

FOURWHEELING ACADEMY

POST TRIP CLEANUP



Figure 1 A standard Massojet in action.

Text and photos by Harry Lewellyn

A dirty 4X is a proud 4X and a hint of what you did last weekend, but at some point ya gotta make it spiffy again. The Staun Massojet Under Body Buddy wand is an effective and simple to use product that makes cleaning faster, easier and more thorough!

When you adjust your shower head to fine, you feel the reason Massojet works better than a garden hose for removing dirt

and grime. The needle-like flow deforms your skin as evidenced by temporary little craters. It's too much for me. On gentle, you feel it tenderly flowing over your body, but which one cleans best is obvious. In this article, I take a look at why the Massojets work so well and water conservation.

SUMMARY

Attached to any garden hose, the standard Massojet produces a powerful spray that removes even the most stubborn, dirt,

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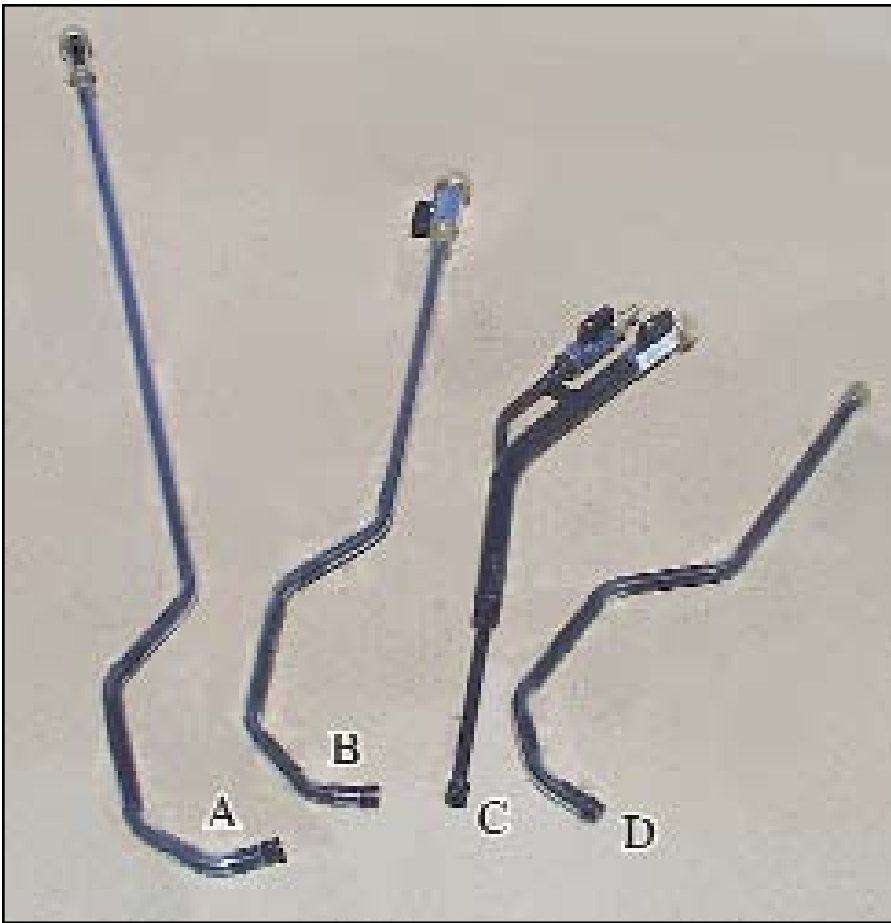


Figure 2 SA900 (A), SA600 (B), Air and Water Gun (C) and Air and Water Gun extension.

MASSOJET, from page 1

mud and grease from those impossible to reach places. The Massojet Air and Water Gun “amplifies” the water pressure with your air compressor.

In addition to your 4X, they can be used on literally anything like your boat, RV, lawnmower, motorcycle, ATV and more. Great products!

DESCRIPTION

There are two Under Body Buddy models and one Air and Water Gun (see Figure 2). The SA600 (B) is about 24-inches long and the SA900 (A) is a foot

longer. The Air and Water Gun (C) uses compressed air and water to produce a more powerful jet. D is an extension tube that is designed to be attached to the Air and Water Gun, but all appear to be interchangeable.

Each has a standard brass garden hose female fitting and a valve to adjust the water (and air) flow. The delivery tube is covered with protective plastic. This ensures the tube will neither scratch nor mar the 4X’s paint and also protects the delivery tube.

MASSOJET USE

It’s simple! Attach to a garden hose, turn it on and spray away (Figure 1). The compound curve at the end allows you to reach under the 4X and behind chassis components without standing on your head or crawling underneath. It also minimizes the chances of splash-back in your face.

SAFETY

High-speed water can ricochet off what’s being cleaned and come right back in your face. Use glasses and never squirt people or animals. A direct blast could potentially damage your eyes and ears or other body parts.

CAUTION

The Under Body Buddies are effective engine compartment cleaners, but beware. Common sense kept this anal engineer from testing this; however, I believe caution should be used around electrical components, the brake reservoir and other “fill” caps. I’m convinced it would either blow the caps off or force water into the containers. Further, there are small filters, flow rate regulators and vents in some of the vacuum hoses that could also be contaminated or damaged.

HOW IT WORKS

A bare garden hose delivers lots of water, but removal power is sacrificed for high volume. We typically put our thumb over the outlet or use a special nozzle like the jet nozzle shown in Figure 3 B to take better advantage of household pressure. This produces a more powerful spray and thereby increases the dirt removal force. You know there’s more power because the water comes out faster and squirts farther.

Massojet optimizes this “restriction” principle. Like a rifle’s recoil; you feel its increased kick when turned on. Comparing the nozzle openings in Figure 4 tells why. What’s not so obvious is that the water’s removal force goes up with the square of the speed, and smaller holes mean faster water. This means double the speed and you have four times the removal force.



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Copy Editor: Jenna Kane

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

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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.

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With a couple of very rough tests, I measured the water speed and force of various nozzles. I'd love to tell you how complicated testing point velocity and force are, but most would be bored in seconds, and I don't fully understand it. With all of the science and computers we can throw at

increasing cleaning power.

What's also interesting is that the jet nozzle's flow rate is about half of the bare hose, but the exit orifice hole area is only 18% of the hose area. I suspect that this is due to the household faucet valve's restriction. It is significantly smaller than the

The Air and Water Massojet cleans best, but you must have a compressor to take full advantage of its cleaning power.

PRESSURE WASHERS

These are the units that increase water pressure via an electric or gasoline motor. I'm pretty cautious with these. They can

NOZZLE	FORCE (relative to hose)
Bare Garden Hose	1
Garden Hose Jet Nozzle	3.8
Standard Massojet	2.47
Air and Water Massojet (water only, no air)	3.09
Air and Water Massojet (both air and water)	13.45

Table 1 This shows a nozzle's force relative to a bare garden hose.

NOZZLE	GALLONS/ HOUR	TOTAL ORIFICE AREA (IN ²)
Bare Garden Hose	984	0.477
Garden Hose Jet Nozzle	506	0.027
Standard Massojet	193	0.011
Air and Water Massojet (water only, no air)	589	0.033
Air and Water Massojet (both air and water)	201	0.033

Table 2 With pressure constant, water consumption is directly related to the exit orifice total area.

fluid dynamics, it's still a black art. Some things vary to the fourth power and with size! However, all things considered, the tests are representative of Massojet dirt removal power.

TEST

As best I could, I compared an open water hose, a jet nozzle and various Massojets. Table 1 shows the removal force of all items tested relative to a "bare" garden hose. Clearly, the Air and Water Massojet comes out on top regarding removal power.

The jet nozzle fairs pretty well, too. The reason is its output hole is just slightly larger than all of the holes in the standard Massojet, but that very short nozzle is difficult to use under the 4X. The long delivery tube on the Massojet which overcomes this, so it's easier to use.

WATER CONSERVATION

I also measured water flow for each nozzle to compare water conservation. It's common sense and obvious from Table 2 that anything that restricts water flow lessens water consumption. The standard Massojet comes out on top.

Compare the two bottom lines. What's interesting is that the Air and Water Massojet uses less water with both water and air engaged versus water only. I reason that some of the air displaces the water and reduces water consumption while

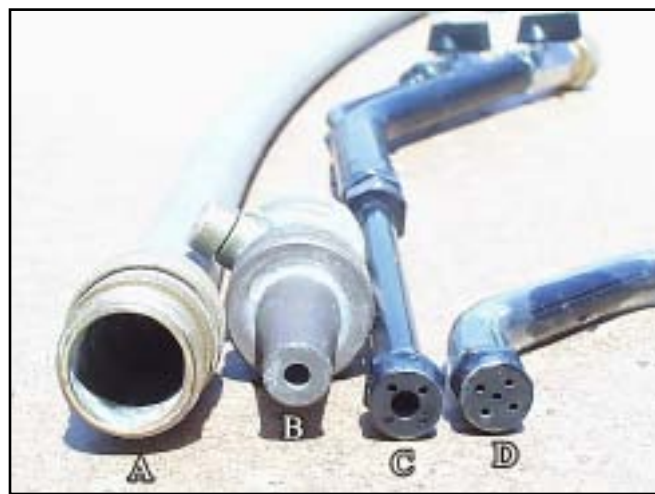


Figure 3 This photo compares the exit orifice of each device tested.

hose and pipes. The net result is that this opening significantly influences water flow until the exit orifice is equal to, or smaller than, the size of the valve's passage. You really needed to know that, huh?

PROS AND CONS

A bare garden hose wastes lots of water and is next to useless for cleaning, so forget that. And although the jet nozzle appears to have significant removal power, it lacks Massojet's extension that allows you to clean hard to reach places and reduce being splashed by reflected water.

definitely damage what's being sprayed and may cause personal injury. Around the 4X, there is no doubt in my mind that they can remove paint and force water past otherwise perfect seals and into areas where it does not belong. Use with caution.

CONCLUSION

If you find you have to pre-clean your 4X before the car wash will take it, or you want to "do it right" yourself, consider a Massojet. It's

like having a coin-wash right at home in your driveway.

Stay tuned for my report on Massojet 329 and the applicator. 329 is a corrosion inhibitor that may render rust underneath your 4X a thing of the past.

We now offer Massojets for sale in the newsletter and on our web site. The SA600 is \$52.00, the SA900 is \$62.00 and the Air and Water Gun, deluxe is \$97.00 (includes tax/shipping).

Dealer inquiries welcome.



FOURWHEELING ACADEMY

TIRE DEFLATION METHODS: PART 3

By Harry Lewellyn

Quoting from TIRE DEFLATION METHODS in the ECO4WD newsletter of February 1997, I caution, "It takes a degree of experience to easily, effectively and safely remove valve cores." Quoting from TIRE DEFLATION METHODS: Part 2, April 1998, "Currie Enterprises has introduced the creme de la creme valve core remover...". Currie eventually sold the rights to E-Z Air to G. H. Meiser Co. www.GetAGauge.com now sells the E-Z Air.

EqualAir incorporates a portion of the E-Z Air valve core removal tool (see Figure 1) into a dual tire inflation/deflation product. This article uses the same test method used in both TIRE DEFLATION METHODS articles and compares past and EqualAir deflation times in Table 1.

DESCRIPTION

EqualAir is a two-at-a-time tire inflation/deflation device. It has a portion of the E-Z Air tool (minus the valve core removal part) in the middle of a flexible 3/16" (I.D.), 16' 4" long hose, with quick-



Figure 1 EqualAir dual tire inflation/deflation tool

METHOD/ PRODUCT	TO 12-PSI (minutes)	TO FINISH (minutes)
QuickAir Deflators	3:34	3:40
Red (remove valve core)	3:43	3:53
Staun Tyre Deflators	3:45*	3:58*
Currie E-Z Deflaotor	3:55	4:08
Oasis Trailhead Deflators	4:09*	4:38*
Quadra-Flate	4:06	5:27
Coyote Kludge (make it yourself)	5:15	5:30
Depress valve core	7:35	7:45
EqualAir	7:18	8:12

Table 1 Four tire, portal-to-portal deflation time from 28PSI to 12PSI

connect air chucks at both ends. This easily reaches any pair of tires on the same axle. The EqualAir has a 0- to 100-PSI dial gauge built in, plus it comes with a 0- to 15-PSI gauge for low pressure measurement. Each is housed in a durable, protective rubber cover. A two-sided instruction sheet provides operating instructions and describes the lifetime limited warranty.

OPERATION

Although fast, the E-Z Air suffers one major drawback. It must be screwed onto each tire's valve stem to remove and reinstall

the valve cores. For the EqualAir, you simply use the quick-connect air chuck. These are the slickest, easiest to use chucks I've ever used (see Figure 2).

To decrease the pressure in a pair of tires, remove the 4X's valve caps, attach the chucks and move the slide valve open (see Figure 3, left). Fully down decreases pressure and gives you the highest deflation rate. Moving it down a little at a time allows for slower deflation and a more exact pressure measurement while deflating. The gauge will not accurately read tire pressure while deflating or inflating at the maximum rate. For perfect pressure readings, the valve must be fully closed.

To increase tire pressure, slide the valve closed (Figure 3, right), remove the valve cap from the EqualAir compressor port and attach an air source to this valve stem, then inflate. Do not use a compressed air source greater than 100-PSI! This will very likely jamb the needle against the "zero" stop pin and damage or affect the accuracy of the gauge.

LOW PRESSURE MEASUREMENT

If you're an "exact pressure" kinda person, this is where the 0-15 gauge comes in. With the slide valve up nearest the valve stem (closed) and the chucks still connected to your tires, put the 0-15 gauge on the compressor port. Again, you can and most likely will do damage to the gauge if you use it on tires that are inflated to more than 18 PSI!

STORAGE

To store the unit, remove it from the 4X, open and close the slide valve one time to relieve any pressure trapped in the hoses, replace the valve cap on the EqualAir compressor port, re-coil the hoses and use the included Velcro straps to secure each coil.

TEST PROCEDURE

The objective was to measure total deflation time for four 31 X 10.50 tires from 28 to 12 PSI. I chose 28 PSI for the high since that is about what most SUV owners run on the street. 12 PSI was chosen because it's a compromise between my rock crawling pressure (15 PSI) and my sand pressure (10 PSI).

TIMING

I took a portal-to-portal approach. I measured all of the time you normally spend airing down. This includes unpacking your toy, using it, and then repacking it in the vehicle. I removed and replaced my No-Loss valve caps for each test, too. I tried my best to move around the car at



Figure 2 Durable, easy to use, quick-connect air chuck.

about the same speed as I would if I were not in an air-down race: efficiently, but not rushing.

Two people were involved. I was the deflator and Jenna was the timekeeper. I was therefore not encumbered with timing details.

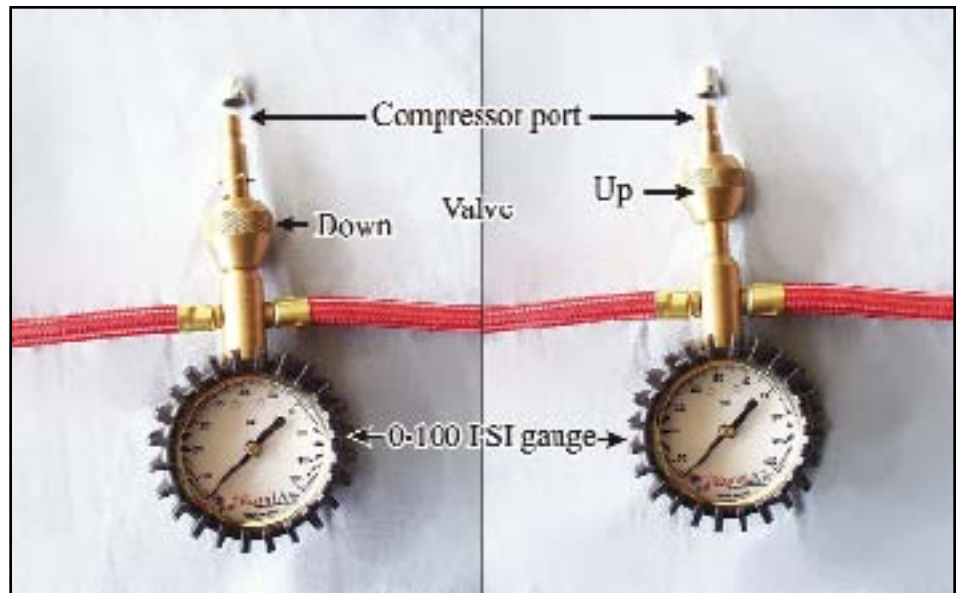


Figure 3 The control valve shown in the deflate position (left) and inflate position (right).

ENVIRONMENTAL TESTS

I did not conduct the temperature and "dirty environment" tests as done in the preceding two articles. However, as with the Quadra-Flate tested in 1997, I believe some portion of the EqualAir will eventually end up being dragged in the dirt and require cleaning.

TEST RESULTS

The EqualAir is not that fast and the reason is understandable. Besides the time it takes to unpack and pack the unit, the air still has to escape through the tiny, restrictive holes in the valve core. Figure 4 is a dissected valve core showing this very small passage (B). Further, the lengthy hoses and chucks can't help things either.

PROS

The quality is beyond compare. I am intimately familiar with G. H. Meiser, the manufacture of the EqualAir, and totally respect its commitment to quality and reliability. EqualAir has the easiest to use lock chuck I've ever seen. It is the perfect tool for tire pressure fanatics. You can balance the pressure in a pair of tires exactly! And with the 0- to 15-PSI gauge, you can measure low pressure down to ¼ PSI. It will be a fantastic tool for future tire pressure articles. It lives up to its name — EqualAir. What more can you ask for?

For airing up, it seemed a little more convenient. You only have to go through the "inflate, measure, inflate, measure" trial and error process once per pair of tires versus once per tire for all other devices.

CONS

Temper this with the fact that I'm rather lazy. I'm not a fan of unpacking a two-armed octopus from the back of the truck, connecting it to a pair of tires, going back to the center of the critter to air down,



Figure 4 Air passage holes in a tire valve stem without the valve core (A) and within the valve core (B).

then disconnecting it from the first pair and repeating the whole process for the next pair. I like a no brainer approach like my Stauns.

CONTACT INFO

EqualAir Off-Road retails for \$59.95. EqualAir: 5428 Rivertown Circle SW, Grandville, MI 49418; voice, (877) 55-EQUAL; fax (616) 588-6055 or www.EqualAirUS.com It has a broad line of products for street, race, RV or dual tires and the latter is where pressure balance really counts.



TRAIL TIP WHEEL CHEAT

Chapter 5 (Basics, page 145) of "SHIFTING Into 4WD" offers this about why you scuff rocks or drop off into gullies with the rear wheels. For a complete "tour" of the book, see www.eco4wd.com/Xbook_preview/1preview.htm Order on the last page of this newsletter or from our Web site.

If there is any one single thing that gets newcomers, it's what I call wheel cheat. Wheel cheat can cause serious paint and body metal damage. Follow along with the drawing on page 146. It shows the front and rear tires do not follow the same track in a turn. Maybe you've pulled



out of a driveway and felt the rear tires miss the driveway and plop off the curb. Or maybe you are the type that cuts right turns too closely and scuffs the curb with the inside rear tire. Most big trucks warn: "This vehicle makes wide right turns." This is to compensate for wheel cheat.

I think it's like "out of sight, out of mind." We pass the obstacle (curb, driveway, rock, gully) and make our turn. If we can't see it, it can't get us, but nothing could be further from the truth.

On tight, twisty trails, wheel cheat is more significant than you might ever suspect. I haven't measured every 4X around, but it is typically about three feet for a 100-inch wheelbase vehicle and increases with wheelbase. That means on the sharpest turn, your rear tires will track

three feet inside the front tires. That is a whole lot of body metal, folks! Learn and pay attention to your 4X's wheel cheat.

The way to avoid wheel cheat is twofold. First, approach the big metal muncher from as far away as possible. Don't drive right up alongside, then sharply turn. Next, if possible, wait until the obstacle is at least behind you, and preferably directly opposite the inside rear tire, before you turn. Now, make a sharper turn than you otherwise would. Another way of putting this whole scenario is don't turn too close, too soon.

This technique also helps. I almost feel like I am cheating because it's so easy. Simply adjust your door mirrors (electric, I presume) so you can see the rear tires and surrounding body metal. Now, you no longer have to guess how close you are to those nasty rocks, particularly on the right side. You can see them.



Until now, the wheel cheat caution has only addressed rocks, but there's something worse! Picture a tight, cliff-side mountain hairpin. Visualize Mother Nature has just laid down a good storm that washed the inside of the road over the cliff. Now picture that your neglectful wheel cheat puts your inside rear tire in the washout, off the edge and the 4X follows. Over the side you go! It's important to learn about wheel cheat and how to manage it.

FOURWHEELING ACADEMY

WORX™ ALL NATURAL HAND CLEANER



Notice how Worx shows no evidence of having dissolved the grease in the center of my hand (explained in text below).

By Harry Lewellyn

I'm kinda tough when it comes to changing from something that already works. The case in point is my mechanic's hand cleaner. It certainly gets my hands clean, but when I took a second look at the ingredients, I saw reason to investigate a Worx Environmental Products, Inc. product (www.worx™.com).

DESCRIPTION

With no compromise in cleaning power, convenience, cost, or most importantly, commitment to the environment, Worx works wonders. It contains no soap, phosphate, alkali, borax or harmful abrasives and is completely drain compatible. It is certified by ECOLOGO of Canada and Green Seal of the USA as biodegradable.

It works on grease, oil, pine tar, fresh paint, primers, wood stains, carbon, soot and much, much more. Worx also removes unpleasant odors associated with most hand cleaning problems either on the job or at home. Odors ranging from diesel fuel to garlic are easily removed and it leaves your

hands scented with a natural juniper berry essence.

The best part is that it is pH balanced to human skin and conditions while it cleans. Worx reduces or completely eliminates rashes and skin irritation associated with solvent based cleaners. Jenna immediately noticed after first use her hands were smoother and softer.

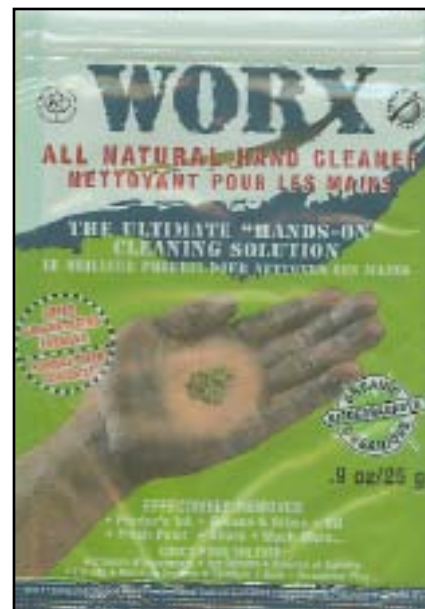
HOW IT WORKS

Worx does not work in the same fashion as my old hand cleaner, which dissolve the bond between what is on my hands and skin. It then scrapes away what has been dissolved with pumice. This "dissolve and scrape" method does work, but it damages the skin and the solvents penetrate the skin and enter the bloodstream. Also, the conventional hand cleaner's solvents and chemicals damage the environment.

Worx operates in a completely different method. Worx contains no solvents, no phosphates, no alkali or harmful abrasives. Worx biodegradable organic powder begins to biodegrade on contact with water. When it does, it breaks down the plant cellulose, and water molecules encapsulate the dirt or whatever, and then it simply

rinses off. So, with solvent or petroleum distillate cleaners, you see the grim running off your hands into the sink. When you use Worx, you do not see that. The filth is encapsulated, so it virtually disappears as opposed to running off and down the drain. When rinsed, the filth is gone for good.

This method of cleaning allows Worx to encapsulate the grime in tiny, minute molecular portions, which allows the biodegrading to take place. If the grime was simply rubbed off in large quantities, it certainly would not be biodegradable or at least fully biodegradable. But if you have a method to hold the dirt in tiny particles inside the plant cellulose and water molecules it will biodegrade.



0.9-ounce sample package (not for sale).

SAMPLES

I have ten free samples (pictured above) that I will mail to the first ten requests. Give it a try!

CONTACT INFO

To see Worx's full line of products, go to www.worx™.com or use: Worx Environmental Products Inc. 3352 46th Ave S.E., Calgary, Alberta, Canada T2B 3J2.



COMING EVENTS *LAST CALL FOR SAN FELIPE!*

<u>EVENT</u>	<u>DATE</u>	<u>DETAILS - See note below</u>
<i>Discovering 4WD *</i>	May 8	<i>Through Rancho Santiago College; 4WD basics (6 hr lect.)*</i>
San Felipe Sand Blast (H)	May 14 to 17	Beach run plus local excursions /p27 < <i>LAST CALL!</i> <
<i>Arrowhead Adventure *</i>	May 23	<i>Through Rancho Santiago College (no lecture)*</i>
Piute Passage (C)	June 5 to 6	Historic California tour /p28
Arrowhead Adventure	June 6	Easy back way into CA's San Bernardino mountains /p28
Hot Spring Mountain (C)	June 19 to 20	Two skills-improving days at Los Coyotes /p29
Land of Volcanoes (C or H)	June 19 to 21	Geologic California tour /p29
<i>Discovering 4WD *</i>	June 26	<i>Through Rancho Santiago College; 4WD basics (6 hr lect.)*</i>
<i>Mojave Expedition *</i>	July 11	<i>Through Rancho Santiago College (no lecture)*</i>
Fat Hill Fandango (H)	July 17 to 19	Historic California/Ghost town tour /p30
Monache Meandering (C)	August 14 to 16	Historic California tour /p31
Rubicon Rendezvous (C)	August 19 to 22	Camping roughie in Tahoe, CA /p30
Arrowhead Adventure	September 5	Easy back way into CA's San Bernardino mountains /p28
By God, to Bodie! (C or H)	September 11 to 13	Historic California ghost town tour /p31
Golden Leaves & Trails (C or H)	September 18 to 20	Historic California tour /p32
Introducing the Hammers (C)	October 8 to 9	Extreme black diamond in Johnson Valley, CA /p33
Death Valley II (C)	October 15 to 18	4WD camping mini-vacation /p32
Lunch in Lucerne	October 30	Easy exploring trip in CA's high desert near Victorville/p24
Copper Canyon, Mexico (H)	November 12 to 23	A driving vacation through Mexico's backcountry /p27

(C) = Camping trip (H) = Hotel-based trip  = Schedule subject to change * = R. S. College (714) 480-7390

DETAILS: The page references (above) refer to the Bonus Issue 2004 newsletter. Request a FREE copy by: mailing your USPS address (USA only); emailing your address with "newsletter" in the subject, or downloading it for FREE from our Web site (www.eco4wd.com/products/!newsletter_choice.htm). See Trip Policy in the newsletter or www.eco4wd.com/about_us/policy.htm for registration details.

UPCOMING CLASSES/TOURS THROUGH RANCHO SANTIAGO COLLEGE:

ARROWHEAD ADVENTURE

Load up the family for this fun and easy Sunday backroad adventure.

Discover the back roads around this popular vacation spot. We'll meander up to Lake Arrowhead for a Dutch-treat brunch overlooking the lake, stopping along the way to smell the flowers and admire the views. A rougher option will tempt some before lunch. We'll exit the area via a still unpaved state highway as we head down into the high desert.

MAY 23 ~ CALL (714) 480-7390.

No pre-trip lecture is required.

DISCOVERING 4WD

This one-day, hands-on 4WD seminar will acquaint you with your SUV, our methods and our ecologically compatible backcountry travel philosophy.

Your SUV is just waiting to show you the backcountry, but it makes good sense to learn the fundamentals first. Let the "clean and easy" expert show you driving techniques and backcountry etiquette. Learn the ins and outs of handling different terrain and getting unstuck the easy way in this 5-hour seminar. Then, it's out to the college parking lot for hands-on experience and aftermarket equipment demos.

JUNE 26 ~ CALL (714) 480-7390.

No pre-trip lecture is required.

MOJAVE EXPEDITION

If you yearn for the things California was built on — gold, old mines and relics — this one is for you!

The legend and lore of Colorado Camp, Schmidt's Tunnel, Painted Canyon, Bonanza Gulch and the Yellow Aster Mine ignite the imagination. On this one-day tour, you'll discover the historically rich gold mining area of Randsburg and improve your four-wheel-drive skills under the watchful eye of the Silver Coyote.

JULY 11 ~ CALL (714) 480-7390.

No pre-trip lecture is required.



**NO RUBBER
CEMENT!**

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

Road heat completely vulcanizes the 21-ply plugs to the inner-tire butyl rubber through a U.S. patented repair process. Make a repair once with Safety Seal, and it will conform to the shape of the puncture and outlast the tire.

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



**NEW HD300!
TruckAir
can't be matched
for the price!**



- Built-in 2-1/4" diameter, 300-psi gauge
 - 25" delivery hose with nozzle adapters
 - Fan-cooled, heavy-duty motor runs nonstop for 8 hours
 - Long, 13-1/2' power cord plugs into the cigarette lighter for 12VDC power
 - .47 cubic feet per hour air flow
 - Inflates even the biggest tires in minutes
- 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%!**

NO-LOSS Valve Caps

*No more searching for dropped caps!
No more storing filthy caps in your mouth!*



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

**Caps hold air with or with a valve core!
BUILT FOR NATO MILITARY VEHICLES!**

STAUN ADJUSTABLE TYRE DEFLATORS

No backbreaking individual tire deflating!

Simply screw onto tire valve stem to automatically deflate to your desired pressure between 6-30 PSI.

This all brass deflator has been designed to suit most 4WD deflation needs. Suitable for beach or bush pressures, it is preset at 18psi and accurate to within 0.25psi. It has an adjustment of 3psi per half turn and 6psi per full turn of the adjustment cap. These units require up to 7 psi above preset pressure to start automatically, and can be started manually with as little as 2 psi differential. [Also in 0-10 and 15-55 PSI.]



MASTER-PULL SUPER YANKER

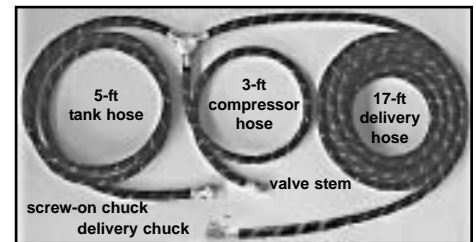
**30'-long
7/8"-diameter
double braid
nylon rope**



At 28,500# strong, this *Super Yanker* is more knot friendly and stretches 12.3% more than conventional flat, yellow yank straps. It has professionally hand spliced eyes that all but eliminate sewn-in eye failure. Heavy duty nylon chafe guards protect eyes against wear.

COMES WITH OR WITHOUT VINYL BAG

COYOTE AIR ROBBER



UNLIMITED AIR: With an AR, you have unlimited air with or without a compressor. **Connect** the screw-on valve stem chuck to any inflated tire and use the custom lock chuck at the other end to air up. **Connect** a compressor to the valve stem at the end of the 3-way manifold, and continuously replenish the source tire while you fill the others.

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

COYOTE CHAIN



your trail.

Attach the **slide hook** (left) directly to the 4X frame or use it as a choker to cinch up on anything, including the downed tree blocking

Don't travel the backcountry without one!

Includes 3' of 5/16", heavy duty transport chain and "Recovery" newsletter reprint.

ClampTite

clampmaking tool

Hundreds of uses around the home, workshop, garage and in the field.

CLAMP ANYTHING

**ANY SIZE
ANY SHAPE
ANYWHERE!**



This tool is a must for any backcountry traveler's "getchaback" box.

Makes instant clamps from ordinary wire, or even clothes hangers!

Stop leaky hoses on the spot or fix broken handles, tail pipes, sports equipment, fences and more with this handy tool.

ORDER ON PAGE 10.

For more information on these and our other backcountry products and services, see:

**[www.eco4wd.com/products/
!product_choice.htm](http://www.eco4wd.com/products/product_choice.htm)**

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Bonus Issue 2004 newsletter!**



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