

March 1988

MEETING NOTICE

The next meeting will be Mar. 18th, at CRAGIN FEDERAL SAVINGS & LOAN 333 W. Wesley St. Wheaton, Ill. - Time - 7:30 P.M. sharp. Guests are welcome and need not be members to attend the meeting.

THE PRES SAYS

Things are looking good to have our April 15th meeting as a live program on Cablevision. Pending final confirmation, the meeting will be held at Chicago Cablevision's Oak Park studios where we will present a 1-hour program about the FVEAA. The discussion is planned to include how we got started, what we have accomplished, future plans, and comments about our experiences with electric cars. The program will also be taped and rebroadcast several times. We can get VHS tape copies made if members wish.

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FOX VALLEY ELECTRIC
AUTO ASSOCIATION
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FIRST CLASS

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THE PRES SAYS continued

The next event will be our appearance at the Kane County Fairgrounds flea market on Sunday, May 1 where we will have an opportunity to exhibit two electric cars. According to Member Stockberger, this event is attended by thousands and should give us an opportunity to tell a lot of persons what we know about electric cars. The appearance was originally suggested and set up by Member Ness. Our premier negotiator, Member Harris, is arranging the final details.

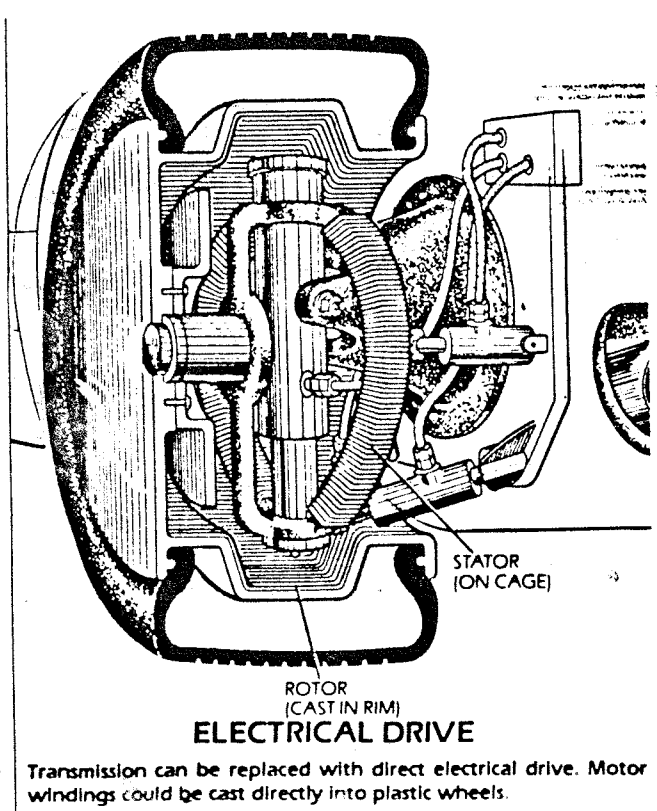
The following month on Saturday, June 11 we will have an EV rally at Argonne Lab which has been arranged by Member Woods.

We will require the help of all members to publicize and cover these events. Now is the time to get your electric car in good shape to participate. If you need help, bring it up at the March meeting.

The future events will be discussed at our March meeting. Our technical discussion will include an update on the controller construction and the battery charger kit. If there is time, we will also discuss electric braking which we didn't get around to in February.

Bill

ACTIVE SUSPENSION OF THE FUTURE



Transmission can be replaced with direct electrical drive. Motor windings could be cast directly into plastic wheels.

Volkswagen, for example, now has a hybrid gas-electric prototype with a large diameter "pancake motor" replacing the fly-wheel/starter/alternator. It's not at all inconceivable that we could someday have a pancake motor in each wheel—and no driveshafts.

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WIND RESISTANCE TEST

Rolling resistance tests on Lloyd Wenzel's 1974 Honda Civic were reported on previously in this newsletter. The East Bay/Contra Costa Chapter of the EAA continued testing this vehicle by measuring its wind resistance with different size wheels.

As in the earlier tests, three combinations of tires and wheels were used:

- 1) The original 12" wheels front and back;
- 2) 12" wheels in front and 15" wheels in back;
- 3) 14" wheels in front and 15" wheels in back.

Combination (3) had the lowest rolling resistance. Combination (2) was about 2% worse, and combination (1) was about 12% worse than combination (3). The same high quality steel belted radial tires were used in the wind resistance tests as were used previously in the rolling resistance tests.

In order to measure the effect of wind resistance, the car was driven at a constant 45 MPH and the propulsion battery voltage and current were recorded. This was done for each of the three combinations of tires and wheels. Each test was repeated in opposite directions over the test route in order to compensate for a slight grade and mild wind conditions. With 12" tires in front, the speedometer read the true speed. With 14" tires in front, the speedometer reading had to be corrected. The correction factor is the ratio of the diameters of the 12" and 14" tires, or (21.5 inches)/(24.5 inches) = .87755. Therefore, in the third test, the speedometer indicated .87755 x 45 MPH = 39.5 MPH.

The following table contains the test data:

TIRE SIZE,		DIRECTION DRIVEN:	BATTERY	BATTERY	BATTERY	RANK:
FRONT:	REAR:		VOLTAGE, VOLTS:	CURRENT, AMPS:	POWER, KILOWATTS:	
12"	12"	North	98-100	120-130	11.76-13.00	Worst
12"	15"	North	"- "	100-110	9.80-10.00	Best
14"	15"	North	"- "	110-120	10.78-12.00	
12"	12"	South	"- "	90-100	8.82-10.00	Worst
12"	15"	South	"- "	50-60	4.90- 6.00	Best
14"	15"	South	"- "	80-90	7.84- 9.00	

The results were consistent for both directions. The small tires in front with large tires in back (combination (2)) was the best. Combination (3), large tires front and back, was the next best. Combination (1), small tires front and rear, was the worst.

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A possible explanation of these results could be that the wind resistance of the vehicle is reduced by tilting it up in the rear. The car is level using combination (1), which produces the worst result. Improvement is made with combination (3), in which the rear of the car is slightly higher than the front. With combination (2), the rear is much higher than the front, and this gives the best result. Perhaps this tilt directs less wind flow to the bottom of the car, where the uneven surface creates turbulence, and more flow to the top of the car, which is smooth, thus reducing drag.

CONCLUSION:

It appears that the best choice is the original 12" wheels in front and large wheels in back. This gives the lowest wind resistance and is within 2% of the lowest rolling resistance obtained with large wheels front and back. Since the Honda has front wheel drive, small wheels in front also improves the drive train gear ratio.

The next best choice is large wheels front and back. Depending on the type of motor used, this combination may be necessary in order for the vehicle to be able to reach an adequate top speed. The test vehicle presently uses a Baldor 7544D series motor, which has a maximum speed of 3200 rpm. With 12" front wheels, top speed is limited to about 50 MPH. The use of a Prestolite MTC-4001 motor, which can run above 5000 rpm, would allow the use of 12" front wheels without imposing this limit on the vehicle's top speed.

In either case, the use of larger wheels in the rear is also desirable for supporting the weight of the batteries, which are located in the back seat area.

Please note that the results presented here are for the 1974 Honda Civic only and may not be valid for other vehicles.

Jon Gabel, 11/15/87

RUSSCO

Coming early 1988 the new high torque Russco motor, manufactured by General Electric, Modified by Russco. Twice the torque of the famed Prestolite. Available Russco's programable field controller and the new high output H O 400 controller, instant regenerative braking & dynamatic braking, of course.

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