MAC-BMC 300-watt Motor

Motor: M3
Hall sensors tuned for CW rotation
Winding: Delta (stock)
Stock Rotor assembly w/composite ring 16-pole magnet
Headline 48v controller

24-volt supply
Full Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
50	0	0.0%
99	50	50.5%
156	100	64.1%
216	155	71.8%
282	215	76.2%
330	253	76.7%
390	300	76.9%
474	363	76.6%
540	413	76.5%
612	463	75.7%
732	517	70.6%
912	580	63.6%

24-volt supply
Half Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
25	0	0.0%
84	50	59.5%
150	100	66.7%
222	147	66.2%
324	198	61.1%

36-volt supply
Full Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
91	0	0.0%
198	102	51.5%
306	198	64.7%
456	333	73.0%
564	425	75.4%
702	533	75.9%
840	625	74.4%
984	722	73.4%
1128	805	71.4%
1440	865	60.1%

36-volt supply
Half Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
46	0	0.0%
132	83	62.9%
312	217	69.6%
450	300	66.7%
618	367	59.4%

48-volt supply
Full Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
140	0	0.0%
222	103	46.4%
354	215	60.7%
534	367	68.7%
768	567	73.8%
948	717	75.6%
1176	900	76.5%
1536	1133	73.8%
1800	1200	66.7%

48-volt supply
Half Throttle

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
65	0	0.0%
240	150	62.5%
414	283	68.4%
600	367	61.2%
710	400	56.3%

MAC-BMC 300-watt Motor (M3)
using stock rotor
Efficiency vs. Input power (watts)

Legend:
- 24v, full-throttle
- 24v, half-throttle
- 36v, full-throttle
- 48v, full-throttle
- 48v, half-throttle
- 36v, half-throttle
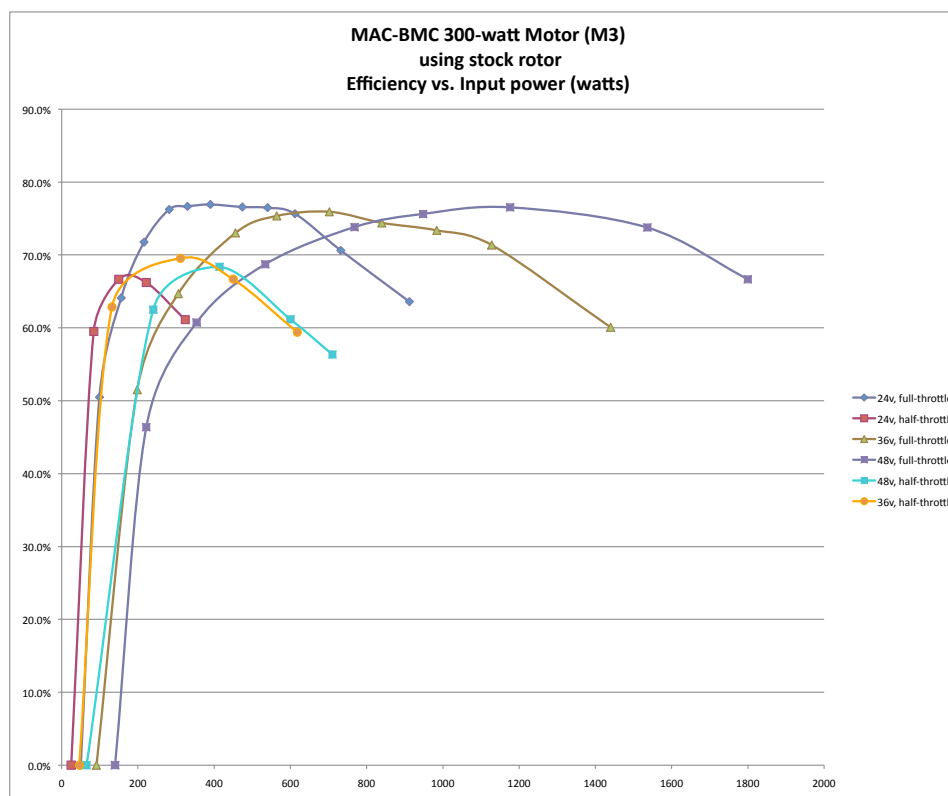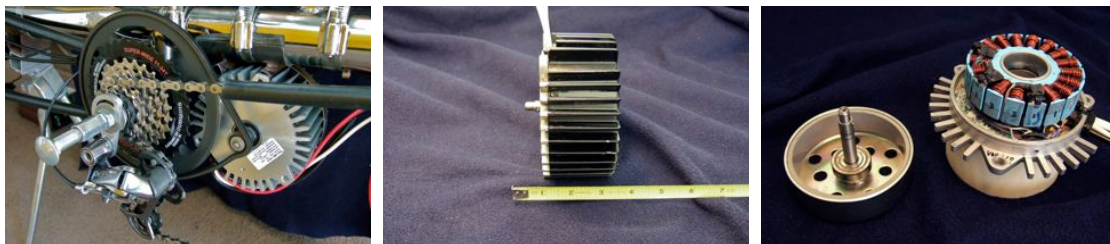
Notes: Efficiency was measured by comparing energy drawn from the battery according to a Cycle Analyst and comparing that to energy sent to the rear wheel of the bicycle as read from a PowerTap hub.
Motor power passes through a chain and sprocket (#25 chain; 11t - 90t) to a mid-drive, which is then passed to the rear wheel using normal bicycle chain (15t - 34t).
Efficiency of the two-stage chain and sprocket drive is probably around 93%-95%, so actual motor/controller efficiency is about 6.5% greater.
This motor exhibited good efficiency at the higher power end of the curve, then would suddenly stall as the load was increased. The right-most markers indicate the maximum usable power.