

The image shows two electronic voltage regulators. The one on the left is on a blue PCB with a silver heat sink, labeled 'MFH 04-24 R3' and 'GEN'. The one on the right is on a green PCB with a black heat sink, labeled 'MFH 06-01 R4' and 'GND'. Both have various electronic components like capacitors and resistors.

Model A Generator

Electronic Voltage Regulators

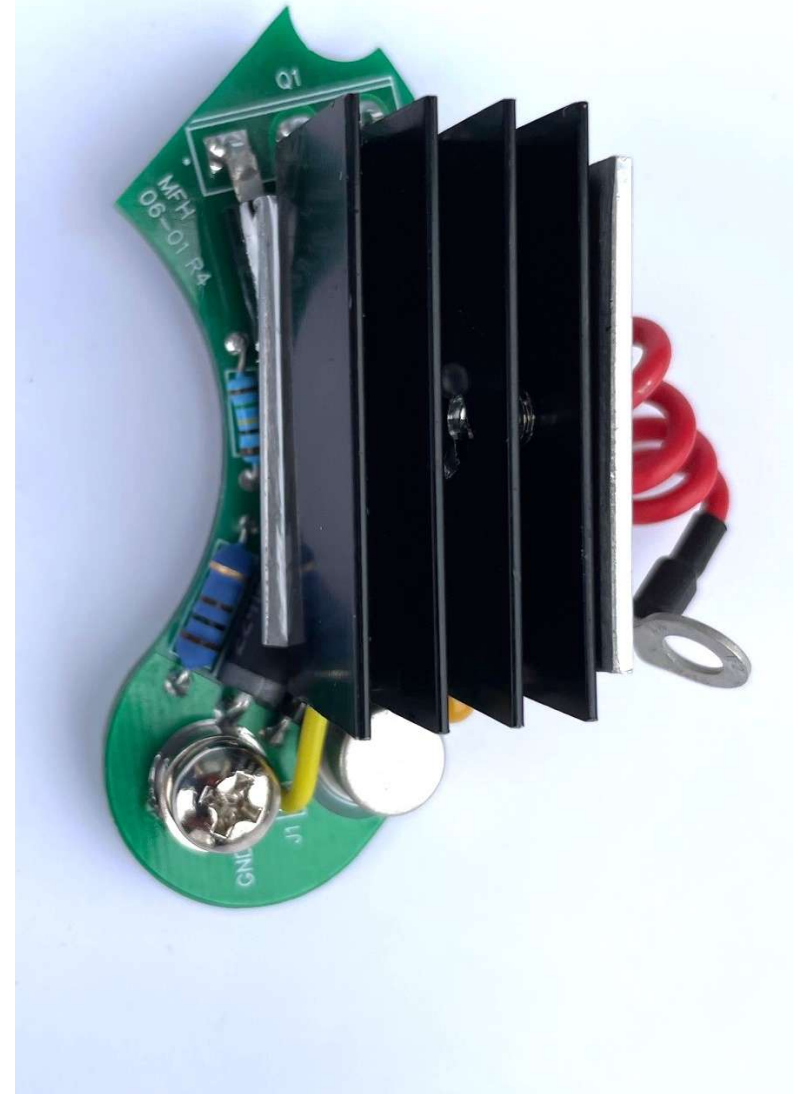
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EVR Benefits

- No adjusting the third brush
- Longer battery life
- Less battery terminal corrosion
- Protects the generator if it is disconnected
- Better fuel economy
- Safe driving using lights on during the day
- Avoid an Alternator



3rd Brush Setting



- 3RD Brush regulates generator current output
- Adjust to driving conditions
 - Up is down, Down is up
- Ford recommendation
 - 10A winter
 - 6A summer
- Battery is either:
 - Being Charged
 - Draining

Model A - Electrical Loads

Component (Incandescent)	Load
Ignition	2 A
32/32 CP Headlight and Taillight	8 A
Brake Lights/Horn	5A – 8A
50 CP Headlights	10 A !!!!
Halogen Sealed Beam	10A – 13A!!!!
Other Stuff	????

- LED Bulbs

- Headlamps – 0.6 A to 1.5 A
- Less power
- Brighter
- Lower brush setting to avoid battery overcharge

- Generator

- Max 12 Amps at engine RPM = 1000
- Available output at 7V = 8A to 10A depending on generator condition

Battery is charging/discharging under regular driving conditions

6V Battery Characteristics

Condition	Voltage
Charged	6.3 V
Maximum Charge Voltage	7.1V
Minimum Battery Charge Voltage	6.45V
Float (Standby) Voltage	6.8V to 6.9V

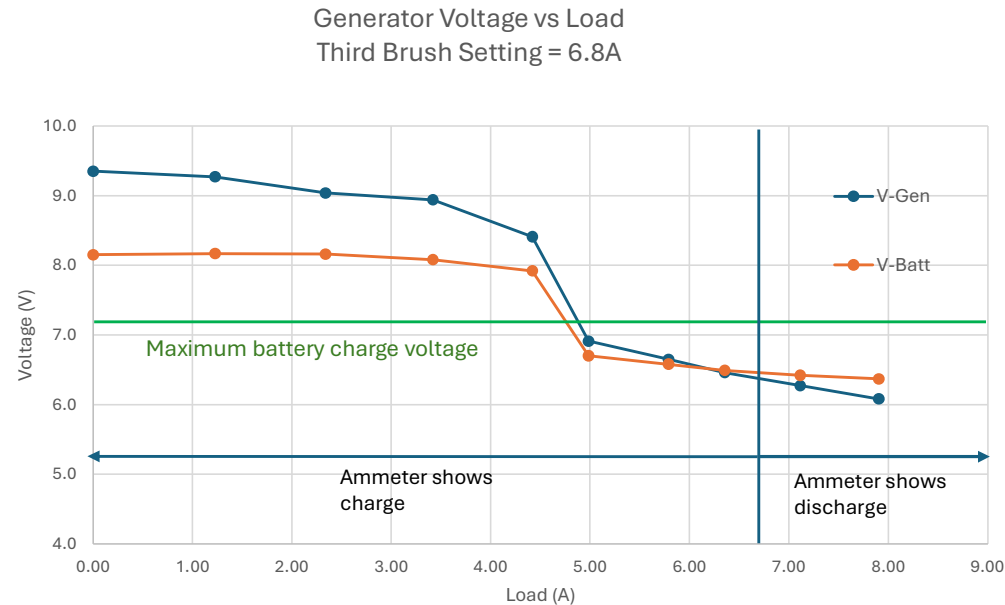
Impact on Battery

>7.2V → Gassing of Battery and loss of electrolyte
< 6.3V → Sulfation



3rd Brush Generator Output Voltage

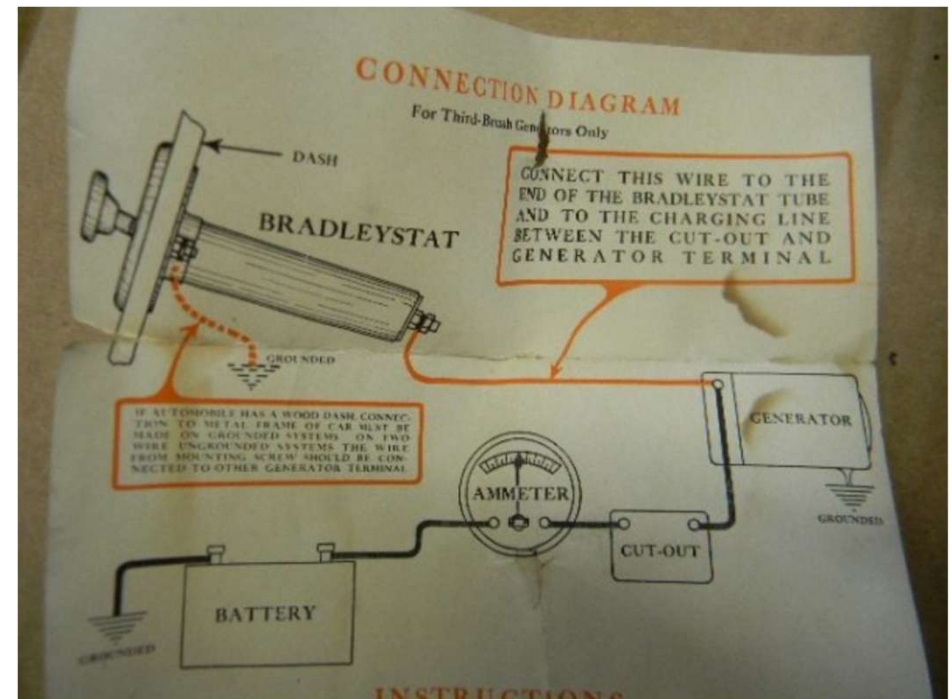
- Until the set generator output load is exceeded the generator outputs voltage higher than 9V
- Even at the lowest brush setting and the ignition load, the generator will typically output over 9V



Ford Instruction Booklet Recommendation – “Check Battery Electrolyte every 2 weeks”

Battery Management Tips and Tricks

- Turn headlights on/off while driving
- Resistor in electrical circuit
- Resistor in light circuit
- Voltage Regulator



1940's – More Electrical

- More electrical loads in cars starting in mid-30's

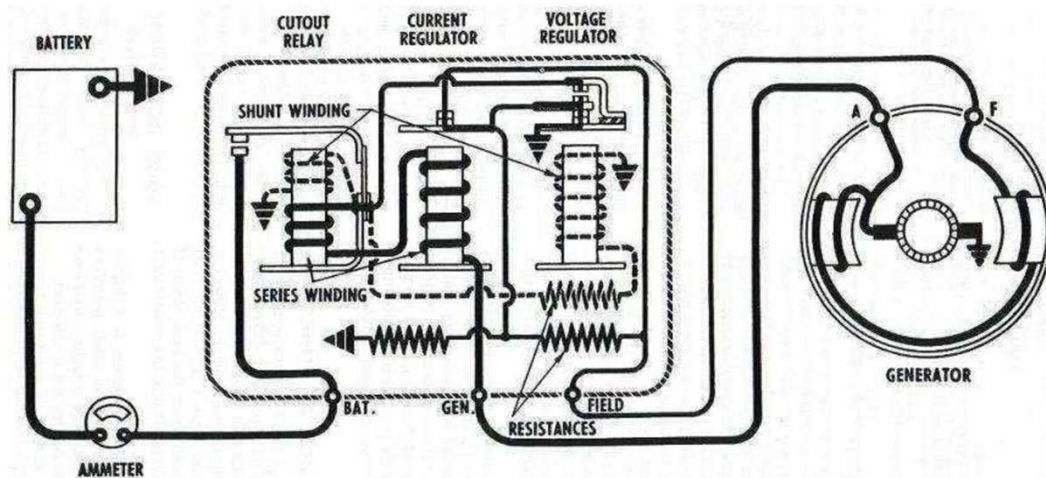


Ford 1940 Super Delux Convertible Coupe



Electro-Mechanical Voltage Regulators

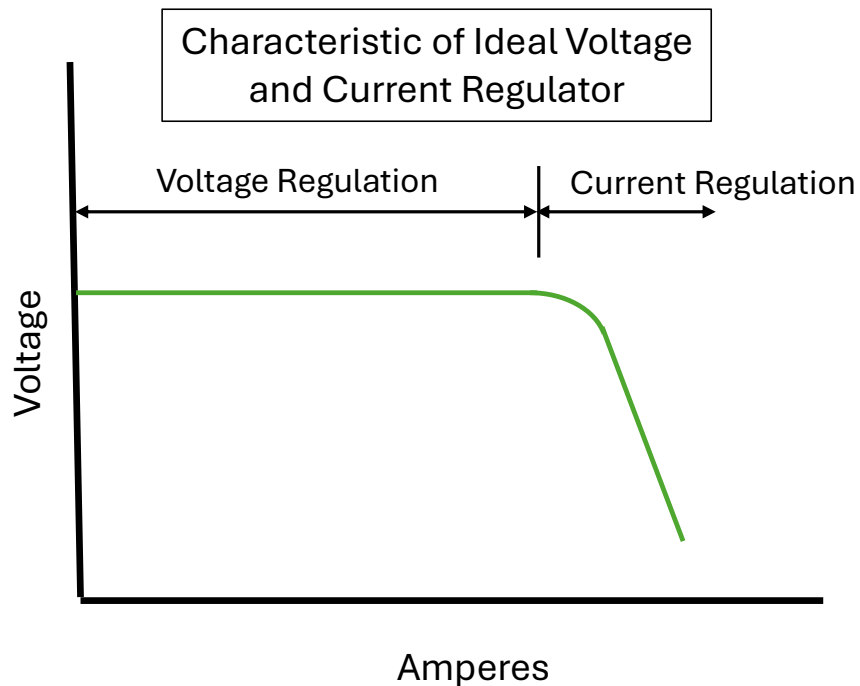
- 1934 – 2 step voltage regulator (option with Radio)
- 1939 – Voltage and Current regulator



[YouTube – Generator Regulator – Peter Mak](#)



Regulator Performance



Source "The Story of the Automobile Voltage Regulator", Bernard Cain

- Model A Regulator Challenges
 - Need Access to Generator Field Coil Wiring
 - Mounting in car



Ford 1940 Super Delux Convertible Coupe

Electronic Voltage Regulators (EVR)

- Internal Style

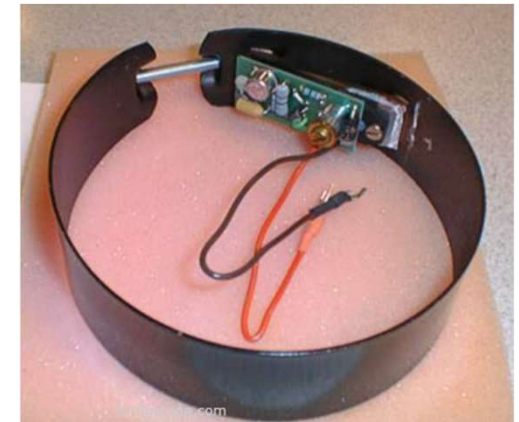
- Internal Mount - Regulates Field Coil Current
- Tom Wesenberg – recently re-introduced
- James Peterson - unavailable
- In use - 15 to 20 years

- Cutout Style

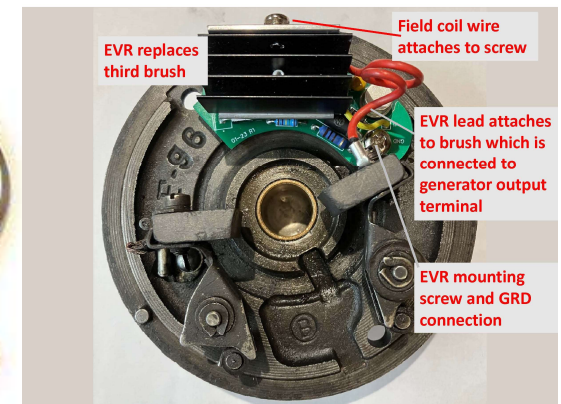
- External Mount - “Shorts” Generator to Ground
- John Regan - Fun Projects – Discontinued
- Jeff Stevenson – not available for 6V positive ground and susceptible to damage



Fun Projects EVR

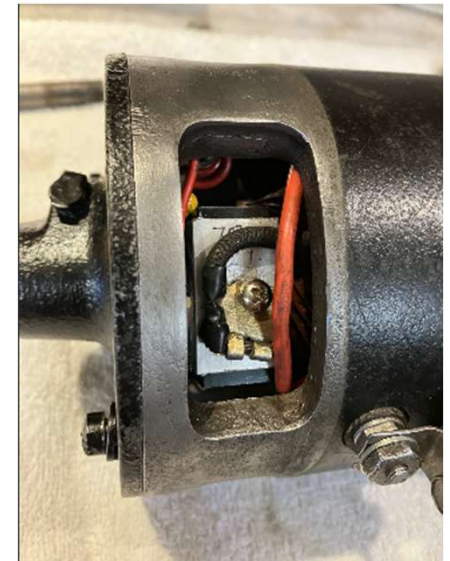
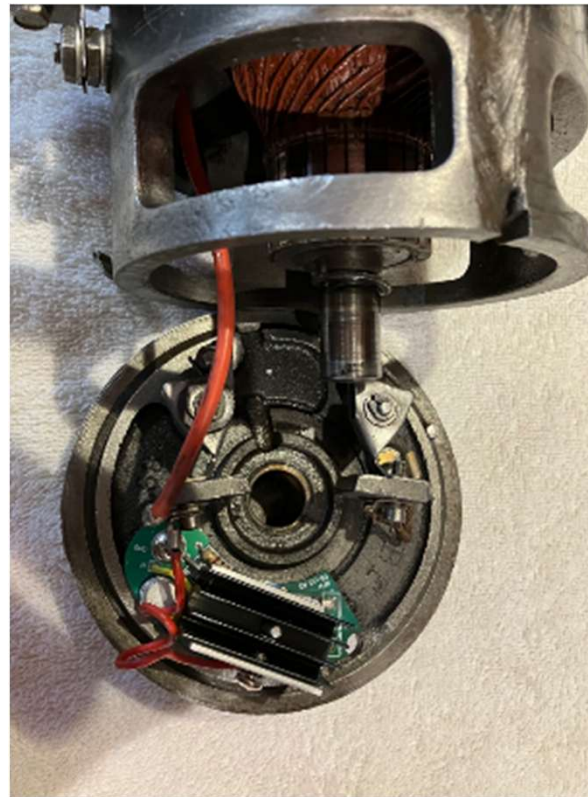
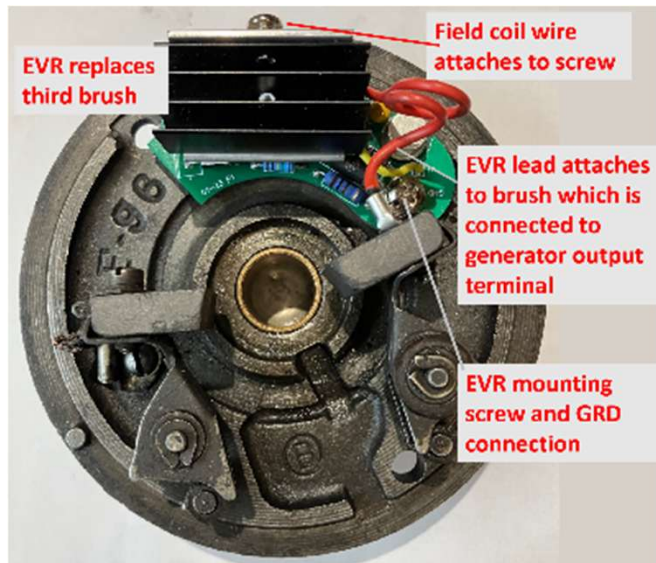


Peterson EVR



Wesenberg EVR

Tom Wesenberg Style EVR



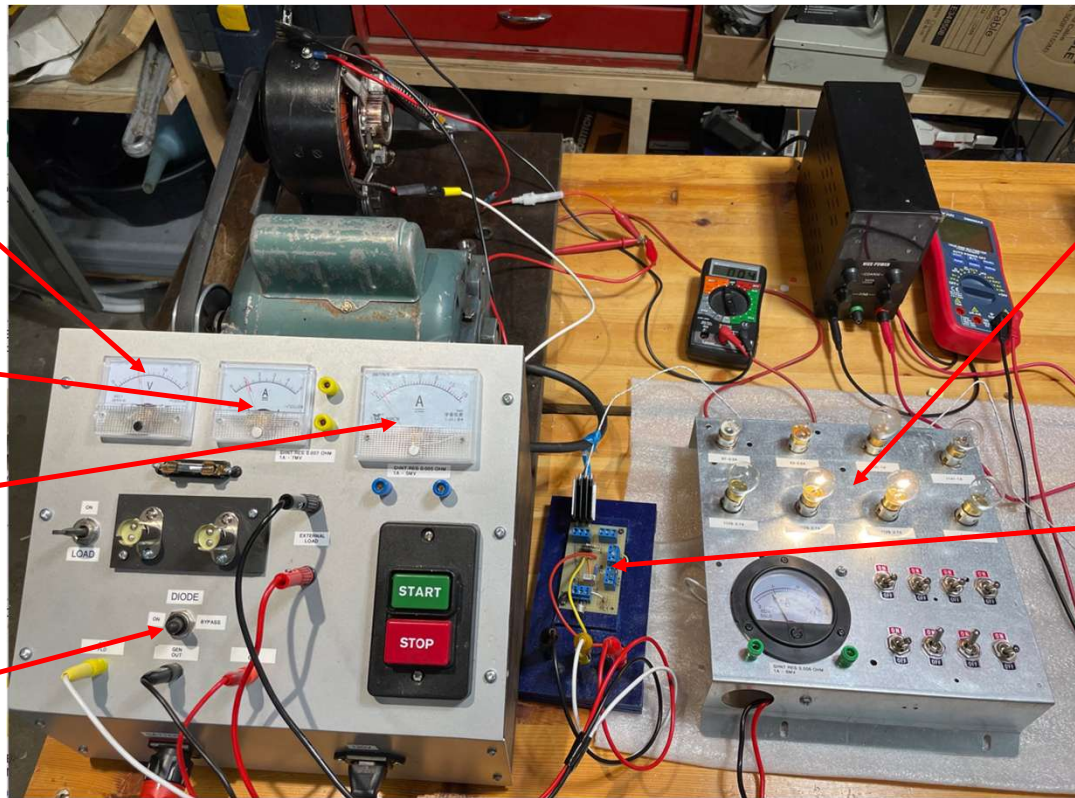
Generator Test Stand

Battery
Voltage

Field Coil
Output

Battery
current
in/out

Cutout type



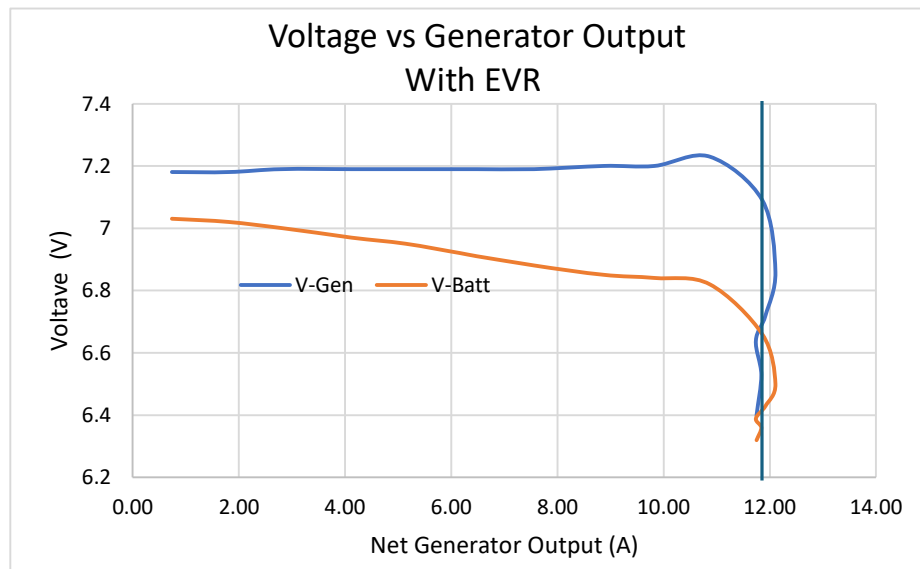
Load Center
Up to 16A in 1A
increments

EVR
Test/Design
Board

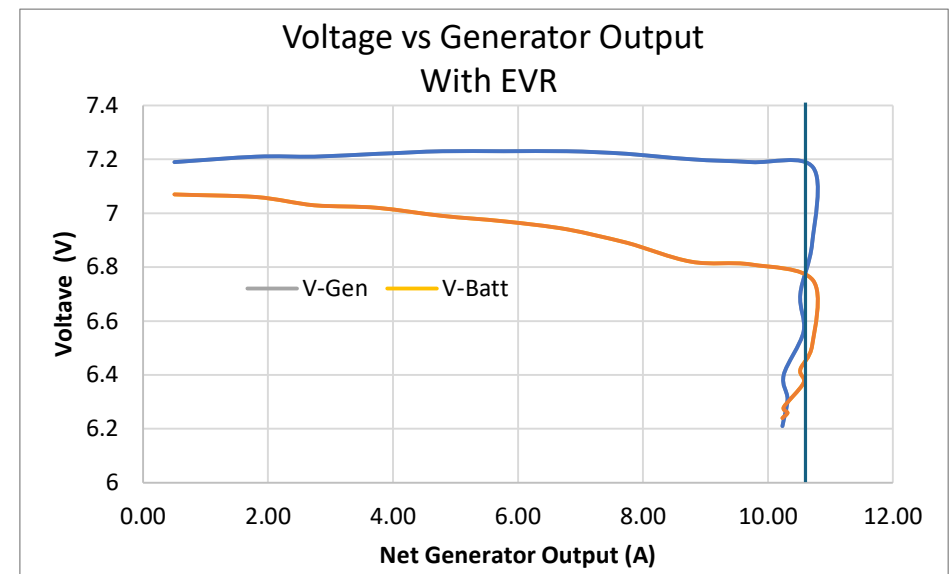
EVR Output Characteristics

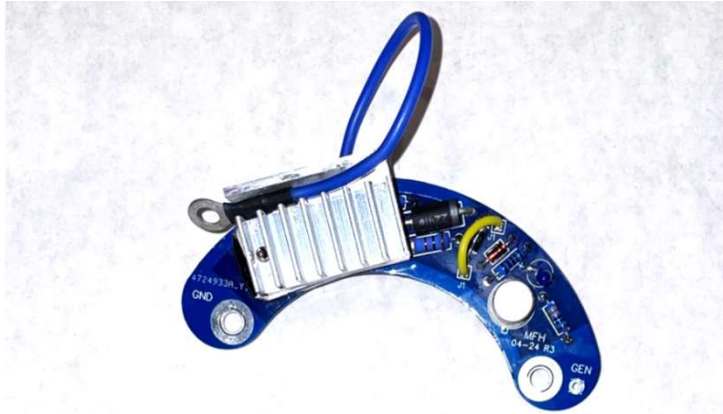
- Generator Output Voltage is held steady until generator capacity is reached

Generator 1 – modern armature



Generator 2 – stock in excellent condition





3 Brush Powerhouse



5 Brush Powerhouse



Long-style Generator



Model T EVR

