

“Solid Legend” Turbocharged Arctic Cat CTEC 800

30+ year DTR member (80 years young!)/ sled rider John Walker of Colville, WA brought his grandson Maverick’s turbo Arctic Cat CTEC 800 here (2457 miles) not to do any tuning, but to obtain engine performance data at light boost level. Maverick’s dad Wayne, who set up this **third party independant dyno evaluation**, told me that it performed flawlessly in mountain riding, and just wanted to see the power output at low altitude (1000’ here in Batavia NY). Wayne had a mixture of mostly pump gas with some 100LL Av gas added (instead of the 8 oz Lucas octane booster per tankful recommended by Solid) to boost octane levels in the tank for this test session, and it measured at just slightly less than 93 R+M/2 octane on our Zeltex 101C tester.

John brought the sled in the bed of his pickup, and I noted how nicely it pull-started and backed out of the bed. Then he drove it cleanly and fairly quietly into the dyno room up onto the hydraulic lift table with none of the cantankerousness we sometimes see with cold aftermarket turbo systems. Then after we pulled off the side panels and hood pod, I could see the nice fabrication and TIG welds on the stainless hot side components, and the filtered reed cage intake in the front of the large aluminum “charge box” feeding unobstructed cold air to the throttle bodies until the turbo begins to spool up. The turbo compressor inlet is fed by a two into one aluminum manifold that draws air from the two screened intake openings in the hood pod. For the dyno test, that was removed in favor of the 4” SuperFlow airflow meter to provide CFM data. And noting the vertical orientation of the Garrett GTX2860R gen 2 turbo that made packaging much cleaner and easier, along with a pulse-pump feeding injector oil to the low-friction ceramic ball bearings—it all looks quite similar to pictures we’ve seen of the new Polaris Boost 850 turbo system. But since the Solid turbo system has been in development for four years, and in production for two years it surely can be considered “prior art”. The stock ECU is retuned for boost using a device called “G.O.A.T. Tuner” that does all of the reflashing without a laptop. It comes with a selection of Ibexx-developed ECU “tunes” and not only can be changed via WiFi in the field, but also datalogs for post-ride viewing of engine operation.

Detailed information of the Solid Legend turbo is available on www.ibexx.com (Ibexx does the ECU tuning, clutch setups, and sells the turbo systems).

After two warmup tests to heat-soak the engine and heat the stock single pipe, here is the dyno data—as Maverick and Wayne Walker rode it all last year. We had our copper tube attached to the engine, and zero clicks of detonation were noted even during this slow WOT acceleration test—spending several seconds at well over 133 lb/ft of torque where cylinder filling is greatest, and deto is likeliest. And this is the first time I can recall asking for 200+ HP worth of fuel from the stock 800 Cat fuel pump, but as you can see it delivered ample fuel flow with zero pressure drop.

Here is dyno test data, and pics taken here and some lifted from Solid’s Facebook page.

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Solid Legend turbocharged CTEC 800 on <93 octane pump gas, 6 psi boost.

EngSpd RPM	STPPwr CHp	STPTrq Clb-ft	BSFCAB lb/hph	FulAB lbs/hr	Air_1c CFM	LM1AF1 Ratio	FulPrA psig	BoostP psig
7500	172.0	120.5	0.607	97.2	315.9	14.63	57.6	5.9
7550	172.5	120.0	0.621	99.6	320.2	14.60	57.5	6.0
7600	173.3	119.8	0.636	102.5	323.7	14.55	57.3	5.9
7650	174.8	120.0	0.663	107.7	328.9	14.33	57.0	5.8
7700	178.8	122.0	0.684	113.7	334.7	13.78	56.7	5.6
7750	185.2	125.5	0.693	119.4	339.5	13.21	56.5	5.4
7800	191.4	128.9	0.699	124.5	343.3	12.84	56.3	5.4
7850	196.5	131.5	0.702	128.3	346.6	12.57	56.2	5.4
7900	199.7	132.8	0.702	130.5	349.2	12.42	56.1	5.4
7950	201.9	133.4	0.704	132.3	351.1	12.37	56.0	5.4
8000	203.8	133.8	0.707	134.0	352.5	12.35	56.0	5.4
8050	205.2	133.9	0.706	134.7	353.2	12.35	56.1	5.5
8100	206.1	133.6	0.706	135.4	353.9	12.31	56.1	5.5
8150	207.0	133.4	0.704	135.6	354.2	12.28	56.1	5.6
8200	207.6	133.0	0.704	135.8	354.7	12.25	56.1	5.6
8250	207.8	132.3	0.703	135.9	355.5	12.22	56.2	5.6
8300	208.2	131.7	0.703	136.1	356.1	12.20	56.2	5.7
8350	208.5	131.2	0.704	136.5	357.1	12.19	56.2	5.7
8400	209.2	130.8	0.702	136.6	357.9	12.20	56.2	5.7
8450	209.7	130.3	0.699	136.3	358.9	12.22	56.1	5.7
8500	209.9	129.7	0.699	136.3	360.0	12.22	56.1	5.7
8550	210.0	129.0	0.699	136.5	361.0	12.23	56.1	5.8
8600	209.3	127.8	0.701	136.5	361.6	12.23	56.2	5.9
8650	207.9	126.2	0.707	136.6	361.9	12.24	56.2	6.0
8700	206.4	124.6	0.715	137.0	361.2	12.24	56.1	6.0
8750	202.3	121.5	0.731	137.4	357.7	12.24	56.0	6.0

Arctic Cat C-tec 800

red stock, black w/ Solid Legend turbo system at 6 psi boost







