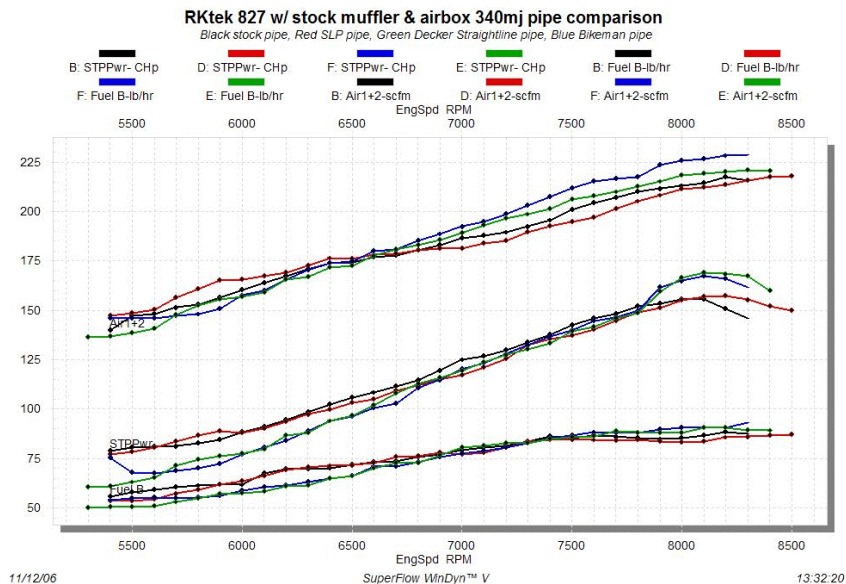


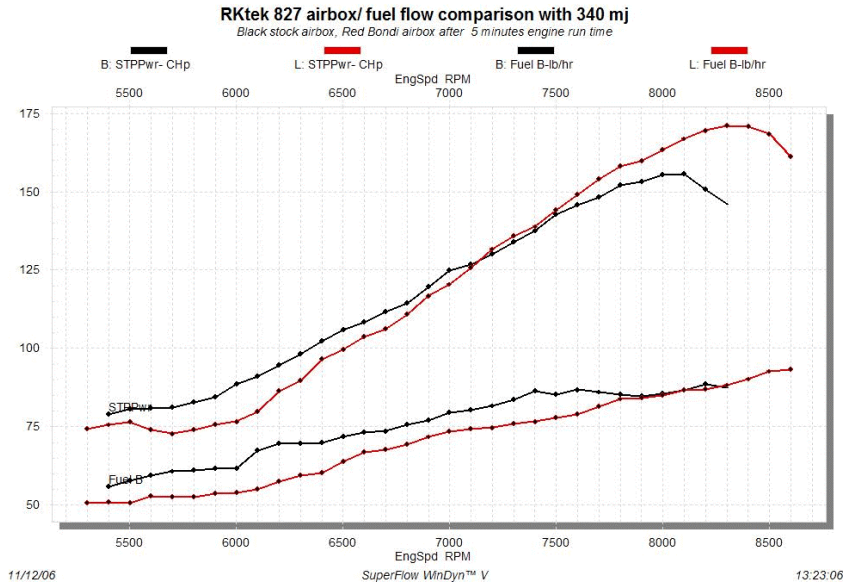
## RK Tek SkiDoo 827 big bore kit preliminary test session

Here is Fred's new engine, tested last week. The following graph is four tests with approximately 11.5/1 A/F ratio with stock airbox (340mj) and stock muffler with four single pipes. With the safe A/F ratio the Decker-Straightline and Bikeman singles made lots more HP than the stock pipe. Note that the Bikeman pipe had more airflow CFM than the Decker-Straightline. Those two pipes appear to be identical, other than the ID of the stinger. The SLP is probably better for high altitude, with even tighter stinger and low airflow CFM. The SLP can (not shown in graph) is more restrictive than the stock muffler and lost CFM and HP compared to the stock muffler, again possibly better for high altitude. The three groups of overlay plots on this graph are, from top to bottom, Airflow CFM, HP, and fuel flow lb/hr.



Kelsey from RK Tek likes to run lean for max HP. He was looking for closer to 170 HP with stock pipe, and Fred drastically reduced fuel flow by installing a Bondi modified airbox, giving us about 13.5/1 measured by the wideband meter on the dyno. While this low BSFC is way lower than we're used to on the trail, this high HP run is 20 seconds on high test pump gas at WOT! After testing with the Bondi box we jockeyed around jetting with the stock airbox and we couldn't quite match this HP, maybe down 1.5 HP with the same or lower fuel flow but still made 170 HP like advertised, amazing HP for a 800-ish twin with quiet single pipe. Kelsey was thinking that the new engine was "breaking in", but from examining the graphic comparison my opinion is that the hotter pipe brought the stock pipe in tune with the ported engine—the much higher internal gas temp in the leaner setup raised the HP peak several hundred revs, and reduced low end torque and HP, much like physically shortening the header pipe and center section. We tried the lean mixture with the Decker-Straightline pipe, and didn't

add any meaningful HP. This might mean that it is designed for cooler pipe temps (perhaps more typical for the casual tuner). We didn't try the Bikeman pipe with the lean mixture, but that may have benefited some from the higher backpressure from the greater expansion of the hotter ex gas. Since the Bondi airbox made it impractical to measure airflow, that is omitted from the graph. I've also included test data from the big HP run.



EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	BSFC B lb/hph	Fuel B lb/hr	WtrOut degF	AirTmp degF	TsTim2 second	LAMAF1 Ratio
5300	73.6	74.3	0.701	50.6	74	46	0	17.7
5400	73.5	75.5	0.694	50.9	73	47	0.9	17.8
5500	73.1	76.5	0.682	50.7	73	46	1.4	17.6
5600	69.3	73.9	0.735	52.8	72	45	2.9	17.1
5700	67.1	72.8	0.744	52.6	72	46	3.6	16.9
5800	67.1	74.1	0.732	52.6	72	46	3.9	16.8
5900	67.5	75.8	0.731	53.7	72	46	4.6	16.3
6000	67.1	76.6	0.726	54.1	72	46	4.8	16.2
6100	68.7	79.8	0.711	55.1	72	46	5.1	16.1
6200	73.1	86.3	0.686	57.5	72	46	5.9	15.7
6300	74.8	89.7	0.682	59.4	73	46	6.4	15.6
6400	79.3	96.6	0.644	60.4	74	46	7.3	15.5
6500	80.5	99.6	0.658	63.8	75	45	7.9	15.3
6600	82.6	103.8	0.664	67.1	74	45	8.5	15.1
6700	83.2	106.2	0.657	67.8	75	45	8.8	15.1
6800	85.6	110.8	0.644	69.4	76	45	9.8	14.9
6900	88.9	116.7	0.632	71.7	76	46	10.4	14.9
7000	90.3	120.4	0.628	73.4	76	46	10.9	14.8
7100	93.1	125.7	0.609	74.3	76	46	11.7	14.7
7200	96.1	131.6	0.584	74.7	77	46	12.3	14.5
7300	97.8	135.9	0.574	75.9	77	45	13.1	14.4
7400	98.5	138.8	0.568	76.6	77	46	13.4	14.3
7500	100.9	144.1	0.556	77.8	78	46	14.3	14.2

7600	103.1	149.1	0.545	79.1	78	46	15.1	14.2
7700	105.1	154.1	0.544	81.4	78	46	15.6	14.2
7800	106.6	158.3	0.545	83.8	78	46	16.5	14.1
7900	106.2	159.8	0.542	84.1	78	46	16.9	14.1
8000	107.2	163.4	0.535	84.9	79	46	17.6	14.1
8100	108.2	166.8	0.534	86.6	79	45	18.4	13.9
8200	108.6	169.5	0.528	87.1	79	46	18.9	13.9
8300	108.3	171.1	0.531	88.2	79	46	19.8	13.8
8400	106.8	170.9	0.542	90.1	80	45	20.3	13.8
8500	104.1	168.4	0.565	92.6	80	44	21.1	13.8
8600	98.4	161.1	0.597	93.3	82	46	22.1	13.9

When we dyno'd Randy Haulman's 830 earlier on DTR, we got about the same HP as this engine made with about 11.5/1 A/F ratio. Had we leaned that one down like we did here, it may have made substantially more HP as well with the stock single pipe.

Fred is jockeying his schedule to bring this 827 engine back for more testing with other pipes, including some twins and an Aaen single.