Electric Auto Association NEWS

May 1983 Vol XV No 5

DIRECTIONS

By CLARENCE ELLERS

NO WHERE TO GO BUT UP

After the gas crisis, where do we go? I wonder if we blew our best shot by over-stating improvements. New batteries, perfecting the electric drive system and, in general, promoting the idea that the perfect electric was right around the next corner. Who would buy an electric in this atmosphere? It seems I read somewhere that the electric car was perfected and doing very well around the turn of the century. We have the technology to build a good electric now and I believe that around 40 million American cars could be electric now on the basis of mileage driven. I think we need a new direction for our promotion and publicity. The number ONE priority should be a campaign to convince the general public that they do not drive as many miles each day that they think they do. Concentrate on a program to encourage drivers to read their odometer. Make people aware of their odometers.

We might distribute club business cards with a form on the back for day by day mileage records. The second very important point is pollution, our metropolitan areas are almost unliveable. IC vehicles must be eliminated from our centre cities. The electric can be a literal life saver here.

Finally, and probably the most important concern to the user is cost of operation. In a recent, very thorough, 10 year survey involving over 2000 vehicles in England, it was found that the overall operating expense was 50% for electrics over IC vehicles. The largest savings being in maintenance, down time, and replacement cycle.

PG and E Levi's Plaza

ELECTRIC CARS ON BATTERY STREET?

SAN FRANCISCO

Yes, PG&E and Livi Strauss Company jointly sponsored an Energy Show on April 12-13-14 at the latter's business complex on Battery Street. Five beautiful cars were on display. John Wasylinas' Honda, Ted Bensen's VW Beetle, Clarence Ellers' Aztec, Ivan Mact's Electra-Van, and I Tillin's Honda. The cars were well received and a lot of questions were asked.

by J.F. "Ted" Bensen

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DOE's EHV FY83 BUDGET FINALIZED AT $ 13.9 MILLION

Is the heading of an article in the February, 1983 issue of the EVC Newsletter. The money was allocated as follows.

$ 7,100,000 for advanced battery research and development.
2,000,000 for hybrid vehicle development
1,300,000 for advanced vehicle research and development.
3,000,000 for testing and evaluation.

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WE WILL PROMOTE **ALL EVENTS** EAA OR NOT

SEND INFO. AT LEAST 2 MONTHS AHEAD

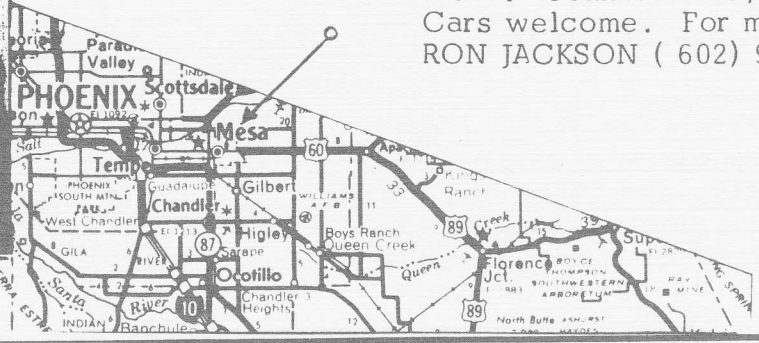
1983

Visions of the Southwest

JUNE 16-19

EV EXPO

EVENT



PHOENIX CHAPTER

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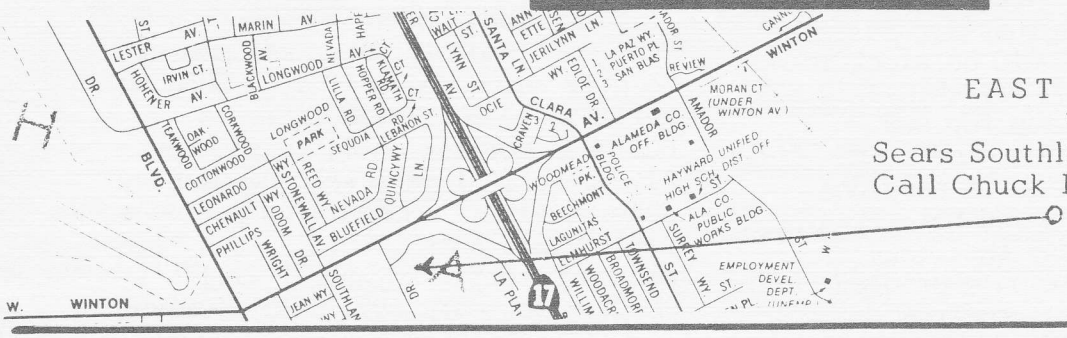
Will hold the first Shopping Mall Show on June 16-19 at the Tri City Mall in Mesa. They need more cars for display. SIGN UP NOW. Commercials, Conversions or Golf Cars welcome. For more information call RON JACKSON (602) 969-7258

EV EXPO Hayward JUNE 11



EAST BAY CHAPTER

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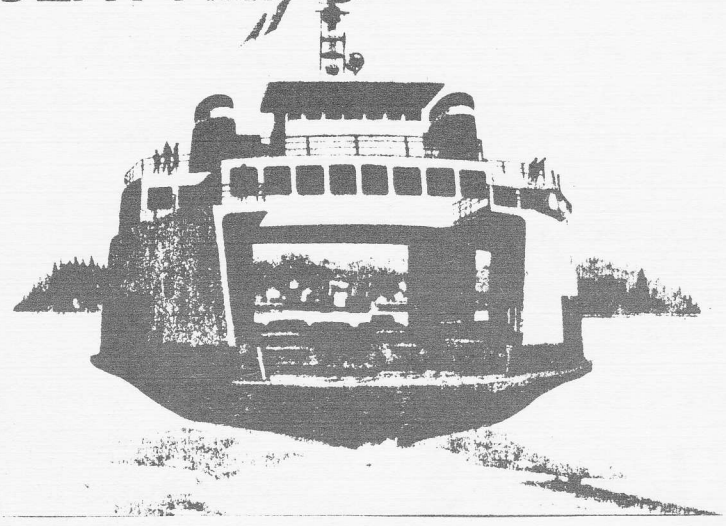
Sears Southland Hi-way 17 & Winton
Call Chuck Huntley After 6 415-431-8179

SEATTLE Electric Car *Rally* JULY 31



SEATTLE CHAPTER

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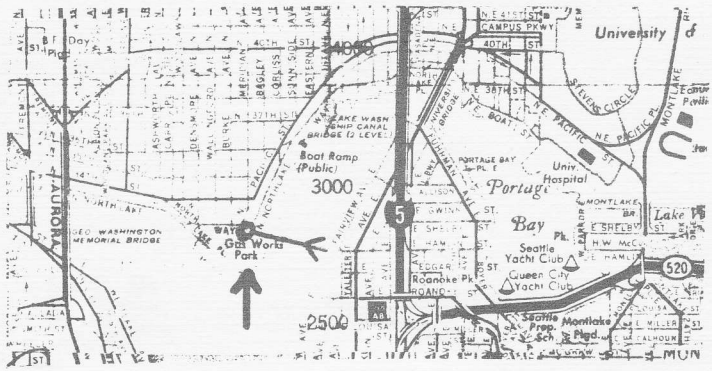
Northlake Way and Maridian. For details call STEVEN LOUGH (206) 325-2600



EV Marketplace

ELECTRO AUTOMOTIVE

Electro Automotive presents the complete, efficient EV System, consisting of: Willey 9 Controller - The China Motor - Alco Batteries - and all necessary components for a complete conversion. For details call Mike Brown at 408-438-3606.

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'69 Toyota-Baldor Motor-PMC Control-16 Trojan Batts-96V Charger $3,500/offer. 12V Fan- (2) CM76 Motors $150 each J.Allison (209) 952-7370

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Toyota Long Bed 5 speed 96V- Prestolite Motor-PMC Controller-Lester 96/12 charger 16 Trojan 135s $5000-M.Lee 503-655-0802 2492 Mustang Court, West Linn, Or. 97068

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(5) GE panel Meters, square 4 1/2" 0-15V 3 1/2 0-100 V - also round 3 1/2 0-25 400 amp. shunt $25 each or all for $100. D. Cheesman 206-352-0463. 205 W 24th Olympic, Wash . 98501

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ELECTRIC VEHICLES INC.

Northern Calif. EV Dealership CLEARANCE
*Jet 600 Minivan new $10,995.
*Jet 600 used 2K miles $8,995.
*Jet 600 22K miles $5,995.
*JetElectrica (escort) demo 9Kmiles$9,995
*Jet Electrica 007 (Omni 024) demo $5,995
*Honda Civic Automatic, used $5,995.
EV CONVERSION COMPONENTS. *Prestolite MTC 4001 DC Series Motors new$795 *Transistor Speed ControllersEVI-82 400A up to 110V $695 * Electric Engine TM complete conversion unit $2,200. EAA members discount. Write to EVI 2736 Winfield Dr. Mt. View, Ca. 94040 or call 415-964-3974.

ANNOUNCEMENT
FRANK WILLEY HAS APPOINTED
BILL PALMER
DEALER FOR FRANK WILLEY CONTROLLERS

Prepare now for your summer conversion project by buying your custom motor-mounting adapter, shaft coupling AND controller from BILL PALMER. The proven, reliable WILLEY MODEL -9 450 amp. 36 to 96 volt transistor controller is $695, or $745 with optional shunt field controller. Adapter and coupling prices vary with size and complexity. For discriptions and prices write or call BILL PALMER at 44 DiorTerrace Los Altos, Ca. 94022, (415)948-7677.

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1982 Renault Leopard used 350 miles $6,500. Cost new $12.000 Chet Jones (415) 939-2067

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69VW SQBK 72V Baldor, PMC Contro. J250 Reliable $2,500/offer (916)362-9428

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Electric Road Runner 2 pass.,2 speed Moped 30 mph. 25m on charge $1,000 Ken Ekstrom (209) 733-2763

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Electric SuperTrike 1 pass. 2 speed, 15 mph 35 m on charge $200 Ken Ekstrom

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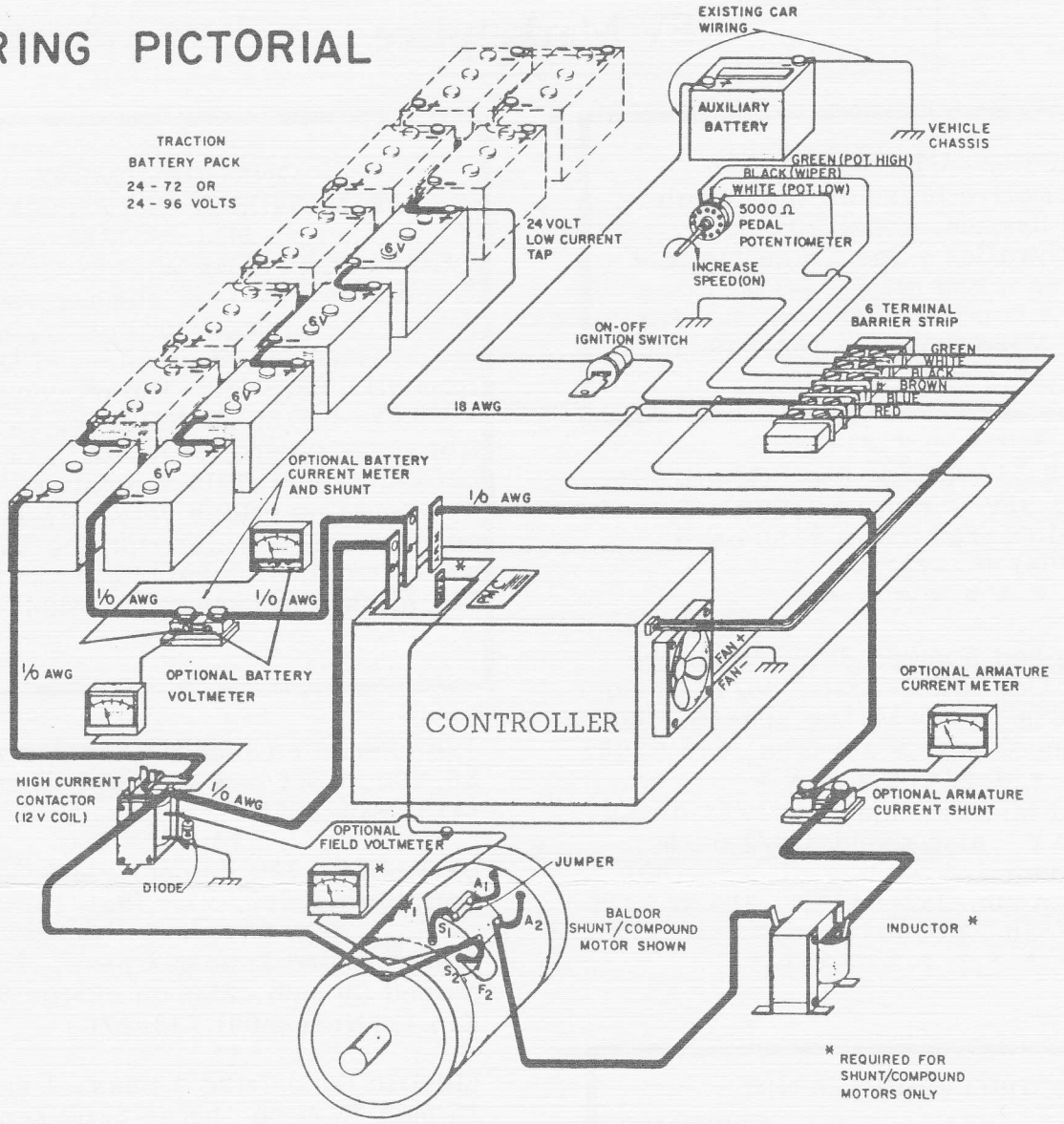
A A ELECTRACAR INC.

We have reduced our business and moved to 1085 Tasman Dr. # 732, Sunnyvale Ca. 94086. For information on the Aquila Electric Engine Kit, Batteries, etc., call Alfred Hardage at 408-734-8385. Al will be handling the Alco Batteries at $65 each for six or more, delivered within a 50 mile radius. He will also provide a vehicle moving service for $30 within a 30 mile radius.

ADS must be received with payment by the 10th of the month, for the following month's issue. Ad rate is $5 each half column inch. (1/2" high by 3 1/2 wide). Mail to EAA 1249 Lane St. Belmont Ca. 94002.

WIRING PICTORIAL



COMPLETE STATE OF THE ART EV SYSTEM

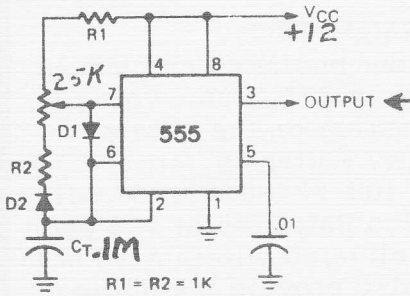
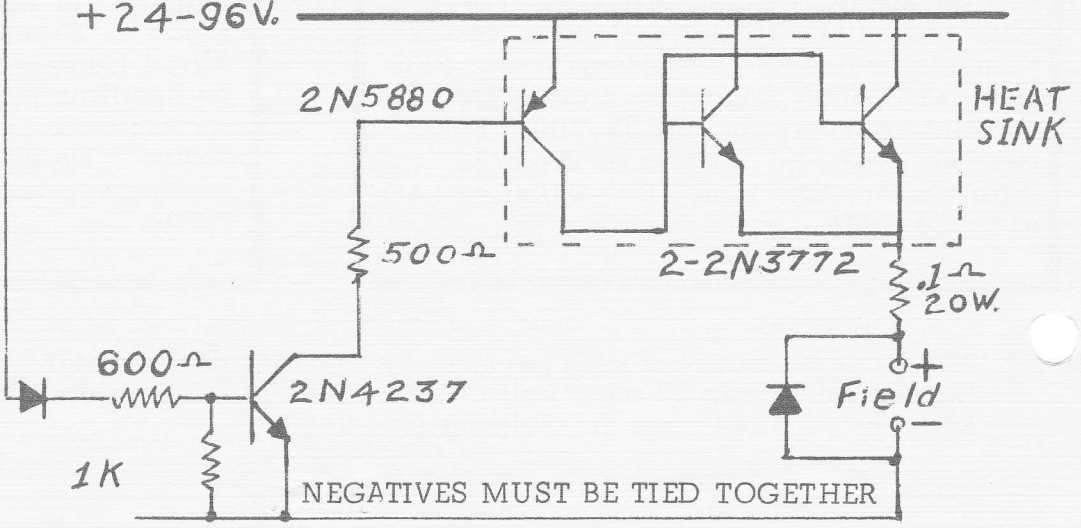


FIG. 17—ASTABLE MUTIVIBRATOR with duty cycle variable from 0 to 100% and frequency constant.

In some applications, we may need to vary the duty cycle of a multivibrator from about 0 to 100% while holding the frequency constant. In this case, replace R_{T-a} and R_{T-b} with a single linear-pot as in Fig. 17. Resistors R1 and R2—approximately 1,000 ohms each—are connected in series with the pot. R1 limits the maximum current through the discharge transistor. Resistor R2 establishes a minimum value for R_{T-b} and to compensate for the addition of R1 to the network.

WORLD DISTANCE RECORD HOLDER BRUCE MCCASKIE'S
20 AMP. FIELD CONTROLLER USED ON COMPOUND (CM77)
FULL FIELD SHOULD BE USED ON ALL SHUNT MOTORS



CHARGING SAFETY

ISRAEL TILLIN

Many EV owners have built their own battery chargers. These can do a respectable job of charging and cost much less than commercial chargers. The advantages of commercial vs. homemade chargers will not be discussed here.

The most costly and difficult part to procure for a homemade charger is the transformer. This must be of a non-standard voltage and must usually be made to order. Very few do-it-yourselfers can make their own successfully. To circumvent procuring a special transformer such people have resorted to using a variable voltage auto transformer such as Variac or similar. Recently chargers have been built using an electronic voltage controlling device. Some of these are quite inexpensive and simple to build.

Unfortunately both the auto transformer and electronic types present a potential line to ground LETHAL SHOCK HAZARD which can sometimes occur when simply touching the body of the car while it is being charged. Chargers made with conventional two winding transformers do not have this hazard. Of course, all chargers, and in fact the batteries themselves, always present a line-to-line shock hazard, which can also be lethal.

There are two techniques to guard against the line-to-ground shock hazard;

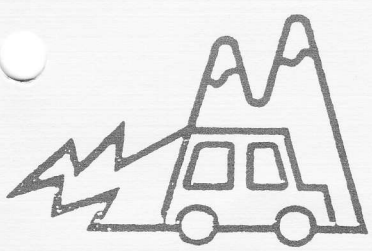
1. Install an isolation transformer ahead of the charger.
2. Use a ground fault interrupter (GFI) type of receptacle or circuit breaker in the line ahead of the charger.

An isolation transformer is the most foolproof. It is also heavy, bulky, and expensive. A 1½ or 2 Kva (15 to 20 amp secondary) transformer can sometimes be found in an electronics surplus house for about $100.

A ground fault interrupter is cheaper and lighter, but probably not as foolproof as an isolation transformer. It costs about $30 and comes in two formats: as replacement for a conventional 115V receptacle, or as replacement for a conventional circuit breaker in the circuit breaker panel. It works by sensing an imbalance in the two sides of the line. This imbalance must be due to current flowing from a line to ground. It trips very fast if there is more than 5 milliamps of imbalance. Five milliamps can be felt; 10 milliamps feels as though you have been hit over the head. Ground fault interrupters are not available for 220V circuits.

For safety, I recommend that all homemade battery chargers with other than conventional two-winding transformers be protected with either of these devices, and preferably with both. Through redundancy you will be protected should one malfunction. Even if a 2 winding transformer is used, a GFI is a good idea.

You have put a lot of time and money into your electric car. Invest a little more to assure that you live to enjoy your EV!



DENVER DEVC JUNE 9–12

DENVER ELECTRIC VEHICLE COUNCIL

EV EXPO LAKEWOOD **MALL**

Call George E. Gless 442-6566

EVC Electric Vehicle Council
1111 19th Street N.W. Washington, D.C. 20036

SYMPOSIUM & EXPO '83
Dearborn, MI Hyatt Regency Hotel
October 4-6, 1983

Bookshelf

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"SO YOU THINK YOU ARE DRIVING A GASOLINE CAR, HUH?". This is a first printing and contains a questionaire which I hope you will fill out and return. Price $1.50 . J.F. Bensen, 8 San Juan Ave., Daly City, Ca. 94015

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STEP-BY-STEP CONVERSION MANUAL _ By Clarence Ellers. Complete instructions on conversion of gas cars to electric. Simple method saves hundreds of dollars. Also information on parts and where to get them. Send for summary to Clarence Ellers, P. O. Box 2781 , Santa Clara, Ca 95055

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Guide to Electric Auto Conversion - Fourth Edition. A clearly written 76 page conversion Manual with an emphasis on practical techniques, using latest technology. Plans include several PROVEN diagrams and Schematics, as well as a comperhensive Parts Procurement Directory. Separate Chapters thoroughly cover Expected Conversion Cost/Performance, Electric Motors, Adaptor Plates, Controllers, Batteries, Chargers, Maintenance, System Test/Integration Safety and wiring capacity. A real bargain for only $19.95 from Bill Williams, Dept. EAAN, Box 1548 , Cupertino, Ca. 95051

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