

How Unwanted* Series Resistance Affects Circuit Operation

*Such as bad connections, corrosion, frayed or fractured wiring.

(The type of resistance that cannot be measured with an ohmmeter, but drops voltage to the load.)

Typical Normal Circuit Readings (including maximum allowable voltage drop at load) 97 Plymouth Voyager

Circuit	Condition	Battery Volts	Circuit Amps	Dynamic Ohms	Voltage at the Load assuming 0.5 allowable	Circuit Voltage Drop
Fuel Pump	KOEO	14	7	2.0	13.5	0.5
Headlights	KOEO	14	14	1.0	13.5	0.5
Starter	Cranking	10.5	140	0.075	10.0	0.5

Example A- Adding 0.01 Ohms in Series

Circuit	Condition	Battery Volts	Dynamic Res Plus .01 Ohms	Revised Amps	Voltage at the Load (less allowable 0.5)	Circuit Voltage Drop
Fuel Pump	KOEO	14	2.01	6.96	13.42	0.58
Headlights	KOEO	14	1.01	13.86	13.36	0.64
Starter	Cranking	10.5	0.085	123.53	8.76	1.74

Example B- Adding 0.1 Ohms in Series

Circuit	Condition	Battery Volts	Dynamic Res Plus .1 Ohms	Revised Amps	Voltage at the Load (less allowable 0.5)	Circuit Voltage Drop
Fuel Pump	KOEO	14	2.1	6.67	12.84	1.16
Headlights	KOEO	14	1.1	12.73	12.23	1.77
Starter	Cranking	10.5	0.175	60	4.0	6.5

Example C- Adding 0.25 Ohms in Series

Circuit	Condition	Battery Volts	Dynamic Res Plus .25 Ohms	Revised Amps	Voltage at the Load (less allowable 0.5)	Circuit Voltage Drop
Fuel Pump	KOEO	14	2.25	6.22	11.94	2.06
Headlights	KOEO	14	1.25	11.2	10.7	3.3
Starter	Cranking	10.5	0.325	32.31	1.93	8.57

At what point would each circuit be affected and how would the effect be noticeable, or measurable?