

1972 Datsun Pickup

Electric Conversion



This is the revised version of the original Design Document, revised over 40 years after the converted vehicle was put on the road on November 1st 1979.

This document contains what I can recall from my notes of the EPT1 design. It contains varying levels of detail. Many areas are sketchy. This information is offered without warranty.

The conversion of an automobile drive train is not to be undertaken lightly. Do not attempt to replicate this project unless you know what you are doing and are willing to accept full responsibility for the outcome.

Although this document can be viewed as a web page, it is best viewed as a [PDF document](#).

EPT1 Specifications	
Owner	Al Lococo
Location	Wappingersxfalls, NY (currently Winter Haven, FI)
Web/Email	al@lococo.org
Vehicle	72 Datsun Pickup
Motor	Bauer E-1604-1, aircraft Generator, 30V, 400 Amps, 4500-8000 RPM
Drivetrain	Original 4 speed manual
Controller	Resistive with relay selection
Batteries	14, 6 Volt, Lead-Acid, Flooded
System Voltage	42 Volts
Charger	Off board 25 amp charger
Heater	None
DC/DC Converter	None, 12V Accessory battery
Instrumentation	Ammeter, Voltmeter
Top Speed	40 MPH (65 KPH)
Acceleration	0 to 40 mph, 15 seconds, guess.
Range	18 Miles (30 Kilometers)
Start:	69,686 Miles
Current:	70,727 Miles
Total:	1,041 Miles 1,735 Kilometers)
As of 5/13/1980	
Seating Capacity	3 adults
Conversion Time	7/16/79 – 11/1/79, 4 months.
Conversion Cost	\$3,130 including truck (\$1,300) and batteries (\$930)
Curb Weight	2,800 Pounds ,1273 Kilograms) including truck (2,020) and batteries (780)
Tires	Standard 13 inch

My name is Al Lococo. In 1979 I lived in Wappingers Falls, New York and was interested in converting a car to electric. I often traveled to San Jose on business. I obtained an EAA contact address of 1674 Merrill Drive. On my next trip to San Jose on May 28 1979 , I looked in the phone book for Walter Laski and called him on the phone. On Wednesday may 30th, I had a short visit with him. He was waiting for me when I arrived. I was surprised that he didn't have an EV.

He advised me to visit some one who had a conversion manual for a 72 Datsun pickup truck. His name was Clarence Ellers (Phone 295-8532 then). I no longer have the manual although I have copies of several pages.

I visited Clarence at 2892 Mesquite Drive in Santa Clara. He had a yellow Datsun Pickup.



Illustration 1: Here are three of Clarence's cars the yellow pickup is on the left.

He was working on a custom frame for a kit car for his next ground up home built electric. It was a going to be a Fibefab Aztec 7 composite body sports car. He may have mentioned the fact that it would be a hybrid. If he did it went over my head. I was more interested in the yellow Datsun Pickup. It was very attractive parked in the street in front of the house. The garage was occupied with the frame and running gear for his new project.

I bought his manual for \$40.00 and arranged for him to ship me a motor. I returned to New York and purchased a Datsun Pickup and converted it using the manual.

On the same visit to San Jose, I made several phone calls. I believe I spoke with Roy Kaylor and Roger Hedlund. I visited Roger at 457 Carneros Ave. #1, Sunnyvale. I was surprised at his modest home considering his accomplishments. He explained all the details of his "Battery Box" and his Land

Speed Record. Roger later sold me the plans for the Willey Model 7 Electronic Controller.

He gave me an 8x10 color Picture of his record breaking car. I have seen the same picture on the web.



In my notes, I have an address of 19841 Buckhaven Lane, Saratoga. Phone 867-5930 which may be for Roy Kaylor. I think I spoke to Roy on the phone. But, I don't think I ever visited with him in person. I think he was not available before I had to leave.

It is all a blur. If you know of the yellow Datsun Pickup and the conversion manual that was written by Clarence Eller's, let me know. Are there any pictures of it? Do you have a saved copy of what used to be at: Electric Conversion

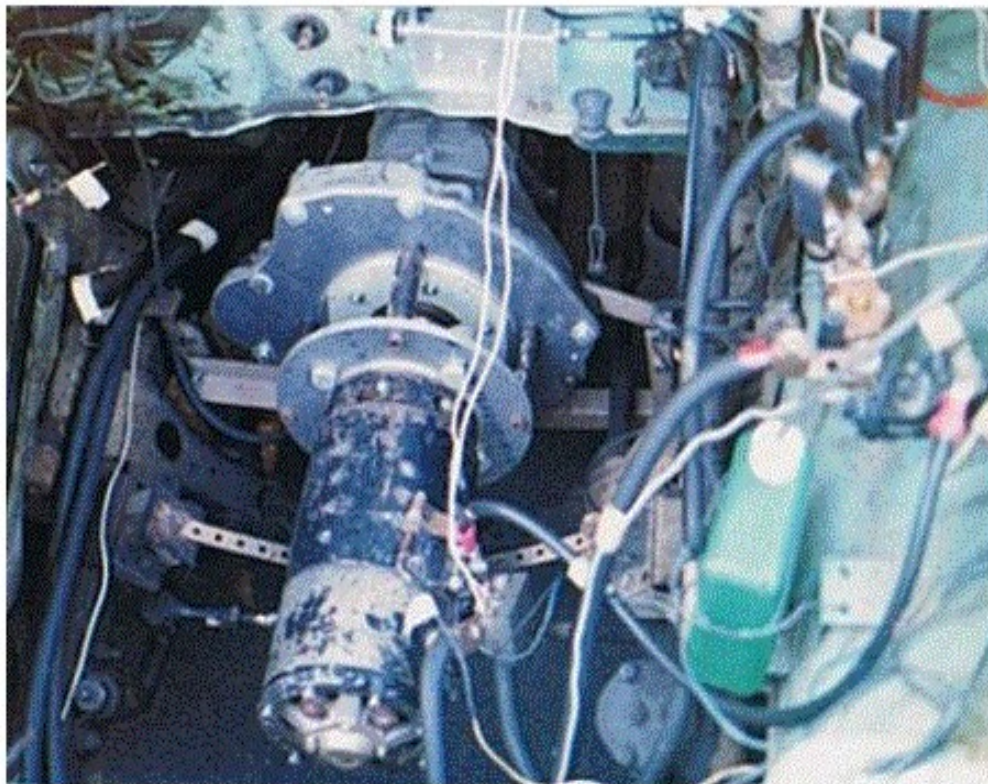
<http://www.electrichybridvehicles.com/>



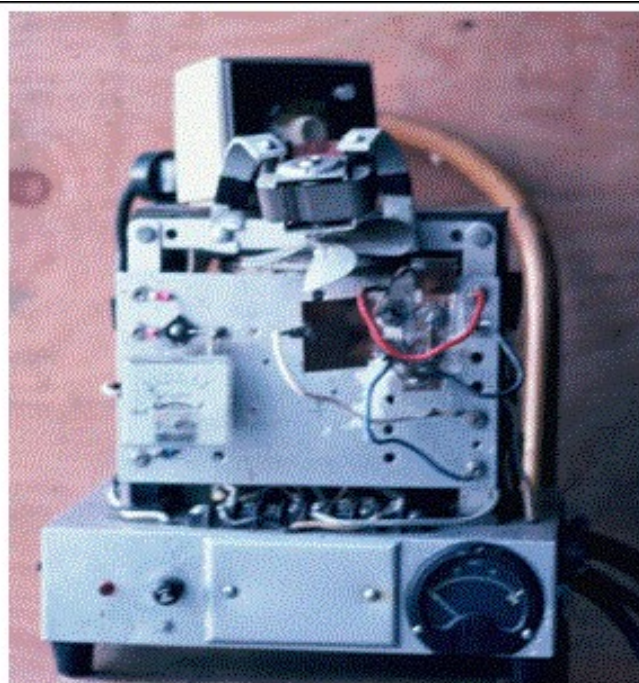
Schedule	
May 30, 1979	California visit with Laski
July 16 1979	Purchase Datusn
August 11 Add	Transmission support
August 13	Remove Motor
August 14 – 17	Work with machinist
August 18	Install electric motor
August 25	Install batteries
August 29	First run as electric
November 1	Registered as electric

Cost	
Batteries	800.00
“	130.00
Motor	100.00
Bearings	80.00
Machinist	300.00
Aluminum	50.00
Car	1300.00
Welder	50.00
Meters, relays, etc.	175.00
Blower	45.00
Total	3130.00

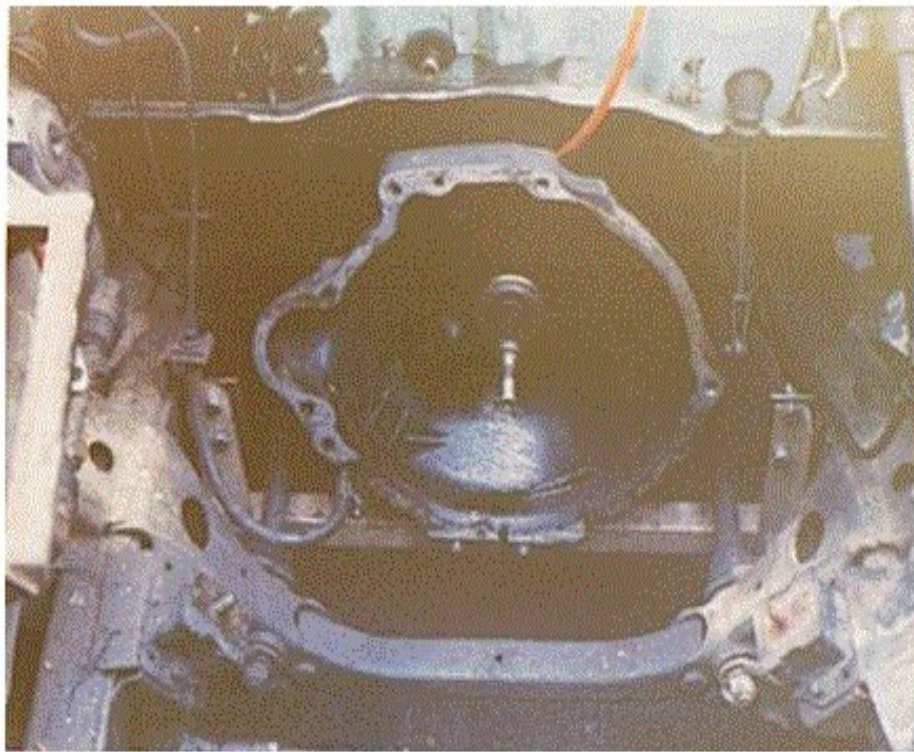
Starting Weight 2400	
Curb Weight	2400
Block	-150
Crank	-24
Manifold	-16
Pully	-3
Wheel Covers	-2.5
Distributor	-11
Altenator	-11
Starter	-9
Carberator	-6
Oil Pan	-4
Radiator and Fan	-9
Air Cleaner	-6
Misc parts	-13
Gas Tank	-15
Cap	-110
Total	2010.5
Electric Motor and Adaptor	92
Batteries	780
Estimated final curb weight	2882.5
Actual measured Curb Weight	2800



Under the Hood



The Charger

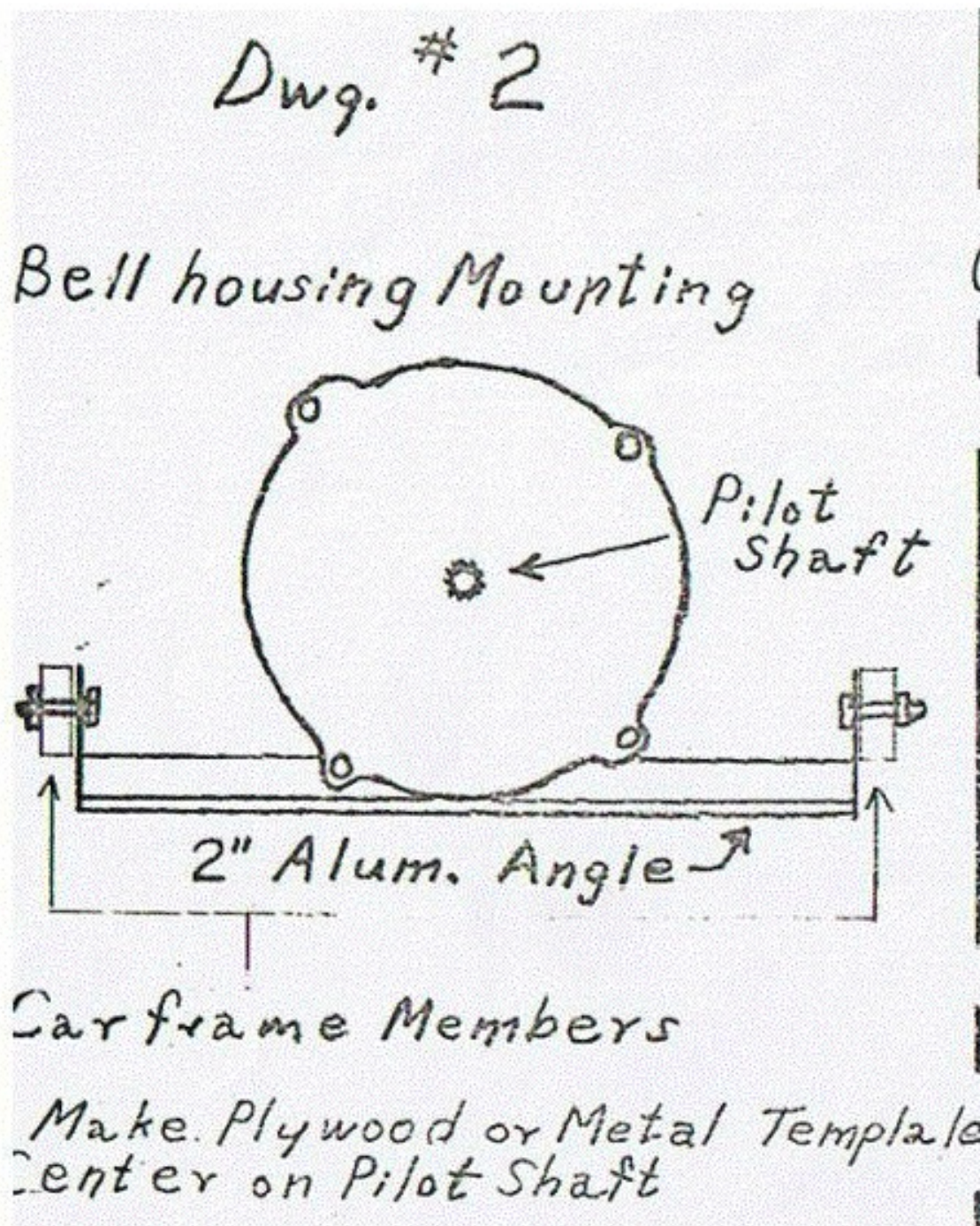


The Front Transmission support

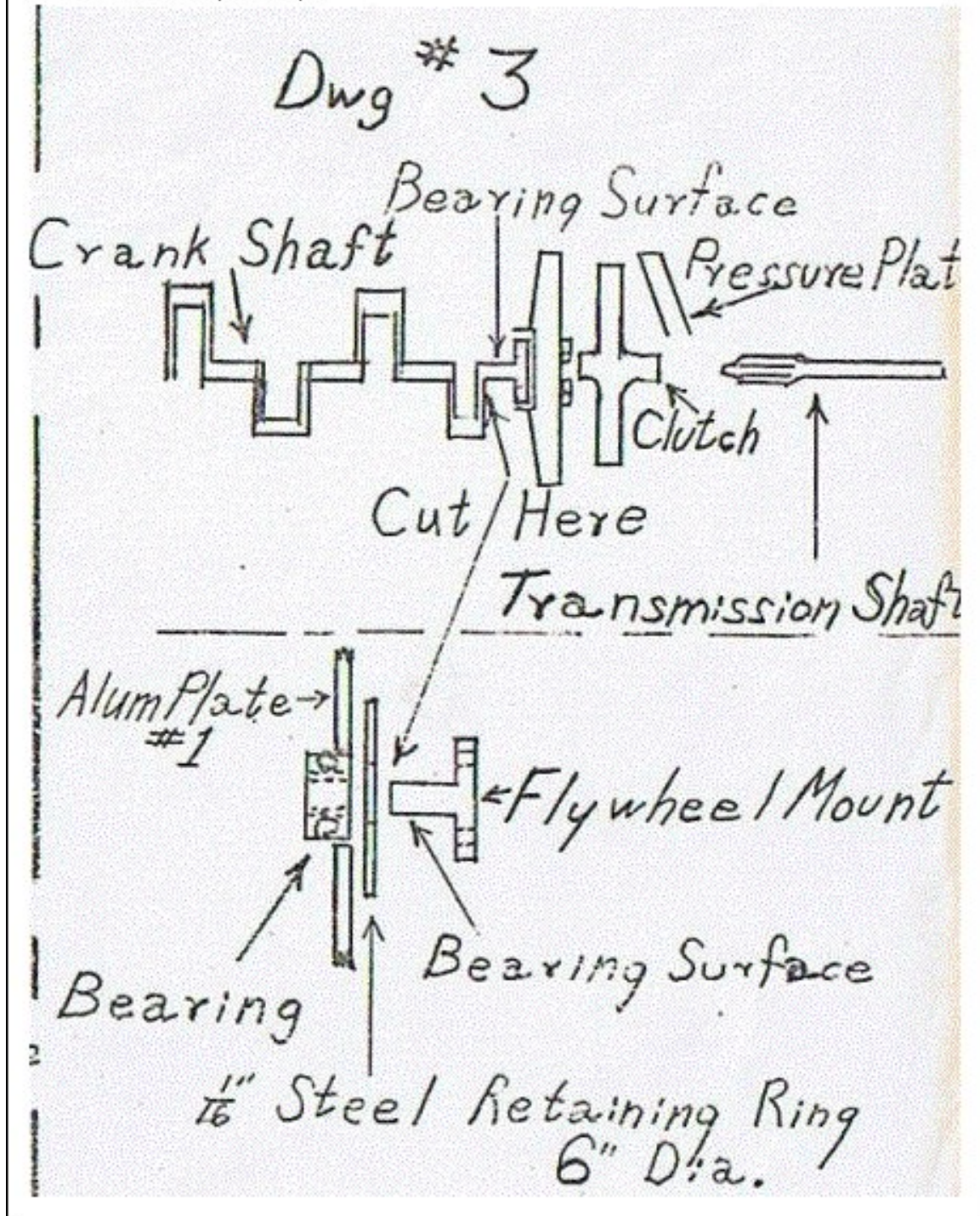


Trial fit of the Adaptor Plate

This is Clarence Eller's Front Transmission Crossmember and adapter Plate design as presented in his Coersion Manual and as implemented in my 72 Datsun EPT1 (above).



This is Clarence Eller's Flywheel Flange and coupler design as presented in his Coersion Manual and as implemented in my '72 Datsun EPT1 (below).





The Flywheel Flange is cut from the crank



The Flex Coupler has three parts, spline on one side (lower) and Keyway on the other (upper).



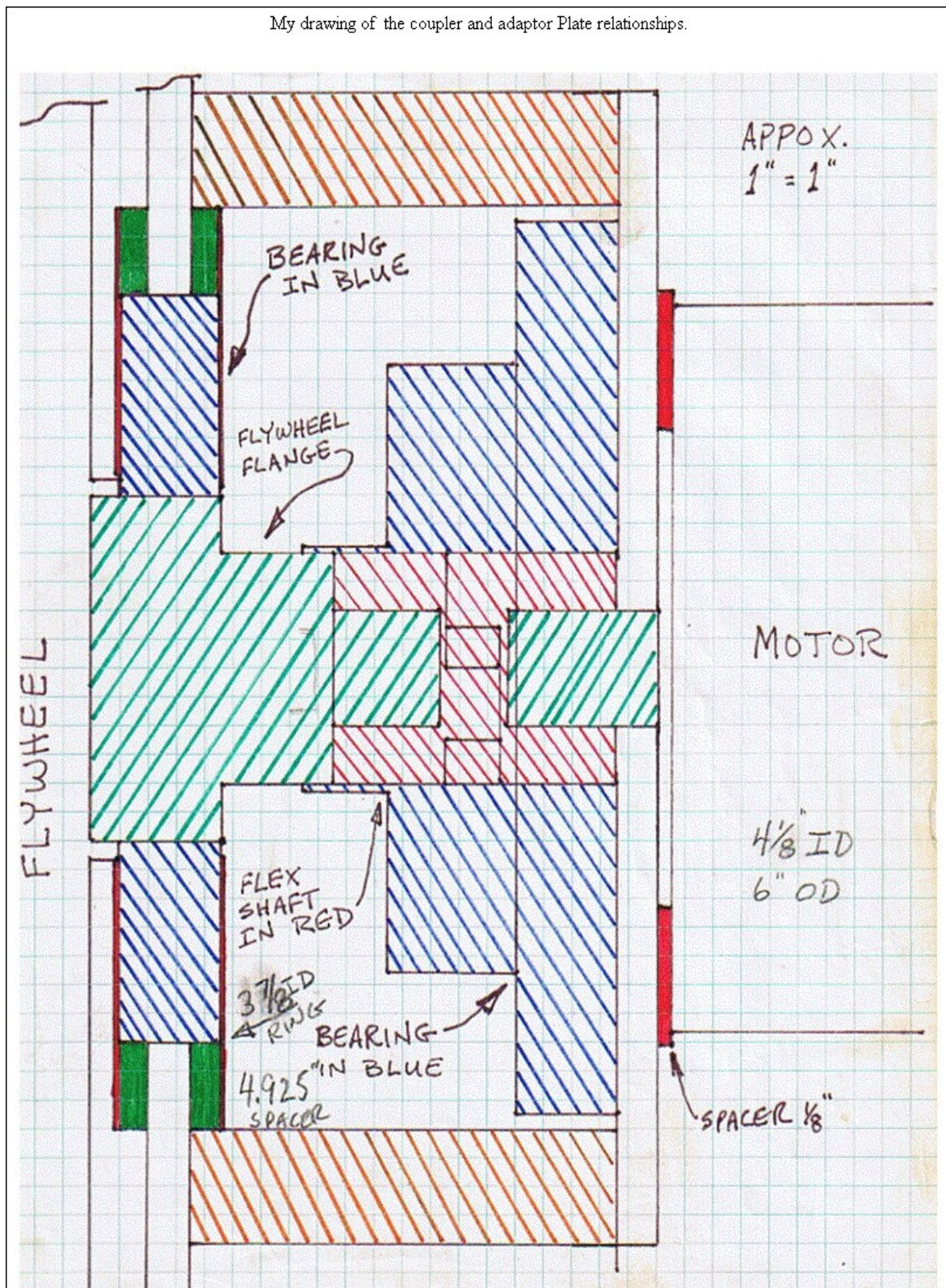
The machined Flywheel Flange is pressed into the Bearing on the bottom and the Flywheel Flange is now machined with a keyway. The keyed part of the coupler is in place on the shaft of the Flywheel Flange. The splined half of the coupler shown here goes on the motor shaft below.



Motor with coupling



Bauer E-1604-1, aircraft Generator, 30V, 400 Amps,
4500-8000 RPM, Splined Drive shaft.





Flywheel and Clutch Assembly



Parts from P&D in Kingston.

The parts pictured above were purchased at P and D Surplus in Kingston. Laid out here are: the Stainless Steel Strap, RY6, RY1 and 2, Fuse. Resistor R2, Volt Meter Ammeter and Shunt, and Teflon Strip. The stainless steel strap was shaped into resistor R1 mounted on top of RY2. When the RY2 relay was open current passed through the strap resistor. It would glow cherry red. When the relay closed, the resistor was bypassed.

The two meters were mounted in a plate under the radio. Two micro switches were operated by the cable attached to the accelerator pedal. These picked the RY1 and RY2 relays. A 12 volt 40 amp relay was attached to the ignition key circuit to send 24 volts to RY6.

Pictured at right is the relay assembly. R1 is in the upper right. The two 2.0 cables on the left are the 400 amp B+ from the battery pack in the bed of the truck. The upper one comes from the pack and the lower one goes to the motor armature.

B+ flows from RY1 to RY2 to the motor. RY6 is in the lower right. The lighter gauge cable carries the the field current to the motor field post. RY1, RY2 and RY6 are 24 Volt coil relays. RY6 is rated at 200 amps and the other two are 400 amps.



R1 Mounted on RY2

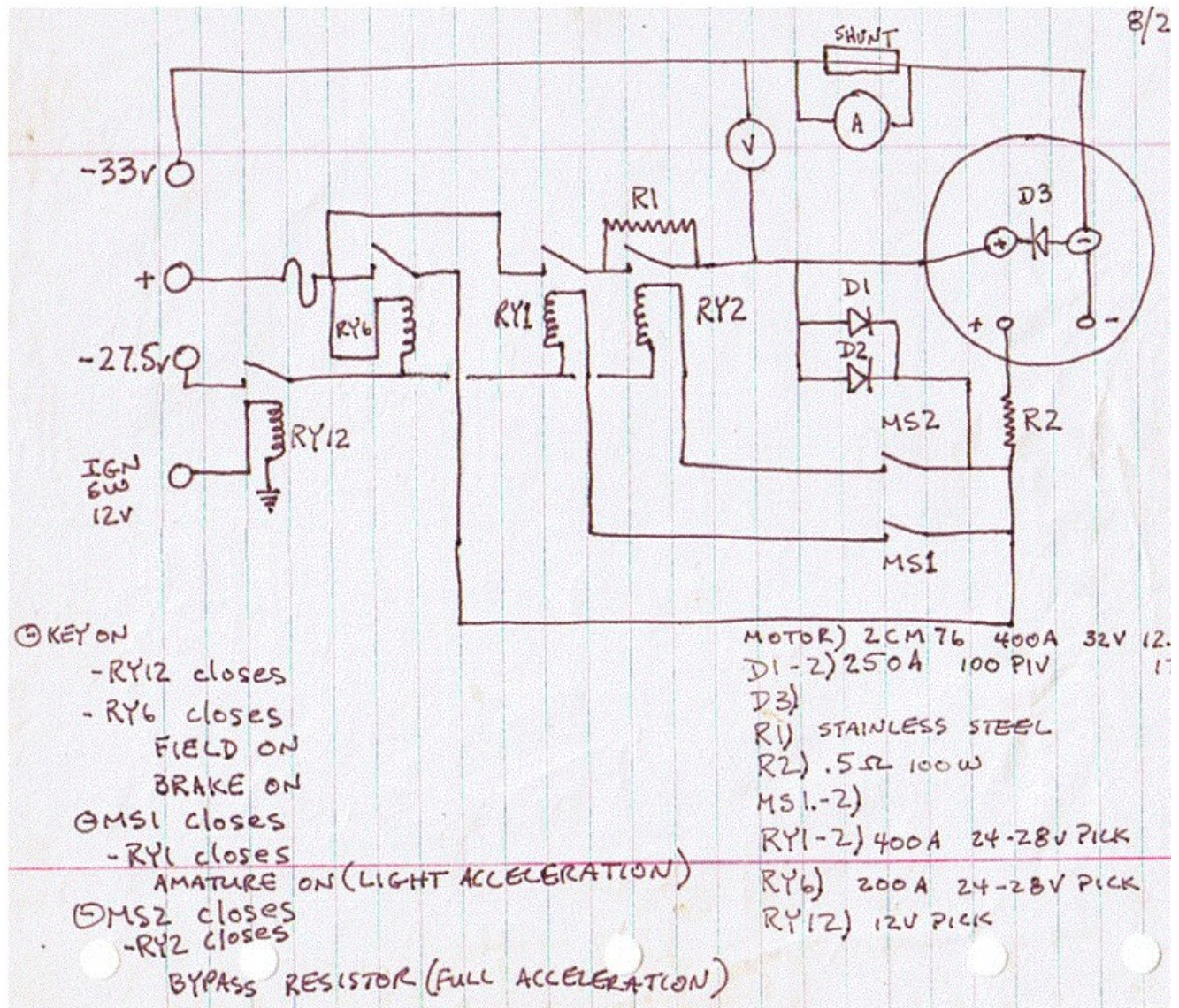
You can see here the battery arrangement. The are 14 six volt batteries in two string of seven batteries in series. The two strings are in parallel providing 42 volts. In the photo below, you can see the Fuse at the top. It is connected to the last post and the B= cable is connected to it.



I got the battery box cover at a salvage place across from the mercury dealer in Fishkill on the north side of Rout 52 west of town. It is a steel door from an old storage unit. They welded it to three gate hinges for me. I covered it with brown naugahide. The remainder of the bed was covered wit a piece of plywood covered with the same material.



My Wiring Diagram



RY1 and 2 are the armature speed control relays. RY2 has R1, the stainless steel strap resistor, on top of it. When RY2 is open, that's low speed. Armature current flows through R1, the strap resistor.

RY6 is the Field relay. It closes at key-on through power from RY12 the 12 volt key on relay.

Tony, the salesman at the local Pontiac dealer in Fishkill took a ride with me in the completed truck. He was impressed. He got a real kick out of it. I asked him to give me a signed affidavit on dealership letterhead, stating that the car was capable of going 40 mph. He laughed and said "sure." I needed this to get the Notice Of Vehicle Registration Acceptability form necessary to get the truck registered.

NOTICE OF REGISTRATION ACCEPTABILITY

Date October 23, 1979 Manufacturer: Datsun

Year & Make: 1972 Datsun

Model: 1200

VIN: PL521744479

Color: Blue

Fuel: Electric

Weight: 2800

Cylinders: None

Body Style: Pickup

Registration Class: Commercial

Mr. Alfred Lococo
41 Kretch Circle
Wappingers Falls, NY 12590

We have determined that the vehicle described above is acceptable for registration in New York State.

Before the vehicle may be registered, you must have it inspected at any licensed New York Inspection Station. If the vehicle passes the official inspection, the inspector will stamp this letter in the space below. Then present this letter at any of our issuing offices with the following:

1. A completed Application For Registration and Title (Form MV-82T)
2. Proof of ownership (for example: original Bill of Sale; Certificate(s) of Sale (MV-50) covering major components)
3. Proof of insurance
4. Proof of sales tax payment or exemption
5. Weight Certificate
6. Proof of identity and date of birth
7. Proof of incorporation, if not an individual or partnership registration
8. Original copy of Application for Vehicle Identification Number, if you obtained new VIN plate from the Office of Field Investigation
9. Fee

If everything is in order, a New York State registration and plates will be issued to you.

REGISTRANT: Keep this form to present upon each registration renewal. If you sell the vehicle described above, give this form to the new owner.

NYS OFF.

INSP. STA.
30345

DATE 10/30/79

FOR INSPECTION STAMP

Commissioner of Motor Vehicles

By: Paul Blenden

Technical Assessment Bureau

Notice Of Vehicle Registration Acceptability

ELECTRIC CARS AVAILABLE NOW

The Electric Car market has grown steadily in the past few years and at present we have auto makers in the U.S., as listed in the EV News, February '79 issue; at least half of them will build cars to order and only one is the first mass-produced for over 30 years, the original CityCar built by Sebring-Vanguard now taken over by General Engines, Inc.

Most of the vehicles are electrified conversions of cars built by U.S. or foreign auto firms. The small companies say it is cheaper to buy bodies and chassis that already meet Federal Safety requirements than build them from the ground up. The major auto makers say they are staying out of the market until better, long-range batteries are available. The electric car makers, listed below, will supply the various conversions within 8 to 12 weeks after an order and deposit are placed.

Electric Fuel Propulsion, Inc., 2191 Elliott Avenue, Troy, MI 48084 offers the most curious conversion of a GM Cadillac at a starting price of \$35,000. The car can provide a top speed of 70 mph and a range of 100 miles with a booster charge. For long trips, a trailer mounted gasoline powered generator is an optional piece of equipment. EFP was active already back in 1968 when it helped students in "The Great Electric Car Race" - and it has built since a number of experimental vehicles of high quality.

Electric Auto Corporation, 2237 Elliott Avenue, Troy, MI 48084 is not taking orders but is accumulating a waiting list for its \$15,000 "Silver Volt" - a full-size car conversion that is scheduled to begin coming off the assembly line late next year in Freeport, Grand Bahama Island.

General Engines, Inc., Commuter Vehicles Div., 591 Mantua Blvd., Sewell, NJ 08080 offering the Comuta-Car and Comuta-Van at a price starting at \$4,500. The Northern California Sales Branch is Cabot Electric Car, 401 Bel Marin Blvd., Novato, CA 94947.

Electric Vehicle Associates, Inc., 9100 Bank Street, Valley View, OH 44125, offers four-passenger conversion of the AM Pacer Wagon at \$13,838 with a range of 50 miles and a top speed of 55 mph.

U.S. Electricar Corp., White Pond Road, Athol, MA 01331 will deliver in 8 days an electrified Renault LeCar, called Lectric Leopard for \$7,495 with a range of 80 miles and a top speed of 55 mph. It comes in four models with a top price of \$8,995.

3-M Vehicles, Inc., 6276 Greenleaf Trail, Apple Valley, MN 55124 produces a variety of three-wheel vehicles called Free-Way models at \$2,895 base price. The car is classified as Motorcycle and it is basically a one-seater. It has a top speed of 40 mph and 40 mile range at 40 mph and it weighs 625 pounds.

Electric Passenger Cars, Inc., 5127 Galt Way, San Diego, CA 92117, is the only firm that offers an electric hybrid, a battery-powered vehicle that also has a small auxiliary gasoline engine that runs an onboard DC generator. It comes in two models: Hummingbird IV based on a Ford Pinto and a Hummingbird Van based on a VW. The car is priced at \$11,975 with the hybrid and \$9,975 without. The car's range is 70 miles in the city and nearly double that with the hybrid.

There are also commercial Vans available from several sources - the most popular one is the Electra-Van from Jet Industries, Austin, Texas. It comes in four models and a four-passenger mini-van, with a cargo capacity of 960 lbs., is priced at \$9,000. A local representative for Electra-Vans in the Bay Area is Electric Vehicles, Inc., 6 Winfield Drive, Mountain View, CA 94040 (415) 964-3974.