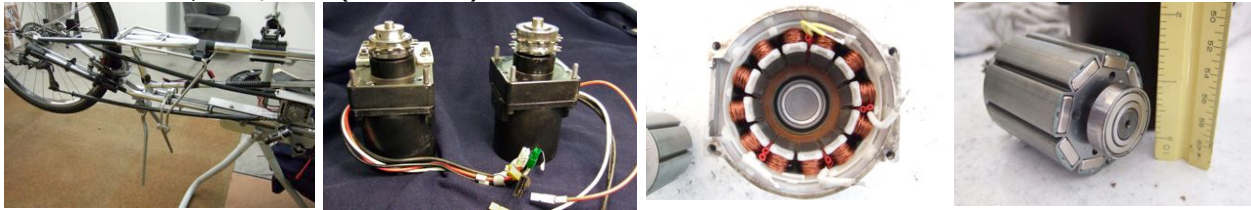


# Cyclone raw motor with external controller, 36v/35A (900w kit)

Installed on Gold Rush as a mid-drive.



At 24 volts.  
CW rotation  
Full Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
105	0	0.0%
216	117	54.2%
312	200	64.1%
402	282	70.1%
486	342	70.4%
522	369	70.7%
606	433	71.5%
780	550	70.5%

At 24 volts.  
CW rotation  
Half Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
55	0	0.0%
162	100	61.7%
252	167	66.3%
402	250	62.2%

At 36 volts.  
CW rotation  
Full Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
165	0	0.0%
330	150	45.5%
438	250	57.1%
594	400	67.3%
822	583	70.9%
1062	767	72.2%
1190	840	70.6%

At 36 volts.  
CW rotation  
Half Throttle

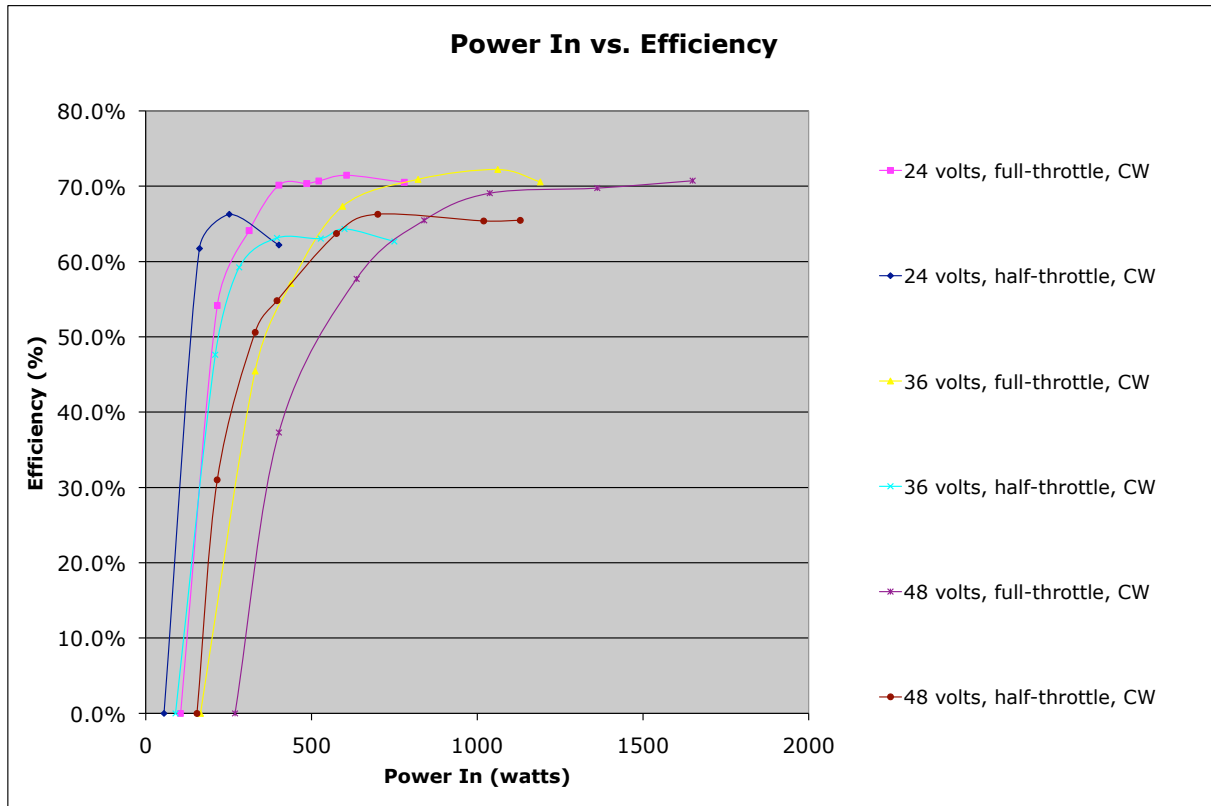
Power (Drain Brain)	Power (PowerTap)	Efficiency
90	0	0.0%
210	100	47.6%
282	167	59.2%
396	250	63.1%
528	333	63.1%
600	386	64.3%
750	470	62.7%

At 48 volts.  
CW rotation  
Full Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
270	0	0.0%
402	150	37.3%
636	367	57.7%
840	550	65.5%
1038	717	69.1%
1362	950	69.8%
1650	1167	70.7%

At 48 volts.  
CW rotation  
Half Throttle

Power (Drain Brain)	Power (PowerTap)	Efficiency
155	0	0.0%
216	67	31.0%
330	167	50.6%
396	217	54.8%
576	367	63.7%
700	464	66.3%
1020	667	65.4%
1130	740	65.5%



Notes: The curves should generally be concave downward. Variation from this is no doubt due to errors in my measurement equipment. Efficiency was measured by comparing energy drawn from the battery according to a Cycle Analyst and comparing that to energy sent to the rear wheel of the bicycle as read from a PowerTap hub. Motor power passes through a 9.33:1 planetary gearbox and 14t sprocket on the gearbox output to standard bicycle chain to a 34t sprocket on the rear wheel. Efficiency of the planetary and one-stage sprocket drive is probably around 91%, so actual motor/controller efficiency is about 10% greater.