOCIATION

Through educational endeavors, ABDNHA promotes understanding, appreciation and preservation of the desert natural resources and our cultural heritage. Members enjoy newsletter, lectures, activities, discounts and more. For more info, contact ABDNHA at P.O. Box 310, Borrego Springs, CA 92004; (760) 767-3052; FAX 767-3099; www.california-desert.org



BLM VOLUNTEER PROGRAM Sponsor of National Public Lands Day Activities!

The BLM, Barstow Field Office organizes and recruits for a variety of projects that are derived from the Management Plans for the California desert in the Barstow Resource Area. Volunteers are among the most respected and valued resources in Barstow Field Office. For more information visit www.ca.blm.gov/barstow/volunteer.html or contact Volunteer Coordinator, Rose Foster at (760) 252-6011 or email: Rose_Foster@ca.blm.gov.

The **Desert Explorers** is a family-oriented 4WD organization associated with the Mojave River Valley Museum (760) 256-5452 in Barstow, CA. Museum membership is required to attend monthly trips that focus on sightseeing and include at least one hike. For more info, visit www.desertexplorers.org or kindly harrass Neal Johns at aridneal@earthlink.net or (909) 887-1549.



Arizona-based **Mohave Outback Explorations** is a casual family-oriented club with no formal meetings or dues. Participants tend to take the "long cut" and desire to share experiences and tips for treading lightly and safely in the outback. Help this small group grow with your support and participation. Get on its newsletter list! Contact Dan Messersmith at dmess@ctaz.com or 2945 Leroy Ave. Kingman, AZ 86401. for more info.



TYREPLIERS *Beadbreaker*

Tyrepliers allow for easy bead breaking and tire removal in the field or shop!



Deluxe kit includes Tyrepliers, a single and a double-ended spoon, puncture repair kit and canvas storage bag.

ORDER ON PAGE 39!

See www.eco4wd.com/product/product_details/Tyrepliers.pdf

Tyrepliers are the only beadbreaker endorsed and used by the Australian military. It carries a worldwide NATO stocking number!

- For use on all alloy, steel and split rims
- Adjustable from 4" to 19.5" diameter
- Will not damage painted or polished rims
- Unaffected by sand, mud, moisture or freezing temperatures
- Made with high quality electroplated steel
- Built to withstand continuous use in difficult conditions
- Length: 23 inches ~ Weight: 14 pounds

NoLoss

Never lose another valve cap!
CAPTIVE TIRE VALVE CAPS



No more storing those filthy caps in your mouth!

Secure the polyethylene restraining straps over valve stem threads for permanent storage and screw down the brass caps to tighten. Unscrew the nickel plated brass caps to inflate/deflate. Straps hold them safely just a fingertip away.

No more searching for dropped caps!

Caps will not stick to brass valve stem threads. Inside features an o-ring for a positive, air tight seal. Outside, the knurled surface offers slip free gripping. And if you forget to screw a cap back on, it's restraining strap will withstand 80 MPH speeds!

Built for NATO military vehicles! ORDER ON PAGE 39!

See www.eco4wd.com/products/Hardware/Details/CaptiveValveCaps.pdf

STAUN ADJUSTABLE TYRE DEFLATORS

NO BACKBREAKING INDIVIDUAL TIRE DEFLATING!



Simply screw these adjustable deflators onto standard tire valve stems to automatically deflate to YOUR desired off-highway pressure.

NO TOOLS REQUIRED TO ADJUST!

WHY AIR DOWN?

- Improved traction on sand, snow and mud with a larger (fatter) tire footprint!
- Less environmentally abusive tire spinning!

DEFLATORS COME IN 3 RANGES. ORDER ON PAGE 39!

Standard: Lowers to 6-30 PSI for beach or bush pressures

Light Duty: Lowers to 0-10 PSI for rock crawlers, quads and dune buggies.

Heavy Duty: Lowers to 15-55 PSI for light to heavy trucks, RVs and equipment.

CAMPER TRAILER PACK: Air down tow vehicle and trailer at the same time! Includes 4 Standard and 2 Heavy Duty deflators

See www.eco4wd.com/products/Hardware/Details/StaunDeflators.pdf

TRUCKAIR

12V HEAVY DUTY INFLATOR



This is the most cost-effective compressor around! You can pay 300 or 400% more and only reduce air up time by as little as 30%. Two of these units approach \$600 compressor inflation times! **ORDER ON PAGE 39!**

Truck Air can't be matched for the price!

- Built-in 2-1/4" dia., 300-psi pressure gauge
- 25" delivery hose with nozzle adapter
- Fan-cooled, heavy-duty motor runs nonstop for 8 hours
- Long 13-1/2-ft power cord plugs into the cigarette lighter for 12VDC power
- Dimensions: 12"L x 4"W x 9"H; weight 5 lbs
- Rugged carrying case stores all components

See www.eco4wd.com/products/Hardware/Details/TruckAir.pdf

BAJA, from page 26

With a reasonable mid morning departure, our goal on day 3 is Guerrero Negro and the *Malarrimo* for a night at Enrique Achoy's motel and cafe. This is the place I use on my Whales and Cave painting tour. We'll enjoy a night of civility and reprovision in town.

Day 4, we head for one of the most beautiful white sand, crescent beaches on the Sea of Cortez, San Fransiquito. We'll use the open air "rooms" for camp and take advantage of the showers. Dinner in the cantina will most likely be the catch of the day.

Next comes one of my favorite bays, Las Animas, for two nights. This will be like R&R as we launch our inflatables to explore the off shore islands and fish for our supper. Clamming is also in order, so bring your shovels and lots of garlic!

With seafood-stuffed ice chests, day 7 brings on the Monte Video cave paintings, Mission San Borja and more rock art. We'll camp here this night. If we are in luck, our Mexican friends will still be there to show us how they have lived for years at this oasis.

Day 8 will be a tough one for we want to make it all the way north to the *Las Misiones* hotel in San Felipe. Along the way, we'll see Coco's corner, Gonzaga Bay and Puertecitos.

Day 9 brings on the inevitable reality that the trip is almost over and we'll soon be back in the USA. To make this as painless as possible, we'll go back through the pine forest of Laguna Hansen and cross the border at Tecate.

PLEASE CONTACT US EARLY so we can start fine tuning this March 2006 adventure!

Deposit: \$100 Limited to 10 vehicles.

Master-Pull SUPER YANKER

The Coyote's #1 yanker recommendation!

High strength
and elongation!

Meets military
spec. #R-24052D

Rated and tested
by ASTM method
#D4268-83

ORDER ON PAGE 39!



At 28,500# strong, this round *Super Yanker* is more knot-friendly and stretches 12.3% more than conventional flat, yellow yank straps! Professionally hand spliced eyes all but eliminate sewn-in eye failure. Heavy duty nylon chafe guards protect each eye against wear. Optional vinyl bag. Use with the Coyote Chain for increased versatility!

30'-long • 7/8"-diameter • double braid nylon rope

See www.eco4wd.com/product/product_details/SuperYanker.pdf

When your buddy is stuck and you are free,
but you can't connect, use the ...

COYOTE CHAIN

3' of welded,
heavy-duty 5/16"
transport chain

Grab hook and
slide hook

Easy hook
removal for
versatility



ENDLESS RECOVERY AND REPAIR USES! *Traveling the backcountry without one makes as much sense as jumping out of an airplane ... without a parachute!*

The slide/choke hook can attach directly to the 4X frame. Also use this hook as a choker to cinch up on anything, including the downed tree limb blocking your trail.

The grab hook loops back and attaches to any link. Here's the key: Use as above to attach a towline when your vehicle does not have a frame mounted tow hook.

Includes "Recovery" newsletter reprint! **ORDER ON PAGE 39!**

See www.eco4wd.com/products/product_details/CoyoteChain.pdf

SAFETY SEAL



ULTIMATE
TUBELESS TIRE
REPAIR!



The Safety Seal tire plugger kit is easy to use and makes a permanent repair.

PLUG TIRES IN MINUTES WITH LITTLE EFFORT
~ **ON OR OFF THE CAR!**

Road heat completely vulcanizes the 21-ply plug through a U.S. patented repair process without the use of rubber cement. The repair is permanent because it becomes "one" with the inner-tire butyl rubber. It will not flow under heat or pressure!

DON'T TRAVEL THE BACKCOUNTRY WITHOUT ONE!

Wicking and rubber cement dry-out cause failure of other plugs and the cement often dries between use. Don't waste your money on plug kits that use rubber cement! Make the repair once with Safety Seal, and it will conform to the shape of the puncture and outlast the tire. **BE PREPARED WITH SAFETY SEAL!**

Kit comes with a durable 8" x 12" x 3" plastic case, pictorial instructions and 60 plugs. **ORDER ON PAGE 39!**

See www.eco4wd.com/products/Hardware/Details/SafetySeal.pdf

DeLorme Atlas & Gazetteers of NORTHERN and SOUTHERN/CENTRAL CA.

~The state of CALIFORNIA on topographic maps with photo relief shading~

Rely on the Atlas & Gazetteers for the utmost in trip planning and backcountry access. The large scale 11" x 15-1/2" paperbacks contain topographic maps with unbeatable detail, plus gazetteer information on great places to go and things to do. Gazetteer entry locations are cross-referenced to the corresponding map while the back cover features a Thomas Brothers-style map index with grid numbers that refer to detailed map pages.

Southern CA Atlas covers south of 37° latitude from Santa Cruz to Chula Vista

Backcountry details commonly included are backroads and trails, elevation contours, remote lakes and streams, land use/cover (forests, wetlands, agriculture), trailheads, etc.

These books are indispensable to unpaved CA travel!

Gazetteers include:

~**ORDER ON PAGE 39!**~

- Park/Forest areas
- Campgrounds
- Vehicular areas
- Golf Courses
- Natural features
- Hiking/biking trails
- Scenic Drives
- Skiing
- Museums/Historic Sites
- Campgrounds
- Beaches
- ... and much more!

www.eco4wd.com/products/Books/book_DelSouth.htm

www.eco4wd.com/products/Books/book_DelNorth.htm

SHIFTING INTO 4WD

HOW TO USE YOUR 4WD OFF HIGHWAY

“From basics to advanced, Harry Lewellyn’s 4WD handbook provides both a witty and informative look at leaving the pavement for a backcountry experience. A must for any 4-wheeler.”
 ~ Rick Russell, *Sidekick Off Road*

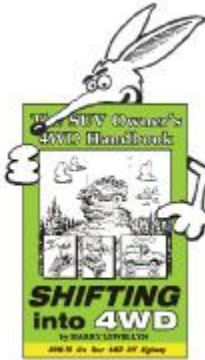
The Professor of Offroad Shares His Backroad Secrets!!

- Fact driven uncommon COMMON SENSE that never fails
 - 5 x 7” format easily fits in glovebox or console
- “Quick Look” inside front cover steers to major subjects
- 342 pages • 115 illustrations • 9 important lists

Order on page 39!

“Written in a way that’s easy to understand and enjoyable to read, Harry’s handbook is perfect for the newcomer to the sport. This book contains all the basic things you really should know before going four wheeling, and then some. Yet, even veteran wheelers will likely learn a few new tricks, and also find it entertaining.”

~ Jimmy Nyland, *FOUR WHEELER Magazine*



Take a “Book Tour” at:

http://www.eco4wd.com/xbook_preview/1preview.htm

ADVERTISER INDEX

4WD Products	4
A-Z Tech Automotive	11
All 4Wheel Drive	27
ARB	3
Blue Ribbon Coalition	29
CORVA / ACTION Program	28
Discover Baja Travel Club	25
Fourwheeler Supply	24
FunTreks Guidebooks	32
Master-Pull Recovery Equipment	25
Outback USA	30
Pull-Pal / Premier Power Welder	26
Sidekick Off Road	17
Spectrum Gas Products	23
Spotted Dog Press	5
Staun Products	33
The Solder Joint	25
TJM Bullbars	7
Track&Trail Publications	34

ECO4WD TOURS

Arrowhead Adventure	27
Baja Whales & Rock Art	24
Baja Adventure	26
By God, to Bodie!	29
Copper Canyon, Mexico	23
Death Valley	25
Fat Hill Fandango	31
Golden Leaves and Golden Trails	29
Land of Volcanoes	31
Lucerne Sand Session	28
Lunch in Lucerne	27
Monache Meandering	30
Mojave Expedition + Bonus Trip	28
Piute Passage	30
Rubicon Rendezvous	26
San Felipe, Baja	25

GUIDE TO *Northern* (and *Southern*) California Backroads & 4-Wheel Drive Trails

These handy 6” x 9” California books include hundreds of photographs of actual trail conditions. A unique “zoom-in” map technique makes it easy to locate the featured trail. Every trail has a custom map filled with details important to the backroad traveler including GPS waypoints. Fifty easy and moderate trails in each book are suitable for most stock 4-wheel-drive, high-clearance SUVs. Twenty-five difficult trails are geared for serious 4-wheelers with modified vehicles.



ORDER BOTH ON PAGE 39!

Guide to Northern California Backroads & 4-Wheel Drive Trails includes 85 maps, over 400 photos, and 75 trails in mountain and coastal areas from Bakersfield/Lake Isabella/Ridgecrest northward.

Guide to Southern California Backroads & 4-Wheel Drive Trails includes 86 maps, over 340 photos, and 75 trails from Death Valley/Santa Barbara south to the Mexican border.

See www.eco4wd.com/products/book_CABackroads.pdf

The **ECO4WD newsletter** presents 4WD-related product reviews and in-depth analysis, new backcountry books, trail tips from *Shifting into 4WD*, our class and tour schedule, and more. **Back issues** (\$3.00 each) and **Reprints** bring you up to speed on past matters and selected topics. Identify which reprints or back issues you want, calculate the total and enter on the last line of the order form at the bottom.

NEWSLETTER REPRINTS AND BACK ISSUES

- CB RADIOS** — 9 articles on principles, selecting, operating, SSB, spares, antennas, SWR\$6.00
- COPPER CANYON** — Articles on ECO4WD trips, history and topo map coverage of Mexico's *Barranca del Cobre*\$7.00
- DRIVING** — 4WD features, net moving force, driving hills, sand, starting in gear, winching, waterproofing\$7.00
- FIRST AID** — Kit, snakes, hypothermia, killer bees, water, dehydration, poison oak, skin secrets, backache\$6.00
- LISTS** — What to take on a backroad trip, first aid, camera care/spares, and CB radio spares\$5.00
- RECOVERY** — Details yankers, towing, tugging, coiling tow lines, CG, roll recovery, winching basics\$7.00
- TIRES** — 17 articles on selecting, inspecting, size, pressure considerations, fixing tires and wheels, inflation gases and more ..\$8.00
- TIRE TOOLS** — 20 articles on tire gauges, inflation, deflation, repair kits and fixing, jacks and jacking, chains and more ...\$8.00
- All issues of any year (\$12.00 per year, check year): _____ || Other _____ \$ _____
- Any three or more selections of reprints or back issues — Apply 20% discount and calculate total below — **(MAIL ORDER ONLY)**

HARDWARE • BOOKS • NEWSLETTER

> See www.eco4wd.com/products/default.htm for more books, products and details. <

> **PRICES INCLUDE SHIPPING, INSURANCE AND TAX FOR USA ONLY!** ~ **PLEASE ALLOW 2-4 WEEKS FOR DELIVERY.** <

- SHIFTING into 4WD**—"How to 4WD" by the Coyote—(342+ pgs; 5 1/2 x 8 1/2") /p38\$26
- Guide to Southern California Backroads & 4-Wheel Drive Trails**—(75 trails, 286 pgs, 340+ photos, 86 maps, 6 x 9") /p32 ..\$23
- Guide to Northern California Backroads & 4-Wheel Drive Trails**—(75 trails, 286 p, 400+ photos, 85 maps, 6 x 9") /p32 ..\$23
- DeLorme Atlas & Gazetteer—Southern/Central CA**—Topo map books with photo relief shading (11 x 15 1/2") /p37 ...\$21
- DeLorme Atlas & Gazetteer—Northern CA**—Topo map books with photo relief shading/travel info (11 x 15 1/2") /p37 ...\$21
- SPECIAL: Three** or more books—Deduct \$1 per book and calculate total **(MAIL ORDER ONLY)**\$ _____
- NEW!** ExtremeAire Outback Portable Compressor—Premium compressor with 100% duty cycle (20"x8"x9", 34lbs) /p31 ...\$574
- NEW!** ExtremeAire Jr. Outback Portable Compressor—High end compressor with 50% duty cycle (16"x8"x8", 15lbs) /p31 ..\$341
- NEW!** Tyrepliers Deluxe Kit—Tyrepliers, 2 tire spoons, sm wheel foot, bag and video **-OR-** —**(Tyrepliers only - \$164)** /p35 ..\$284
- No Loss Captive Valve Caps—4 nickel plated brass valve caps with polyethelyne straps that "tether" to valve stem /p36 ..\$14
- Coyote Chain (inc. "Recovery" newsletter reprint)—Attach directly to vehicle frame without installed hooks /p37\$45
- Safety Seal Tire Plugging Kit—Repair tires on or off the car. Comes with 60 plugs, tools and plastic case /p37\$55
- Truck Air Compressor HD300—Can't be matched for the price! Plugs into cigarette lighter for 12VDC power /p36\$55
- Staun Tire Deflators—4 adjustable deflators: **Standard** (6-30PSI) / —**Light Duty** (0-10PSI) / —**Heavy Duty** (15-55PSI) /p36 ..\$64
- Staun Tire Deflators—**Camper Trailer Pack**—Includes 4 Standard and 2 Heavy Duty deflators with storage pouch /p36\$97
- Massejet Under Body Buddy **SA600**—High pressure cleaning for hard to reach areas; connects to garden hose (600mm) /p33 ..\$52
- Massejet Under Body Buddy **SA900**—Greater access of hard to reach areas; connects to garden hose (length 900mm) /p33 ..\$62
- Massejet **Air and Water Gun**—Connects to air and garden hoses for ultimate high pressure cleaning system /p33\$97
- Master—Pull Super Yanker 30' Towline—(**Circle bag color: RED or BLACK**) **-OR-** —**(Towline only - \$104)** /p37 ..\$134
- Order / Renew **6 ISSUES** (1 year) of ECO4WD newsletter\$14
- Order / Renew **12 ISSUES** (2 years) of ECO4WD newsletter—(two year maximum renewal)\$27
- Reprints or Back Issues—Indicate selections above and calculate total: _____ \$ _____

> **ORDER ONLINE** or **CHECK FOR NEW PRODUCTS** at www.eco4wd.com/products/default.htm <

> **OFFERS EXPIRE FEBRUARY 28, 2005 - then - CONTACT US for CURRENT PRICES!** < **TOTAL: \$ _____**

MAKE CHECKS PAYABLE to:
ECO4WD
P.O. Box 12137
Costa Mesa, CA 92627

NAME _____ PHONE # (____) _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____
 EMAIL _____

n0411



Staun Internal Beadlock™ – Tire is stressed but still on! See page 1.

BAJA ADVENTURE

See page 26.



Back in 2006!

Find our 2005 4WD trade show/event schedule in **ECO4WD EVENTS** on page 19!

Support our sport with your participation and see all the latest parts & accessories.

IN THIS ISSUE:

TITLE	PAGE
<i>FOURWHEELING ACADEMY</i>	
RANCHO RS9000X Control Panel	1
<i>FOURWHEELING ACADEMY</i>	
Low Pressure Revolution	1
From the Silver Coyote	2
Leader Bios: Vargo and Carter	4-5
Recovery Videos	6
Staun BeadLock™ – <i>How it Works</i>	8
Black Rat Hand Winch	9
Southern California SUV Trails, Vol. 1	11
Trail Tip: Safe Bead Mounting	16
Staun BeadLock™ – <i>Burst Test Details</i>	18
2005 ECO4WD Events	19
2005 ECO4WD Event Calendar	20-21
Trip Difficulty/Trip Policy	22
ECO4WD Exploring Trips	25-31
Good Groups to Support!	34
Tour and Advertiser Indexes	38
Order Form	39

TRAIL TIP SEE PAGE 10. SAFE BEAD MOUNTING

STAUN
PRODUCTS

RANCHO
SUSPENSION

ARB

GOODYEAR
MTR

Coleman

SOLDER JOINT

ODYSSEY
BATTERY OF YOURS

Coleman

EXTREME OUTBACK PRODUCTS

Ecological
WHEELING ADVENTURES

Committed to Ecological Backcountry Travel Since 1984

www.eco4wd.com

P.O. Box 12137 • Costa Mesa, CA 92627
(949) 645-7733 • (949) 645-7738 Fax
info@eco4wd.com

Presorted Standard
U.S. Postage
PAID
Permit # 400
Laguna Niguel, CA

Please let us know if you have received this newsletter in error!

Additional FREE copies are available.

OR CURRENT RESIDENT