MAC-BMC 600-watt Motor

Motor: M1
Hall sensors tuned for CW rotation
Winding: Delta (stock)
Headline controller (Current limit: 50A)
24-volt supply
Full Throttle

No gearbox

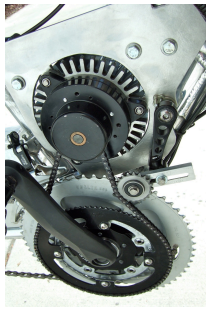
Power (CycleAnalyst)	Power (PowerTap)	Efficiency
54	0	0.0%
111	51	45.9%
174	106	60.9%
228	154	67.5%
288	205	71.2%
348	257	73.9%
408	306	75.0%
480	363	75.6%
540	412	76.3%
606	465	76.7%
690	529	76.7%
840	628	74.8%
1008	719	71.3%
1284	821	63.9%

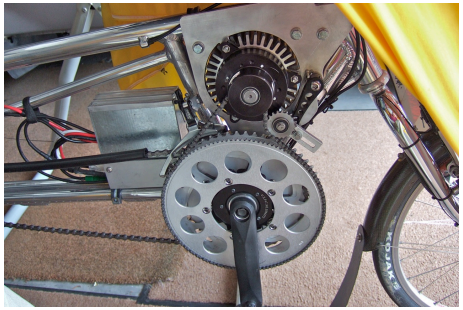
Currie gearbox, 15t sprocket on 12mm output pinion, brass bushing on housing

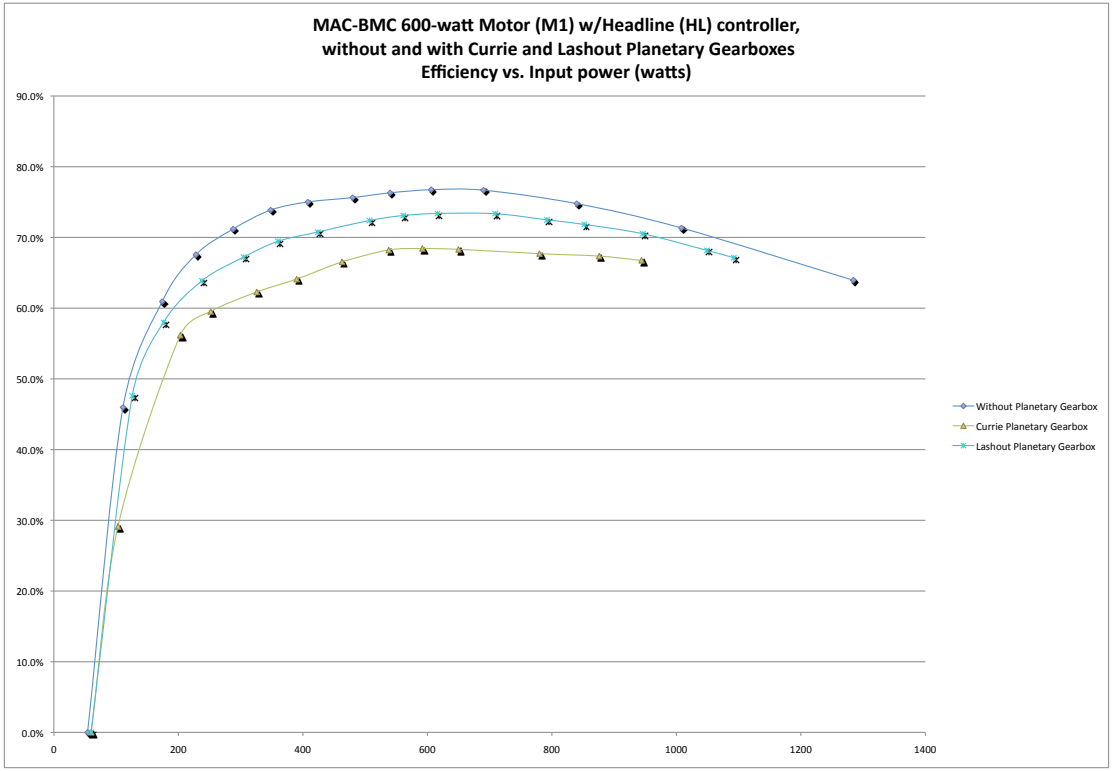
Power (CycleAnalyst)	Power (PowerTap)	Efficiency
60	0	0.0%
103	30	29.1%
203	114	56.2%
252	150	59.5%
326	203	62.3%
390	250	64.1%
463	308	66.5%
538	367	68.2%
592	405	68.4%
650	444	68.3%
780	528	67.7%
876	590	67.4%
944	630	66.7%

Lashout gearbox, 19t sprocket on 18mm output pinion, ball bearing on housing

Power (CycleAnalyst)	Power (PowerTap)	Efficiency
60	0	0.0%
126	60	47.6%
176	102	58.0%
238	152	63.9%
305	205	67.2%
360	250	69.4%
424	300	70.8%
507	367	72.4%
561	410	73.1%
616	452	73.4%
709	520	73.3%
792	574	72.5%
852	612	71.8%
946	667	70.5%
1049	715	68.2%
1092	733	67.1%







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 **without** gearbox 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).
Motor power **with** gearbox passes through gearbox and a chain and sprocket (#25 chain; 15t:90t or 19t:120t) to the crank, which is then passed to the rear wheel using normal bicycle chain (15t - 34t).
Currie gearbox is an older design using a 12mm output pinion shaft and a brass bushing on the housing to support the rotating shaft.
Lashout gearbox is the latest design using an 18mm output pinion shaft with a ball bearing on the housing to support the rotating shaft.